77th IIW

Annual Assembly & International Conference

7-12 July 2024 ~ Rhodes Greece

WELDED ART PHOTOGRAPHIC EXHIBITION

SUSTAINABLE DEVELOPMENT GOALS

4 QUALITY EDUCATION

IIW 2024 DIGITAL COLLECTION

Welcome Message

As President of the International Institute of Welding (IIW), it is my privilege to welcome you to view our fifth IIW Digital Collection of Welded Art, and for you to enjoy the 2024 outcomes related to United Nations (UN) Sustainable Development Goal SDG 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

IIW was founded in 1948 by the welding institutes or societies of 13 countries that considered it crucial to make more rapid scientific and technical progress in welding possible on a global basis. Its membership today comprises welding organisations from 51 countries worldwide.

Providing technology transfer and lifelong learning opportunities in conjunction with its member countries, has always been key IIW objectives through the formation of its Technical Commissions, including Commission XIV Welding Instruction in 1950.

In 2000, IIW established its IIW International Authorisation Board (IAB) and over 40 countries now provide opportunities for people to gain inclusive and equitable quality education, training, qualification and certification on a global basis in the welding field.

These unique cooperative and collaborative efforts between so many countries truly assist in progressing SDG 4.

We are proud that this IIW 2024 Digital Collection also shows the excellent IIW ethos of cooperation and collaboration with over 50 artists from 18 countries contributing to creating greater awareness of the importance of the relationship of the global welding industry to progressing the UN Sustainable Development Goals.

Please enjoy and pass the Collection onto your friends and colleagues.

Thomas Böllinghaus, IIW President 2023-26

1st July 2024

Thomas Böllinghaus
IIW President 2023-2026

Acknowledgements

Whether it is an individual, a team or a group of artists across the different welded art activities, all deserve our sincere thanks and appreciation for participating with great enthusiasm in helping to achieve our objective to demonstrate the value and benefits of welding and welded art in the promotion of the UN Sustainable Development Goal SDG 4.

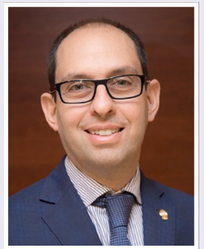
As usual, the interactions between the Exhibition Coordinator and artists have all been outstanding and the contributions greatly appreciated, particularly as involvement is entirely voluntary. Over 50 artists from 18 countries have participated. These countries are: Australia, Belgium, Bulgaria, Canada, DR Congo, Germany, India, Kazakhstan, New Zealand, Norway, Romania, Slovakia, South Africa, Spain, Switzerland, Ukraine, United Kingdom and USA.

Thanks must also go to those organisations which promoted the exhibition in their countries, and it is hoped that their examples will encourage others to provide similar promotion, support and involvement next year.

We also acknowledge the many experts, practitioners and policymakers in the welding and related industries for sharing not only technical information and innovation, but expertise in all areas affecting a country's ability to achieve sustainable development in a sustainable environment and fulfil their responsibilities in a cooperative and converging global community. IIW members are in a position to assist many of the 193 UN member states particularly with UN SDG 4.

Luca Costa, IIW Chief Executive Officer

1 July, 2024



Luca Costa
IIW Chief Executive Officer

Foreword

This is the fifth IIW welded art photographic exhibition since it was initiated in 2019 in Bratislava, Slovakia. As Coordinator and Editor, I have always been thrilled by the goodwill of so many people in participating either as artists, supporting competitions and exhibitions in their own countries, or promoting the IIW exhibition.

It is even better when a subject can be found which can create a unified approach for all participants to be part of. In 2023, the subject was the **17 United Nations (UN) Sustainable Development Goals (SDGs)** linked to a country's **National Welding Capability (NWC)** and the outcome has been described by external sources as **"stunning" (The Welding Institute Welding and Joining Matters Journal)** and **"amazing" (CWB Group, Canadian Welding & Lifestyle Magazine).**

It was a natural follow-on to use **UN SDG 4** "**Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all"** as the subject for our 2024 exhibition particularly since its success can have a significant effect on all the other SDGs. Although not a panacea for all the problems in the world, the exhibits submitted all make a contribution, however small, to the messages of improving the SDGs where possible.

Think of the benefits of welding and welded art related to creative recovery, illnesses, achieving perfect work-life balance and people with special needs. Lifelong learning opportunities, including the most basic opportunities, are not available to many people in the world but hopefully examples of welded art in the exhibition might encourage people in thinking of how they can help create such opportunities.

Chris Smallbone
Editor and Exhibition Co-ordinator
IIW President 2005-2008

Respect and appreciation for teachers, mentors and educational organisations is so important as is adopting and implementing the correct cultures to improve so many of the SDGs.

Peace, improvements in biodiversity, creating education and employment opportunities for people to lift themselves out of poverty, and giving families throughout all life stages the good health resources, security, shelter and food, are what need to be achieved.

Contents

4 QUALITY EDUCATION

The Importance of SDG 4
Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

The very successful IIW 2023 Digital Collection focussed on the 17 United Nations (UN) Sustainable Development Goals (SDGs)
https://iiwelding.org/wp-content/uploads/2023/07/IIW-2023-Digital-Collection-UN-SDGs-Single-Page.pdf

Since UN SDG 4 can have a significant effect on all the other 16 UN SDGs, the IIW 2024 Digital Collection of welded art is focussed on it.

In all countries, education is a key activity to help people to get out of poverty. Promoting education and training which results in credible personnel qualifications and certifications, which should also be portable both within a country and overseas, as well as being recognised on an international basis, is important to help people obtain work and develop careers.

Results of Federal, State and Local Government education and training (E&T) initiatives in different countries, as well as success stories from local and overseas sources, can all be used to show the importance of education, training, skills and careers paths to a country.
Sustainable Development Report 2023 (sdgindex.org)

For this to continue to improve however, the outcome orientated targets for SDG 4 must be achieved.

These could include improved resources and facilities, free primary and secondary education, equal access to quality pre-primary education, affordable technical, vocational and higher education, increased number of people with relevant skills for financial success, elimination of all discrimination in education, universal literacy and numeracy and education for sustainable development and global citizenship.

Developed countries can play a key role in assisting developing countries implement projects which could easily lead to improving lifelong learning. These include efficient and economical education and training via upgrading of schools and educational facilities, modern training course resources, remote training, education and examination methods, inexpensive virtual reality training, grants, scholarships and career opportunities for a diverse range of people.

Notwithstanding the above, in many developing countries, regional disparities can be significant in terms of children being able to read and write. Much of this is attributed to poor attendance levels at school and leads on to the meagre participation of youth and adults in formal and non-formal education and training. A major challenge is to improve participation in education at all levels substantially.

The Role of IIW in Education and Training and Lifelong Learning Opportunities

IIW has been involved in education and training since 1950 with the establishment of Commission XIV Welding Instruction. At the IIW Annual Assembly in Madrid in 1992, Commission XIV was renamed Education and Training and commenced work on a harmonised global system for Education, Training, Qualification and Certification (E, T, Q & C), taking into account the needs of all nations around the world.

As a result of the efforts of IIW Commission XIV Working Group (WG13), at the Beijing IIW Annual Assembly in 1994, the Governing Council of IIW unanimously approved resolutions to proceed with an IIW global scheme for the E, T, Q, & C of welding personnel.

In 1995, the IIW General Assembly in Stockholm then entrusted Commission XIV to prepare a draft guide to cover all aspects involved in the qualification and certification of welding personnel. A new IIW Commission was also formed (Commission VII *Authorisation and Qualification*) to establish and implement all the requirements for the successful implementation and operation of the IIW International Authorisation Board (IAB) which was established in 2000.

Commission XIV still continued with its work for the overall membership of IIW, including complementing the activities of the IIW IAB.

In parallel with these developments, discussions had been held with the European Welding Federation (EWF) regarding a joint E, T, Q & C scheme.

There was good sense in doing so since Commission VII, in performing the preliminary work to establish the IIW IAB, was progressively adopting EWF qualifications which were recognised by ISO standards. As an organisation, EWF was also well placed to deliver company certification to complement its own qualification and certification scheme.

Since the introduction of the IIW IAB programmes in 2000 and implementation in over 40 countries, 67,458 International Welding Engineers (IWEs) have been trained and qualified worldwide, 14,351 International Welding Technologists (IWTs), 51,515 International Welding Specialists (IWSs), 4714 International Welding Practitioners (IWPs), 32,337 International Welders, 19564 International Welding Inspectors and 288 International Welded Structures Designers and 3186 companies have been certified to the IIW MCS ISO 3834 programme at some stage.

The EWF has also introduced programmes such as Additive Manufacturing and many IIW member countries also have their own national programmes.

The global welding industry has an enormous network of facilities and resources which can undoubtedly assist in continuously improving UN SDG 4 in many countries

The Role of IIW in Technology Transfer

Since its formation in 1948, one of the significant strengths of the now 51 member country International Institute of Welding (IIW), is the opportunity for seamless cooperation and collaboration between its different working units, continuously drawing together a broad spectrum of relevant experts from around the world, including universities, to focus on particular issues.

The focus areas of its 18 Technical Working Units, known as Commissions, can generally be divided into Processes, Structural Integrity and Industrial Applications, and Human Factors, all coordinated through the IIW Technical Management Board (TMB).

The Commissions operate as 'think tanks' and engines for driving technical progress, focusing on current needs and challenges in industry and research organisations, and developing technical output to proactively support these needs.

The results of the cooperative and collaborative work by the experts from its 51 member countries lead to the development of highly appreciated documents that assist and support the global industry through various technology transfer mechanisms.

They include, amongst others, International Standardisation Organisation (ISO) Standards, IIW Best Practices, IIW Position Statements, complemented by the numerous expert submissions, which lead to the improvement of the global quality of life and continuous improvement of the UN Sustainable Development Goals.

The current list of IIW Commissions and more information can be obtained via https://iiwelding.org/iiw-working-groups/

Various IIW technology transfer activities are shown in the appropriate pages of the recently published IIW Report **The Importance of a Country's Welding Industry, Its National Welding Capability (NWC) and Their Significance to the UN Sustainable Development Goals (SDGs),** freely available globally.

This report is aimed in particular at assisting low and medium level income countries. Please follow the link https://iiwelding.org/iiw-jointothefuture/iiw-and-sustainable-development/ to the Long Report Volume 2 "Potential National Welding Capability Welding Industry Projects and Resources" and:

- IIW Annual Assemblies and International Conferences pages 60-62
- IIW International Congresses pages 63-65
- IIW Member Technology Innovation Workshops and National Welding Capability Workshops Held Since 2003 pages 66-67
- IIW Welding Research and Collaboration Colloquia (WRCC) page 68
- Examples of IIW and IIW Member Young Professionals (YPs) Events and Activities pages 69-70
- At each stage of Technology Transfer, develop,deliver,receive,adopt,adapt and implement the technology and improve the quality of life, SDG 4 and the competency of people are essential.

Index of Artists

Index of Artists *(Cont.)*

Index of Artists *(Cont.)*

Creative Recovery

Culture and the arts can play significant roles in how disaster-affected communities experience, understand and shape the world and give a positive reinterpretation of perspectives on their lives, the lives of others and the environment around them.

Creative recovery processes have the capacity to mitigate disaster impacts and the disempowerment which results from the stresses and strains of disasters through their unique ability to build long-lasting community resilience, wellbeing and local capacity for disaster preparedness, response and recovery. They can also help to draw communities together by providing a shared focus.

The 2023 IIW Digital Collection highlighted **The Blacksmiths'Tree** built in Victoria, Australia after the catastrophic bushfires in 2009. https://iiwelding.org/wp-content/uploads/2023/07/IIW-2023-Digital-Collection-UN-SDGs-Single-Page.pdf

In this 2024 IIW Digital Collection, **the Iron Roses Memorial Monument in Oslo, Norway,** shows such creative recovery processes after the horrific bomb attack near the government headquarters in Oslo and the mass murder on the island of Utoya in 2011.

The 2016 Ypres Peace Monument at Langemark-Poelkapelle in Belgium was also a fine creative recovery project conducted during the centenary commemoration of the First World War in Flanders with the main purpose of creating a contemporary cenotaph to commemorate all the victims of this conflict. It also expresses community dreams and hope for the future.

Hundreds of people, with the support of so many local communities, from over 30 countries, cooperated and collaborated on these three creative recovery projects through welding and blacksmithing.

Ricard Mira has suffered from Schizophrenia since he was 17 and at 29 the illness worsened. He quit his job, and his life as a sculptor working with iron, clay and wood began. Apart from professional therapy, dedicating himself to art and Exhibits such as **Spring of Knowledge** has contributed significantly to improving his health.

Craig Drew's sculpture Perfect Balance represents the struggles of our day to day lives, dealing with health issues, family commitments, as well as obtaining our work life balance. "When you reach it. Treasure that moment".

- **The Iron Roses Memorial Monument,** Tobbe Malm and Tone Mark Karlsrud (Norway).
- **Peace Monument,** Langemark-Poelkapelle, Luc Vandecasteele (Belgium).
- **Spring of Knowledge,** Ricard Mira (Spain).
- **Perfect Balance,** Craig Drew (Australia).

Peace Monument Langemark-Poelkapelle *and* Luc Vandecasteele *(Belgium)*

Terrence Clark, designer of the monument states: 'In past wars, works of art and utensils made of metal were melted down into weapons. With this project we are turning it around as a tribute to all those involved'.

From 1-6 September 2016, in collaboration with blacksmiths from BABA (British Artist Blacksmith Association), an international group of forging assistants held an important international forging event in the Ypres Grote Markt (Market Square), Belgium.

It was the brainchild of Luc Vandecasteele to conduct a project during the centenary commemoration of the First World War in Flanders with the main purpose of creating a contemporary cenotaph to commemorate all the victims of this conflict.

The 11,5 tonne, 7.0 m high cenotaph which, after its inauguration on 5 November 2016, was renamed a peace memorial, consists of a dramatic but simple piece of steel containing a negative/positive image of a single poppy. The poppy is therefore the internationally recognisable symbol of the commemoration. The negative part represents all the victims, the positive part the hope for a better future that grows out of their sacrifice.

At the base of this central part lies a field of 2016 hand forged poppies, rising out of the Flemish mud. These were forged and welded by more than 200 blacksmiths from all over the world.

Ypres Poppy Making 2016 – YouTube

One poppy is white. It represents all soldiers who were executed by their own troops as punishment for desertion, cowardice etc.

The finished peace monument is permanently displayed at the German war cemetery at Langemark-Poelkapelle, (12km from Ypres) with its 2016 poppies and is surrounded by 26 panels arranged in a zigzag pattern, similar to the arrangement of the trenches. These panels were designed by renowned international master blacksmiths and reflect the designers' insight into war. 25 of these panels were forged during the event by teams of volunteer forgers from Australia, Belgium, England, France, Germany, Ireland, Italy, and Wales and one designed by Alan Dawson and made prior to the event as an example to help sponsors/donors visualise how such a panel might be interpreted. See website for more details.

Involving the Children

The poppy is the iconic symbol of remembrance. One principal aim was to get children involved in the project and it was decided that they should forge Poppies that were similar but smaller than those produced for the Peace Monument. The first trial Children's Poppies were forged in Bath, England and Farbus,

Showing Group which made the Monument in the Market Square in 2016

France. When the process and tooling was deemed successful, the Children's Poppy Forge was taken on the road around Europe. Children forged Poppies at events in Belgium, England, France, Germany, Italy and Wales and at all these events so much support and enthusiasm for the commemorative project was received.

A posy of three poppies with a brass engraved tag was presented to each school which made them.

Three wreathes

The Wreath represents Remembrance and the Poppies Rebirth as poppies are usually the first flowers to grow out of damaged and impoverished soil. By the end of the event there were enough poppies to make three wreaths.

The design concept for the wreathes was for the poppies to be growing up through barbed wire similar to that used in the defences of the WW1 trenches. This was to symbolise rebirth through the enthusiasm of youth after the trauma and destruction of war.

Two wreathes act as 'Gate Guardians' to the Peace Monument, flanking on the left and right sides of the path that leads up to the monument from the car park.

The third wreath is displayed on the intersection of Menenstraat, Kiplinglaan and Hoornwerk streets over the bridge from the Menin Gate at Ypres. This wreath contains only poppies made by children from Ypres Schools who had forged their poppies at the event held in the Grand Market Square (Grote Markt) Ypres.

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Peace Monument, Langemark-Poelkapelle, in Summer

Tobbe Malm *and* Tone Mark Karlsrud *(Norway)*

On Friday 22 July 2011, Norway was hit by two terrorist attacks; the bomb attack near the government headquarters in Oslo and the mass murder on the island of Utøya. These are the worst acts of terrorism in Norway since the Second World War. A total of 77 people were killed in the attacks.

The powerful art project, The Iron Roses, was initiated by Tobbe Malm and Tone Mark Karlsrud after the gruesome attacks. The two artists were deeply moved by the sea of roses that grew in front of the Oslo Cathedral and in the streets of the city the following days.

Inspired by the spontaneous solidarity amongst strangers, they started The Iron Roses project and invited blacksmiths from over 25 countries around the world to forge iron roses and send them to Norway. The project quickly grew, and soon, survivors and others affected were invited to visit Tobbe's workshop to talk, process the grief and forge their own roses for the project. Tobbe is a Blacksmith and artist who was educated in blacksmithing and sculpture as well as being a. self-taught welder. He has made several public assignments in Norway and participated in Exhibitions in and outside Norway.

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Tobbe Malm

Exhibit "The Iron Roses Memorial Monument"

The memorial is 5.5 metres in diameter and approximately 50-80 cm high at the highest point. It is located at Oslo Cathedral and consists of approximately 1000 iron roses laid out like a flower bed on a circular steel plate.

This plate is enclosed by a cast-in-place ring in light concrete that both protects the artwork and functions as a bench. The iron roses are shaped by traditional forging techniques and welding techniques
https://www.youtube.com/watch?v=G00ZyISpoAU

The roses are symbols of engagement and solidarity in the aftermath of terror, and are put together with great care to make a complete sculpture. The sculpture is a gift to the City of Oslo, and the final process is coordinated and financed by Kulturetaten (the Culture Agency).

From 2011 until Kulturetaten (the Culture Agency) took over the responsibility for funding, the project was supported by contributions from private individuals, enterprises, municipalities and other organizations.

The Iron Roses Memorial Monument
Tobbe Malm and Tone Mark Karlsrud

Ricard Mira *(Spain)*

Ricard Mira was born in 1952. He learned to weld while working at the Derbi motorcycle company where, later on, he became a fitter for the motorcycles which won the World Championship repeatedly.

Ricard has had an illustrious career over the past 45 years and was named a Master Sculptor by the Government of Catalonia in 2014. He is a member of ICRE <https://icre.cat/> (Catalan Institute for Research in Sculpture).

Although he also uses other metals (such as stainless steel, copper, brass and aluminium), Ricard makes most of his sculptures by recycling iron scrap from the metalworking industry at Martorelles (near Barcelona, Catalonia), where he lives and works. He imparts this recycling message to students during their visits to his workshop.

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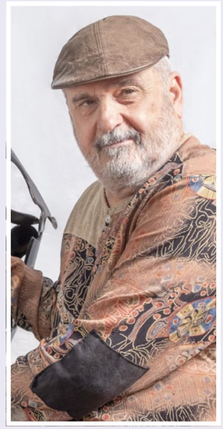
Exhibit “Spring of Knowledge”

This is one of the first public artworks Ricard designed and crafted as a monument to education. In all countries, education is a key activity which can help people get out of poverty.

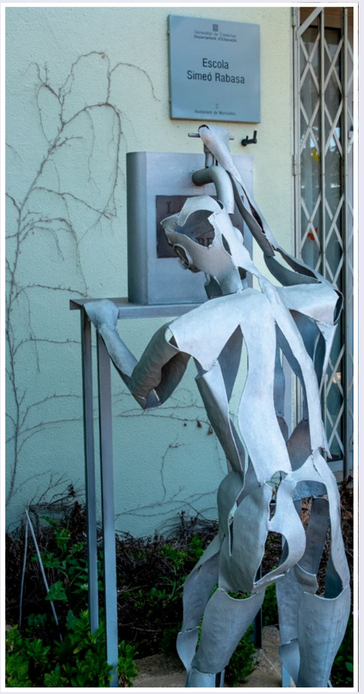


Since 1996, the sculpture has been fittingly located outside the entrance to the Simeó Rabasa School at Martorelles (Barcelona) where both his son and nephew (the model for the child) studied, and later also his two sons. It has become somewhat of a tradition for teachers from this school to organise visits to Ricard’s workshop to get their students to know one of the trades in town.

The sculpture is made of cut, machined, welded, primer-painted and black-paint-finished iron and represents a life-sized child who is drinking from a fountain flowing from a book, symbolising education at school. It is made with cold forging, that is, by working on the steel with no heating as in traditional forging but by cutting and machining it at room temperature and welding the pieces together.

Dimensions of Exhibit

200cm high x 60 cm wide x 100 cm long



Spring of Knowledge
Ricard Mira

Craig Drew *(Australia)*

Craig Drew served an industrial blacksmith trade apprenticeship from 1984 to 1987. He was a Churchill Fellowship recipient in May 1996. This involved a three month study tour of prominent blacksmithing craft schools and blacksmiths in the USA.

He has participated in a number of Exhibitions such as the 'Gone but not Forgotten' Exhibition at Tamworth Regional Gallery in 1995, and the FE26 Exhibition in 2018 and the 2023 National Blacksmiths Survey Exhibition, both at the Glasshouse Regional Gallery, Port Macquarie.

In 2016 he participated in the Ypres Peace Monument International Blacksmithing event in Belgium. He was awarded a silver medal as a member of the Australian Team competing in the 2017 Blacksmiths World Championships held in Stia, Tuscany, Italy.

He has owned and operated Two Gates Forging Company in Tamworth for 14 years, offering professional blacksmithing services. He was instrumental in starting the Peel River Artist Blacksmiths group in 1994.

He is the current President and long term member of the Artists Blacksmiths Association of NSW and one of his important aims is to preserve the skill of forging hot steel with a focus on both traditional and contemporary techniques by creating products that are visually pleasing. He believes that providing affordable educational experiences are key to the future of blacksmithing.

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Exhibit "Perfect Balance"

Perfect Balance is representing the struggles of our day to day lives. Dealing with health issues, family commitments, as well as obtaining our work life balance. "When you reach it. Treasure that moment".

The Exhibit is made from steel and brass.

Dimensions of Exhibit

40 cm high x 40 cm wide x 40 cm deep

Perfect Balance
Craig Drew

Lifelong Learning

Lifelong Learning is a key element of SDG 4. At each stage of life, one uses one's learning experiences to make choices to influence many aspects of life such as work, health and love.

Sergey Minakov's Exhibit, **Through the Ages**, features a series of three welded sculptures of couples that reflect different ages of life: teenage, adult and senior.

Ann Gildner is continually inspiring young people to consider careers in welding, the retirees to use welding as a hobby and its health benefits, and working age people to obtain jobs in the welding industry. Some of them may be inspired to take up welded art both as a hobby and earning income. Her **Eight to Eighty-Eight** approach shows this.

Thomas Huisman's Steel Stallion Exhibit is a perfect example of a person starting from the very young age of eight and now at 13 progressing his career through his learning experiences.

Hilary Clark Cole's Exhibit Street Kid helps highlight the challenges of the millions of children living as "street kids" or urchins around the world.

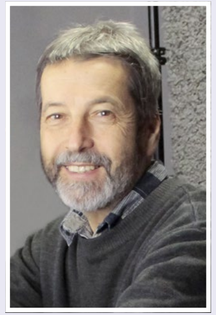
Poverty is often a key driver in creating the reasons for children and young adults, both girls and boys, to have to live on the streets with all its inherent dangers, and the limited opportunities this situation causes.

Aimee Schmelzer's and Oliver Griepenburg's Doves For Peace Exhibit involved two secondary schools, a foundation for young people from the age of twelve needing support in their social, economic, and cultural integration, and a special education school for people with disabilities. In total, 32 students and trainees aged 12 to 50 participated.

The artists in this section illustrate aspects of their learning experiences through their Exhibits.

- **Through the Ages,** Sergey Minakov (Ukraine)
- **Eight to Eighty-Eight,** Ann Gildner (USA)
- **Steel Stallion,** Thomas Huisman (Australia)
- **Street Kid,** Hilary Clark Cole (Canada)
- **Doves For Peace,** Aimee Schmelzer and Oliver Griepenburg (Switzerland)

Sergey Minakov *(Ukraine)*



Sergey Minakov is Associate Professor in the Welding Department of the National Technical University of Ukraine, Igor Sikorsky Kyiv Polytechnic Institute. Sergey has creatively combined both his professional activity in welding and his hobby of welded art and photography.

Welding gave him the opportunity to master different types of metal joining and cutting while photography gave him the skills to capture a moment that carries a powerful energy when people plunge into the space of feelings, forgetting about everything else.

Sergey held a very successful Exhibition "Sensual Metal" from 17th July to 6th August 2023 at the Igor Sikorsky Kyiv Polytechnic Institute.

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Youtube: https://youtu.be/i-pbB75Pm8E
Youtube: https://youtu.be/c-10LPmpXoA

Exhibit "Through the Ages"

The Exhibit features a series of three welded sculptures of couples that reflect different ages of life: teenage, adult and senior. At each stage of life, one uses one's learning experiences to make choices which influence many aspects of life, such as work, health and love.

The sculpture "First Date" symbolizes the happy moment of a date when the couple realises that all paths are open for them.

The sculpture "In the Rain" depicts an adult couple who have become used to each other and are confidently walking through life.

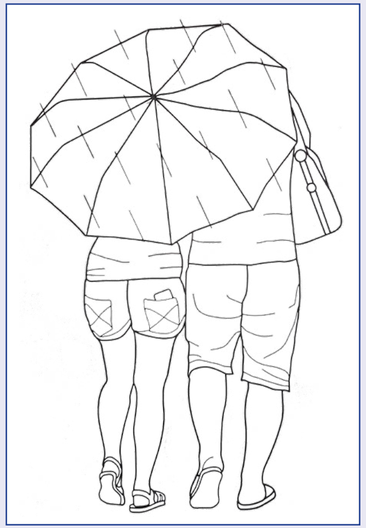
The sculpture "Comfortable" depicts a retired couple who have found comfort in each other being married, relatively healthy, and active.

The technologies involved in the production of the sculptures included computer photo processing (adaptation of a real photo in graphics) and creation of a 2D model of the sculpture. He used thermomechanical wire straightening, cold forging of the figures as well as both mechanical cutting and Gas Tungsten Arc Welding (GTAW) and brazing with CuSi3 solder.

Dimensions of each Exhibit

First Date – 112 cm high x 79 cm wide and 4mm diameter steel wire
In The Rain – 141 cm high x 98 cm wide and 3, 4 and 5 mm diameter steel wire.
Comfortable – 159 cm high x 87 cm wide and 4.5 mm diameter steel wire

First Date



In the Rain

Comfortable

Through the Ages
Sergey Minakov

Ann Gildner *(USA)*

Although an artist for over 40 years, Ann Gildner only began welding ten years ago and particularly likes to create large public and private art. Her Gildner Gallery Studio allows her to create large scale metal sculptures from 2 to 40 plus feet high in the welding school she teaches in at Industrial Arts Institute, Onaway, Michigan.

Ann gives great lifelong learning opportunities to people ranging from 8 to 88 years old. These include welding camps, ornamental welding and CNC Plasma cutting classes to encourage people into welding and welded art careers. Some students continue training to obtain American Welding Society (AWS) welder certifications which can lead to well paid jobs in industry.

Ann recently filled an 88-year-old lady's bucket list by helping her weld. Grand Rapids Public Museum also hired Ann to have students and adults experience welding. She demonstrated and had a hands on welding program for over 800 people.

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Exhibit "Eight to Eighty-Eight"

Ann is continually inspiring young people to consider careers in welding, the retirees to use welding as a hobby and its health benefits, and working age people to obtain jobs in the welding industry. Some of them may be inspired to take up welded art both as a hobby and earning income.

Ann Gildner and Octogenarian

Ann believes in giving trainees a pre-designed project so that learning has a positive outcome particularly since everybody loves to make and take a project home to show off.

The photographs of the group of energetic 10 year olds making a tool box with resistance spot welding and the group of retirees with their **I Love Welding** message illustrate this.

Gas Metal Arc Welding (GMAW) is also eagerly favoured to make lots of interesting shapes, forms and most of all fun. It is an easy welding process for beginners to jump into melting metal to metal. Safety first while experiencing welding is always embraced.

Plasma cutting is a winner with all trainees as they were able to move freely and cut through metal like butter.

Eight to Eighty-Eight
Ann Gildner

Thomas Huisman *(Australia)*

Thomas Huisman, a young Australian welder from Brisbane, began honing his welding skills at just eight years old in early 2019. With a natural ability and passion for welding, Thomas displays an impressive eye for detail and creates a wide range of items from scrap metal.

His inspiration comes from the current season, upcoming events, and his surroundings. Now 13 years old, Thomas has expanded his knowledge and techniques to include building a boat and repairing machinery. He also has a keen interest in computers, electronics, and electrical work, which further enhances his understanding and skills in welding and other related areas.

Thomas' father owns an Earthmoving company, where Thomas utilizes his welding expertise to assist with maintenance. Through these experiences, Thomas is gaining valuable knowledge and skills that will help him determine his future career path.

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Exhibit "Steel Stallion"

Thomas' horse statue is all made out of scrap metal consisting mainly of motorbike, pushbike and hydraulic parts. These are all crafted and welded using his Gas Metal Arc Welding (GMAW) machine. He used oxy-gas heating for bending and a plasma arc machine for cutting various parts. He then spent time grinding and sanding for completion.

This creative masterpiece has been made with love and careful craftsmanship. His creations inspire other young enthusiasts to follow their dreams and talents.

Dimensions of Exhibit

75 cm high x 85 cm wide x 28 cm deep

Steel Stallion
Thomas Huisman

Hilary Clark Cole *(Canada)*

Canadian sculptor Hilary Clark Cole was born in Victoria, British Columbia and is a graduate of the Ontario College of Art and Design. She has lived and worked in Muskoka since 1971. As well as having her metal sculptures in many private collections, she has created significant public sculptures over the years. Her works have featured in all previous IIW welded art photographic Exhibitions.

She has won many awards for her sculptures, and she has been profiled on television programmes on the Life Channel, CBC and Global. She is a strong role model in the community and in 2002 won the first YWCA Woman of Distinction Award for Arts and Culture.

Hilary is an active member of the Muskoka Arts and Crafts Council. She has travelled extensively; including to Ecuador to observe the efforts of Street Kids International (now under the umbrella of Save the Children).

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Exhibit “Street Kid”

This Exhibit helps highlight the challenges of the millions of children living as street kids or urchins around the world. Poverty is often a key driver in creating the reasons for children and young adults, both girls and boys, to have to live on the streets with all its inherent dangers, and the limited opportunities this situation causes.

Mark W. Lusk, a prominent researcher of street children, developed four categories of children on the street from his research: children who work on the street but return to their families at night, children who work on the street but whose family ties are dwindling, children who live and work with their families on the street, and children who work and live on their own on the street.

These latter ones have unique vulnerabilities – the amount of time they spend on the street, their livelihood depending on the street, and their lack of protection and care from adults.

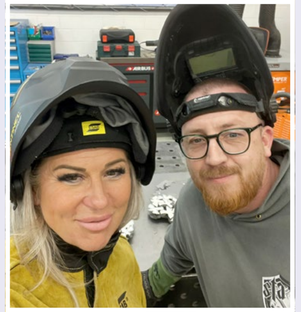
Improving SDG 4 in a country can have a significant effect on helping such kids to move into a better quality of life.

Dimensions of Exhibit

30cm high

Street Kid
Hilary Clark Cole

Aimee Schmelzer *and* Oliver Griepenburg *(Switzerland)*



Aimee is an International Welding Specialist and formed her own company, Artwelding, in 2019. In collaboration with sta Schweisstechnische Ausbildung GmbH, a family-run company supporting welding education in over 80 schools across Switzerland, Aimee developed an educational art project. Working with Oliver Griepenburg from the company, this initiative engaged students in creating welded steel peace doves mounted on a metallic world map, symbolizing global peace and harmony.

The project involved two secondary schools, a foundation for young people from the age of twelve needing support in their social, economic, and cultural integration, and a special education school for people with disabilities. 32 students and trainees aged 12 to 50 participated.

This project not only enhanced the students' technical skills, but also promoted awareness of their work's broader social impact, aligning with the IIW's efforts to use welded art to highlight significant social themes, including education and the pursuit of peace.

The Exhibit is intended to be auctioned, with proceeds donated to projects promoting the integration of students and people with disabilities into the metalworking field.

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Exhibit "Doves For Peace"

Steel sheets (0.8 to 3.0 mm thick) were used for the doves and 3 mm thick steel sheets for the world map and background.

Students cut the steel sheets using a plasma cutter and shaped them with angle and belt grinders and files. The continents were welded using 3 mm round or square steel rods with Gas Metal Arc Welding (GMAW).

People with disabilities used a nibbler machine for cutting and a spot welding machine for assembly.

All participants painted the doves white and added their names for personal identification with the project.

The continent plates were screwed onto the background sheet with a 20 mm gap for depth.

The welded artworks were welded onto a 3 mm CrNi sheet, (polished and engraved with designs or inscriptions), with Gas Tungsten Arc Welding (GTAW) requiring precise parameters and gas settings.

Dimensions of Exhibit

120 cm long x 75 cm wide x 10 cm deep

Doves For Peace
Aimee Schmelzer and Oliver Griepenburg

Philosophy and Learnings

Jordi Díez Fernández's sculpture **El Pensador, The Thinker**, is based on the sculpture by Rodin. The pose is one of deep thought and contemplation, and the statue is often used as an image to represent philosophy ('love of wisdom', in Ancient Greek) which is a systematic study of general and fundamental questions concerning topics such as existence, reason, knowledge, value, mind, and language. It is a rational and critical inquiry that reflects on its own methods and assumptions and most people use it at some stage of their lives.

An **alter ego** means an alternate self which is believed to be distinct from a person's normal or true original personality. Finding one's alter ego will require finding one's other self, one with a different personality. Several famous musicians have also adopted alter egos over the years, usually to indicate a new creative direction in their music.

During different stages of our lives, through lifelong learning, we can find ourselves also changing in various degrees in personality and creative directions, particularly related to careers, challenges and social life including status. This could mean that there could be a number of "alter egos" during one's life. **Bogdan Constantin Nueleanu's Exhibit Alter Ego** is an example of this.

In 2014, **Lawrie Forbes** made a piece of sculpture, and called it **Tote Tai Whenua** after the words welded onto it.

In retrospect, Lawrie realised that this sculpture was the beginning of his trying to become familiar with te reo Māori (the Māori language) and to honour the people who lived and gathered in the area before his ancestors. He'd used his grandmother's 1961 Lilliput te reo Māori dictionary to work out the words and named the piece "Tote, Tai, Whenua". Learning languages unshackles us to learn the concepts that form the tikanga (culture) of others.

The artists in this section illustrate aspects of their thoughts through their Exhibits.

- **El Pensador, The Thinker,** Jordi Díez Fernández (Spain).
- **Alter Ego,** Bogdan Constantin Nueleanu (Romania).
- **Tote, Tai, Whenua,** Lawrie Forbes (New Zealand).

Jordi Díez Fernández *(Spain)*

Jordi Díez Fernández was born in Valladolid on March 5th, 1966. He currently lives and works in Centelles (Barcelona). In 1989, he opened his first workshop in Fresnedillas de la Oliva (Madrid). There, isolated for three years, he set up the sculptural concept of his work. Figurative expression, especially the human figure, is the axis on which his work revolves.

In the different stages of his career, he used all the materials of his profession: stone, iron, wood and terracotta. For Jordi Díez, these materials are the prelude to working exclusively on stainless steel, a metal in which he finds the expressive potential he needs to shape his works, leaving behind the discourse of the virtuous representation of the surface to give way to the interior, to the inner energy.

In his sculptures, he finds himself fully immersed in the presence of the hollow, the void, the deconstruction of the surface, the "less is more." Thus, Jordi Díez uses the metal strictly necessary to imprison the air that contains the form, reaching a degree of synthesis and lightness that only enhances the expression and the feeling of being in front of a reality that underlies the tangible reality. His work can be found all over the world in museums, temples, public areas, and private collections.

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Exhibit "El Pensador"

El Pensador, The Thinker, the original Rodin's Thinker was commissioned in 1880 and since then more than 50 statues of the same size have been made and installed in many famous sites.

The pose is one of deep thought and contemplation, and the statue is often used as an image to represent philosophy ('love of wisdom', in Ancient Greek) which is a systematic study of general and fundamental questions concerning topics such as existence, reason, knowledge, value, mind, and language. It is a rational and critical inquiry that reflects on its own methods and assumptions and most use it at some stage of their lives.

Jordi's Exhibit is made completely out of AISI 316L Stainless Steel in 3, 4, 5 and 8mm diameter rods and 2 or 3mm thick sheet metal, which he shapes with a hammer blow.

He used Gas Metal Arc Welding (GMAW) with inert gas but also Gas Tungsten Arc Welding (GTAW).

He takes special care that there is no contamination in the workshop, as well as in the tools he uses. At the end of an artwork, he always submits it to pickling and passivation treatments in a company specializing in specific treatments for stainless steel.

Dimensions of Exhibit

40 cm high x 22 cm wide x 22 cm deep

El Pensador
(The Thinker)
Jordi Díez Fernández

Bogdan Constantin Nueleanu *(Romania)*

Bogdan was born in 1978 in Romania and graduated from the Faculty of Arts and Design, Timisoara, in Visual Arts in 2010 and in 2015 as a Master Sculptor. As a career artist, he has been involved in a wide range of successful activities with international exposure including participating in over 60 group Exhibitions, eight personal Exhibitions, seven workshops, 13 symposia and six judging panels as well as receiving six major prizes and awards.

Attracted by the chromatic valences it possesses, Bogdan works primarily with bronze, sometimes welding it with other metals like stainless steel. His sculptures are futuristic, post-apocalyptic structures that seem to have been plucked out of a different dimension.

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Exhibit “Alter Ego”

The work is born out of an experience in the Bronze Symposium in Csongrad, Hungary, during the casting process of a sculpture. An unfortunate incident caused the mould in which the bronze was cast to break and create a mass of molten metal which, due to the pressure, pushed the mould upwards.

Although the molten metal had flowed through the created rift and pushed the form upward, it managed to form a mass of metal that after excavating it from the granite sand looked like a human profile. Bogdan saw the potential of this piece of bronze and so he processed it in the workshop and created a profile of a man that made him think of an old self, which is why he decided to call the work, **Alter Ego.** The only thing necessary after faceting the profile, to make the work complete, was to attach an anatomical element to it. So he welded a stainless steel eye because the eye is the mirror of the soul and he wanted the viewer to see beyond the material of this sculpture.

This is how, from what was intended to be a sculpture made using the traditional lost wax technique, another one was born that proved to him that in the course of our becoming intelligent beings, through lifelong learning, we can awaken within us different degrees of change in personality and creative directions.

Dimensions of Exhibit

50 cm high x 23 cm wide x 20 cm deep

Alter Ego
Bogdan Constantin Nueleanu

Lawrie Forbes *(New Zealand)*

Lawrie is a boilermaker-welder by trade and managing director of Zeal Steel Ltd in Dunedin, New Zealand. Zeal Steel does architectural metalwork, high quality fabrications including sculpture.

Besides having a passion for beautifully restoring dilapidated historic buildings which contributed to the revitalising of the city's warehouse precinct, Lawrie also sculpts using recycled steel.

Tote-Tai-Whenua translates as "Salt-Tide-Land", and is the name of the area of land that he lives on with his wife Sarndra, in the Warehouse Precinct, Dunedin, New Zealand.

In 2014, he made a piece of sculpture, and called it Tote Tai Whenua after the words welded onto it.

In retrospect, Lawrie realised that this sculpture was the beginning of his trying to become familiar with te reo Māori (the Māori language) and to honour the people who lived and gathered in this area before his ancestors. He'd used his grandmother's 1961 Lilliput te reo Māori dictionary to work out the words and named the piece "Tote, Tai, Whenua". Learning languages unshackles us to learn the concepts that form the tikanga (culture) of others.

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Exhibit "Tote, Tai, Whenua"

The Exhibit is made from a reused anchor chain of a Sealord fishing boat. The chain is elevated on a beam that once was part of a Dunedin wharf. The chain and beam are joined using old railway line screws, making a connection between the wharf and the boat.

The anchor chain already had the words "shackle chain" on the shackle that joins the first and second chain links.

He used the manual metal arc welding process (which was the first method of welding he learnt in 1980, when beginning his apprenticeship). He formed the letters by drawing the words in chalk, and building them up with weld metal and finishing with a ball pein hammer to achieve the hammered finish.

Dimensions of Exhibit

60 cm high x 150 cm wide x 40 cm deep

Tote, Tai, Whenua
Lawrie Forbes

Mentors and Protectors

At different stages of life, mentoring can play a significant role in ensuring a person's success. Mentors can give guidance, expand the person's network, improve skills and challenge the person to do better.

A Protector is a Mentor who acts as both a guardian and advocate and the person needs to be able to freely express their concerns confidently and receive support and protection to overcome their fears and susceptibilities. The Protector does this.

At some time during our lives, there are times when decisions need to be made which cause trepidation, particularly when it means leaving the security and comfort of one's known surrounds. Such times could include leaving home to move towns for study or employment to improve oneself, or to change the course of their career.

Mike van Dam's Exhibit The Protector and Mentor and **Hilary Clark Cole's Exhibit Leaving Home** illustrate these aspects. Parents, teachers and counsellors among others can play a key role in positively assisting people of all ages to make their correct choices.

Ken McKen, a recent retiree from the Trades vocational education and training (VET) system, through his **Exhibit Enchanted Wilderness Portal**, continues to channel his passion into mentoring emerging entrepreneurs in the vibrant field of welding and its lifelong opportunities. His dedication to showcasing the possibilities of craftsmanship through imaginative approaches remains unwavering.

- **The Protector and Mentor,** Mike van Dam (Australia).
- **Leaving Home,** Hilary Clark Cole (Canada).
- **Enchanted Wilderness Portal,** Ken McKen (Canada).

Mike van Dam *(Australia)*

Artist and Stainless Steel Welder Mike (Michael) van Dam was born in New Zealand and lives in Queensland, Australia, with his wife and two children and is a world-renowned stainless-steel sculptor.

Mike is an award-winning and internationally recognized artist who has a strong background in creating iconic and important sculptures that have been placed all over the world and have attracted various prestigious artistic awards. Mike's sculptures have been placed in central iconic locations such as Sydney Harbour, Hayman Island, Israel and Greece.

Mike has worked on large commercial projects including, for example, high-rise handrails, boat fit-outs in stainless-steel and residential and commercial spiral staircases. Mike has previously had jobs with companies such as Stella Marine, Southern Stainless, Black Marlin Towers to name a few.

Mike is a welding expert due to his lifelong work as a Sheet Metal Worker by trade, specialising in stainless steel, and passionate about contemporary art and sculptures that deliver powerful messages. Mike's sculptures are known to not only be aesthetically pleasing and impactful, but also very durable

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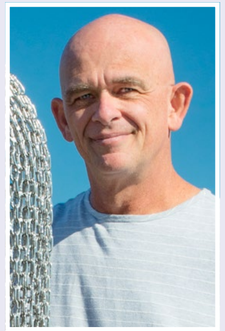

Exhibit "The Protector and Mentor"

During a person's life, at different stages, mentoring can play a significant role in ensuring the person's success. A Protector is a Mentor who at such different stages acts as both a guardian and advocate. The person needs to be able to freely express their concerns confidently and receive support and protection to overcome their fears and susceptibilities. The Protector does this.

'The Protector and Mentor' is made from approximately 1200 metres of 6mm 316 stainless steel chain.

Each link has four welds made by Gas Tungsten Arc Welding (GTAW) and are easy to clean and blend in well with the links.

Dimensions of Exhibit

350 cm high x 220 cm wide x 220 cm long

The Protector and Mentor
Mike van Dam

Hilary Clark Cole *(Canada)*

Canadian sculptor Hilary Clark Cole was born in Victoria, British Columbia and is a graduate of the Ontario College of Art and Design. She has won many awards for her sculptures, and she has been profiled on television programmes on the Life Channel, CBC and Global. She is a strong role model in the community and in 2002 won the first YWCA Woman of Distinction Award for Arts and Culture.

Hilary works mainly in hand-built welded steel artwork, which can be very small or very large, rough or smooth, monochromatic or colourful. In particular, they often reflect the importance of biodiversity related to her home country.

Her work has been described as “In the world of welding women, her creative spirit has no equal . . . lyrical and beautiful, infused with joy and humour, hard cold steel comes alive”

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Exhibit “Leaving Home”

Hilary created the Brazen Hussy series as a group of artistic statements by her: an artist, a woman, a welder. These are one of a kind life-size female forms, which could loosely be described as a bustier, bodice or sculpted torso. The entire series including **Leaving Home** can be viewed on Hilary’s website www.hilaryclarkcole.com

During our lives there are times when decisions need to be made which cause trepidation particularly when it means leaving the security and comfort of one’s known surrounds. Such times could include leaving home to move towns for study or employment to improve oneself.

This life size bustier is inspired by the lyrics of the ABBA song called “I Wonder”. It is a song about having the wings to fly, but feeling the weight of fear holding you back.

“I wonder, it’s frightening. Leaving now is that the right thing? I wonder, it scares me. But who the hell am I if I don’t leave it. I’m not a coward. Oh no, I’ll be strong”.

The sculpture is created entirely of welded copper making it symbolically and surprisingly heavy

The texture and patina gives it a look of a baroque angel. It is engraved with stars, the ones we all reach for.

Dimensions of Exhibit

Lifesize

Ken McKen *(Canada)*

Ken McKen, a recent retiree from the Trades vocational education and training (VET) system, continues to channel his passion into mentoring emerging entrepreneurs in the vibrant field of welding and its lifelong opportunities. His dedication to showcasing the possibilities of craftsmanship through imaginative approaches remains unwavering. He has also received various awards for his lifelong contributions to inclusive, equitable and quality VET providing numerous employment opportunities for people.

Despite retirement, Ken actively engages his artistic abilities with metal-works, crafting unique and innovative commissions for a diverse clientele. In his small workshop, Ken brings his creations to life through hand-drawn sketches and manual welding processes, eschewing the use of CNC equipment.

Ken believes his unique Exhibit, adorned with educational motifs, serves as a gateway to learning, symbolising that one's imagination is the key to limitless possibilities. Integrating a captivating wildlife scene within a forest landscape on the gate not only adds aesthetic value but also emphasises the interconnectedness of knowledge and the natural world.

This holistic approach aligns with fostering inclusive and lifelong learning by showcasing that the path to education is as diverse and interconnected as a thriving forest ecosystem.

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Exhibit "Enchanted Wilderness Portal"

Elegant and grand, a symphony of elegance and security, this 7.3m wide ornamental aluminium gate, covered in matt black powder-coated paint, showcases a majestic silhouette of whitetail deer amidst a tranquil forest scene. Illuminated during the evening hours by a stunning Red, Green, Blue, Independent Control (RGBIC) light display, it transforms against a backdrop of stained cedar panels; the gate becomes a captivating canvas,that adds a touch of enchantment to the exquisite masterpiece.

Meticulously crafted, the aluminium silhouettes were hand-drawn and manually cut with precision using a plasma cutter, while the entire assembly was skilfully welded using a Gas Metal Arc Welding (GMAW) power source and aluminium spool gun.

The gate and adjoining fence are enhanced with three 200 watt LED security lights, further elevating its functionality and ensuring heightened visibility for added safety and security. The interplay of these powerful lights with the ornate gate design creates a harmonious blend of aesthetics and practicality in the outdoor space. This innovative automated gate not only provides premium yard security and privacy but also serves as a subtle tribute to the intrinsic value of our flora and fauna within the ecosystem.

Dimensions of Exhibit

Each piece 3.75 m wide x 2.1m high at the peak

Enchanted Wilderness Portal
Ken McKen

Cultures

It is incumbent upon both government and industry in a country to investigate, recommend and implement measures that will ensure that the optimum necessary cultures are present in the country's people, business, teaching and research establishments, as well as in government departments, and are encouraged to ensure that all contribute to produce positive outcomes to meet the needs of the different industries in the country contributing to a successful economy and quality of life.

What is meant by Culture?

Culture is 'a way of life or life style summarised in a system of particular values and attitudes which result in characteristic actions and customs'. There are a number of key cultures that help make a country, company or individual achieve excellence and success.

Whether a nation's economy is considered developed, developing or an economy in transition, the optimum necessary cultures are constantly required to meet the growing needs of its population, sustain a successful economy and contribute to improving the quality of life for all including biodiversity.

Cultures which can be considered important to the welding related industries include, but are not limited to, a skills respect culture, a Work, Health and Safety (WHS) culture, an environmental and biodiversity culture, a quality culture, a productivity culture, an ethics culture, a customer service culture and an innovation culture.

The artists in this section illustrate aspects of three of the cultures through their Exhibits.

- **Life in a Welding Apron,** Hilary Clark Cole (Canada). Skills Respect Culture.
- **Cultural Attitudes,** Jackie Morris (Canada). Skills Respect Culture.
- **Welder-Welding Operator**, Mayank Sharma (India). Work, Health and Safety Culture.
- **Poison Dart Frog,** Andrey Makhorin (Kazakhstan). Environmental and Biodiversity Culture.
- **Conservation,** Renee Saloka Wallbaum, (USA). Environmental and Biodiversity Culture
- **Solar Tree,** Narayan Dash (India). Environmental and Biodiversity Culture

Hilary Clark Cole *(Canada)*

Canadian sculptor Hilary Clark Cole was born in Victoria, British Columbia and is a graduate of the Ontario College of Art and Design. She has lived and worked in Muskoka since 1971.

As well as having her metal sculptures in many private collections, she has created significant public sculptures over the years. Her works have featured in all previous IIW welded art photographic Exhibitions.

She has won many awards for her sculptures, and she has been profiled on television programmes on the Life Channel, CBC and Global. She is a strong role model in the community and in 2002 won the first YWCA Woman of Distinction Award for Arts and Culture.

Hilary works mainly in hand-built welded steel artwork, which can be very small or very large, rough or smooth, monochromatic or colourful. In particular, they often reflect the importance of biodiversity related to her home country.

Her work has been described as "In the world of welding women, her creative spirit has no equal . . . Lyrical and beautiful, infused with joy and humour, hard cold steel comes alive".

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Exhibit "Life in a Welding Apron"

Hilary created this Exhibit as an expression of both her passion for creating welded art during the day and creating in the kitchen at night.

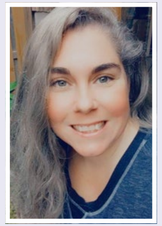
As she says "I've spent my life in an apron. That is not a lament. It is about art and loving what I do. I wear a leather apron all day and work with hard materials, steel and copper and brass, and then I move to the kitchen and work with the soft materials of dinner! It's a good life, enriching in all ways. This sculpture is a portrait of my 'day job'. But when you travel around it, there is a feminine side. Steel sheet, hammered, pierced, rusted and engraved".

Dimensions of Exhibit

Lifesize

Life in a Welding Apron
Hilary Clark Cole

Jackie Morris *(Canada)*



Jackie is a welding technologist with involvement in training in welding skills at Conestoga College of Technology and Advanced Learning in Ontario, promoting careers in welding to a diverse range of people. Between inspiring future tradesmen and running one of the College's many welding sites, she enjoys creating welded art.

One of Jackie's key concerns is that many people, including parents and teachers, are often negative about young people pursuing careers involving vocational education and training instead of for example university graduate training.

A skills respect culture is a national way of life which is characterised by support of, and value placed on, a willingness to learn, respect for people who acquire skills; and, tangible rewards for individuals who acquire skills

Young people are influenced by their environment and the pressures of choosing a career can weigh heavily since it is one of the most significant decisions which will influence the rest of their lives. Both their attitude and that of the parents and teachers to choosing the career will be influenced by the culture of respect for skills.

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Exhibit "Cultural Attitudes"

This piece depicts the darkness, the weight of generational negative influence towards trades education and the eclipsing of many opportunities.

The illuminated Sun holding some turmoil from the overwhelming array of opportunities represents youth trying to figure out what they want, who they are and who they will become. Where the moon like figure shadows the environmental vastness, will parental or other older influence push prospects away from opportunity because of narrow perspective?

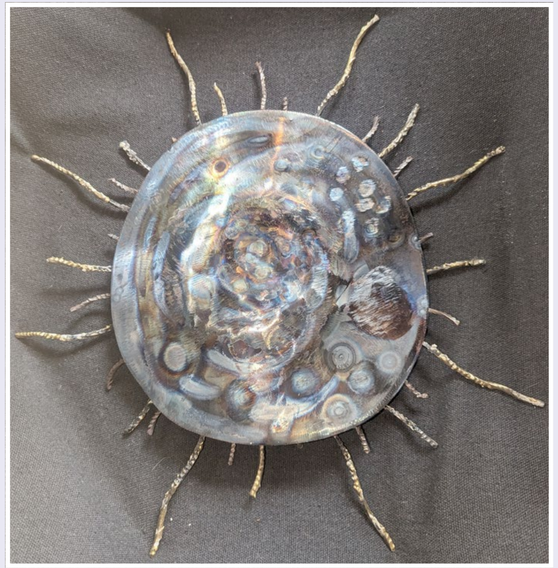
Then through to the back side of the piece a galaxy of planets, moons and stars represent the infinite opportunities. The perspective of finding something you love to pursue.

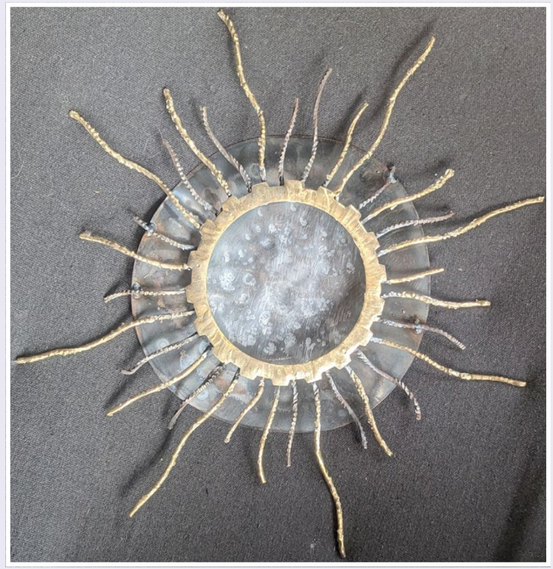
Trades education is just as valuable as any other post-secondary education. You can't have one without the other in industry. Everyone has value and a role to contribute, including improving the national cultural attitudes towards respect for all skills.

The Exhibit was made from scrap steel from heavy equipment engine parts and a bar bevelling nibbler system. Processing applications included cutting (Ironworker), Oxy-Fuel heating and braze welding, Gas Metal Arc Welding (GMAW), grinding using stone and sanding discs.

Dimensions of Exhibit

47cm high x 50 cm wide x 4.5 cm deep





Cultural Attitudes
Jackie Morris

Mayank Sharma *(India)*

Mayank holds a Bachelor of Science degree in Physics, Chemistry and Mathematics (B.Sc. PCM) and a Diploma in Mechanical Engineering. He works as a General Manager QA&C at Ratnamani Metals & Tubes Ltd, Kutch, Gujarat. His work focuses on productivity enhancement through process optimization, cost savings and in-process R&D activities.

Occupational health and safety (OH&S) is a crucial aspect of the welding industry, but it is often neglected in both the formal and informal sectors, leading to significant consequences. Over a lifetime, injuries and health problems can have a detrimental effect on a person. Therefore, it is essential to prevent such problems from occurring by following proper OH&S processes.

This involves providing lifelong learning opportunities to cover all the times and activities when such correct OH&S processes should be applied. Besides the necessary education and training courses, proper procedures and good management, Mayank believes that creating an Exhibit is an effective way to reinforce the message of safe welding work.

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Exhibit “Welder-Welding Operator”

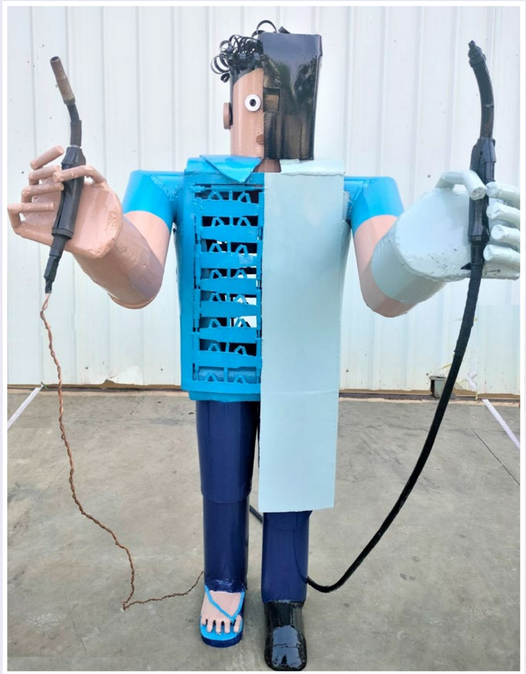
Mayank participated in the IIW-India National Competition for the “Welded Marvels 2023 – Project Trash to Treasure” with his sculpture that is both innovative and visually striking. The sculpture depicts a welder or welding operator, showcasing both safe and unsafe working conditions related to the use of proper personal protective equipment (PPE).

The primary goal of the IIW-India competition was to use scrap parts, so Mayank created the sculpture entirely out of various metallic scraps that were generated in his company, which is involved in welded pipe manufacturing. His work demonstrates resourcefulness and ingenuity, inspiring others to think creatively about how they can repurpose materials to create something truly remarkable.

The safe welder-welding operator in the sculpture is shown wearing the correct PPE, such as a welding helmet, apron, hand gloves, safety shoes, and proper insulation, while the unsafe welder-welding operator is depicted taking a more careless approach.

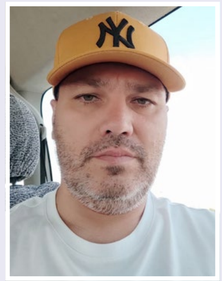
Dimensions of Exhibit

210 cm high x 110 cm wide x 115 cm deep



Welder-Welding Operator
Mayank Sharma

Andrey Makhorin *(Kazakhstan)*



Andrey is from Atyrau, western part of Kazakhstan. He was born on February 19, 1981. He is a professional welder and is very proud of it and has been working in the big company KazTransOil for more than 20 years.

Andrey likes drawing, music, fishing and sports. He began to be fond of welding at the age of 16 helping his uncle in the garage before going to the welding college and graduating with honours.

Andrey has taken part in many welding competitions such as “The Best in the Profession” and “Arc Cup” amongst others. He has received more than 20 winner certificates.

Knowing how to draw and weld, Andrey began to combine them together and began to make various crafts from scrap metal including electrode stubs. He likes working with metal very much, making his ideas come true. It’s very cool. He participated in the IIW 2021 Digital Collection with his Exhibit “Metallica” and IIW 2023 Digital Collection with “Starry Sturgeon”

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Exhibit “Poison Dart Frog”

Andrey has used lifelong learning opportunities to train and qualify as a welding artisan and continually improved his abilities and job opportunities through the on-the-job training and experience which he has gained through working with top class companies and projects. In parallel, as he learns more about nature and the environment and the need to protect and improve them, he uses his welded art to highlight challenges we increasingly face. Last year, he showcased his Exhibit “Starry Sturgeon” ,a critically endangered fish and his latest Exhibit, ”Poison Dart Frog” highlights the challenges these frogs face with species being classified as endangered to critically endangered by the International Union for Conservation of Nature (IUCN).

The frogs are only 1.5 to 2.5 cms long and have been subjected to heavy trafficking and smuggling over the past 15 years particularly since their bright colours make them seem attractive as pets as well as being hunted for their skins.”

The Exhibit was made in his garage using manual metal arc welding. The Exhibit was made using a machine and a set of natfels in the garage. The material used was rolled reinforcement of 12 mm and 6 mm thicknesses. Eyes and bearings 10 mm dia.

Dimensions of Exhibit

30 cm high (with the frog being 18cm high)
x 20 cm wide x 15cm deep

Poison Dart Frog
Andrey Makhorin

Renee Saloka Wallbaum *(USA)*

Renee started off as a non-destructive inspector for welding at a Naval shipyard, qualified in structural and pipe welding, which led her to getting a job as a Fabrication Specialist at Caterpillar, and eventually moving into a welding instructors position. Through her own continual training she obtained certification as an American Welding Society (AWS) Certified Welding Inspector (CWI) which also enhances her role as a welding instructor. Such a role also expands the opportunities for trainees in her company to improve their own careers.

She also starting moving into welded art as a hobby. For example, in 2017 she began making a 7-foot walk-in eyeball for a children's museum, which was opened as an Exhibit in the museum in 2019. She enjoys making animals out of silverware, nuts and bolts, and scrap metal. She has also donated artwork to a nonprofit animal shelter for auctioning, to help raise funds for supplies.

She participated in the 2022 WildThings NSW Virtual Welded Art Biodiversity Photographic Exhibition & Digital Collection with her Exhibit "Steel Habitat". Her Exhibit for this Collection follows a similar theme but related to the conservation of animals and habitat in Illinois where she lives.

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Exhibit "Conservation"

This Exhibit focuses on the challenges regarding learning about how to have nature conservation in Illinois with its various national parks including the preservation of deer while at the same time getting the balance of the number of deer right to protect habitat and other flora and fauna.

The Exhibit was made out of scrap metal by measuring the dimensions of a real deer mount and then very meticulously welding tools and hardware together to build out his shape. The antlers are pieces of rebar twisted together and narrowed at the tips, all set on a metal plaque to finalise it.

Dimensions of Exhibit

60 cm long x 90 cm high x 50 cm wide

Conservation
Renee Saloka Wallbaum

Narayan Dash *(India)*

Narayan is a welding instructor at the Government Industrial Training Institute (ITI) in Berhampur. He has been training students for nine years and has received felicitations by Dr Rajat Kumar Panigrahy, Principal, ITI Berhampur for various fabrication works.

As part of the learning experiences at the ITI, giving students an understanding and awareness of the need for adoption of renewable energy is undertaken. One method used by Narayan is by the use of welded art and Narayan has used this approach to show the benefits of installing a solar tree.

A solar tree complements rooftop solar systems or other green initiatives and can enthuse the use of solar technology particularly since the energy produced by a solar tree can be more than an array of solar cells.

Solar trees are a new innovative way to generate solar energy. They are essentially artificial trees with solar panels attached to their branches and can be used to provide electricity for individual homes, businesses or even entire communities.

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Exhibit “Solar Tree”

Fabrication of the structure of the solar tree involved welding scrap GI metal plumbing pipes generated during the demolition of buildings. Sheet metal from scrapped bathroom doors,TMT bars from RCC structure together created a strong and stable structure. The solar panels were then attached to the branches of the Solar Tree and wired together for a complete electrical circuit to generate the green and renewable energy. A 2KW system was created with 12 solar panels.

Mild steel round bar and pipe,GI sheet,solar panels,battery and wiring cables were the key components.

Dimensions of Exhibit

3.35m high x 2.43m wide, weight 220 kg

Solar Tree
Narayan Dash

Opportunities

In Rina Stutzer's Exhibit, There is no time like the present, the line sculpture represents an Africa rooted in tradition; the bare bones of a continent that hold us all together. The second sculpture, built from mirror-finish stainless steel plates, allows us to see the wealth of opportunity and the inherent potential that lies within all of us.

Symbolically, in **Mike van Dam's Exhibit Unchain the Family**, the chains restrain the family members from achieving their potential. Lack of education and job opportunities, poverty, hunger, lack of security, are some of the consequences of not being free and unrestrained. By unchaining them, setting them free of the constraints existing in so many situations, particularly with the opportunities of lifelong learning, both the individuals and the family as a whole can benefit and improve their quality of life.

Teresa Seaton's Exhibits Garden Hearts III and IV are prime examples of a person making and taking opportunities to make a very successful career in art. She had been working in advertising for over 20 years and after attending some stained glass courses in 2000 and freelancing as a graphic designer and hobby artist for ten years, she became a full time artist in 2010.

Leah Applejohn's Exhibit Gods of Welding typifies the grit, determination, and hard work it takes to be in the welding industry and the love for the craft. With the support of her family and employers as well as the opportunities offered by the Canadian Vocational, Education and Training (VET) system, these enabled Leah to obtain the learning opportunities and experiences to achieve the quality of life and further opportunities that she has today.

The Exhibits by the artists in this section illustrate aspects of the potential for opportunities which may come available.

- **There is no time like the present,** Rina Stutzer (South Africa).
- **Unchain the Family,** Mike van Dam (Australia).
- **Garden Hearts 111 and 1V,** Teresa Seaton (Canada).
- **Gods of Welding,** Leah Applejohn (Canada).

Rina Stutzer *(South Africa)*

Rina Stutzer is a full-time artist and creative adviser at the collective art studio and foundry, Dionysus Sculpture Works (DSW), in Pretoria. She completed both her Bachelor and Master's degree in Fine Arts at the University of Pretoria in 1999 and 2007, respectively.

She has participated in multiple international Exhibitions in Australia, France and Great Britain and has been honoured for her work with awards that include the Ekurhuleni Fine Arts Award, The Rendezvous Focus Painting Award and the Southern Africa Stainless Steel Development Association (SASSDA) Art Project Award.

She was commissioned by Attacq to create an engaging and representative landmark which was completed in 2018 at the Mall of Africa in Waterfall City, Midrand, to complement Attacq's building development representing the best in architectural design.

The geometricised and facetted forms shaped as the African continent are engaged in a dialogue representing an ever-changing present, reflective of collective progress and potential. This project mirrors the ideals practiced by the Southern African Institute of Welding (SAIW), providing and promoting opportunity for education, training activities and sustainable improved quality of life, particularly with the United Nations Industrial Development Organisation (UNIDO) and the International Atomic Energy Agency (IAEA) throughout Africa.

Photo: Warren Heath/ Bureaux

Attacq has stated that the line sculpture represents an Africa rooted in tradition; the bare bones of a continent that hold us all together. The second sculpture, built from mirror-finish stainless steel plates, allows us to see the wealth of opportunity and the inherent potential that lies within all of us.

Each sculpture is 5.5m high x 5.27m wide x 2.3m deep. With this diptych, Rina investigated renewal and transition into the ideal. Consisting of multifaceted components, it relates to connectedness in biodiversity and the resourceful phasing of Africa.

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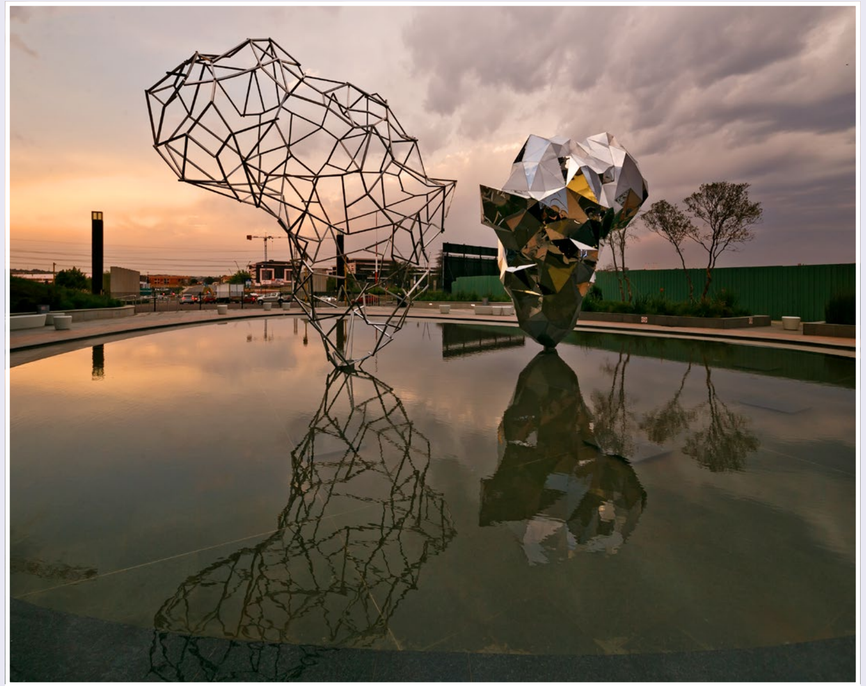
Exhibit "There is no time like the present"

The Southern African Stainless Steel Development Association (SASSDA) played a role in assisting Rina with the use and fabrication of the stainless steel in the Exhibit. The project, from conceptualisation to completion and on-site installation, spanned more than two years and construction was executed in collaboration with Dionysus Sculpture Works (DSW), and consisted of a specialised team of 15 artists and artisans.

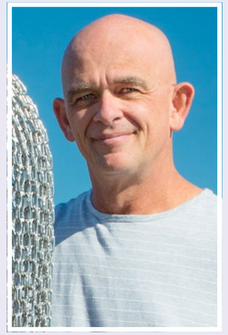
The line motif consists of 320 pieces of 30 mm thick square bar combining AISI 304 and AISI 316 stainless steel. The faceted sculpture is shaped by using the Gas Metal Arc Welding (GMAW) process and is constructed by 608 triangulated stainless steel plates, built from imported super mirror finish 3 mm thick AISI 304 stainless steel plate.

The fitting together of the stainless steel plates required precision planning from maquette to large scale construction. The on-site assembly process involved structuring separately modelled sides to the stabilized armature. Due to the demanding precision and technological complexity of the methodology and the materials used, this project boosted the art studio's skill development and created job opportunities for fine artists and artisans.



There is no time like the present
Rina Stutzer
Photo: Michael Tree, Architectural Visuals (https://archvis.co.za)

Mike van Dam *(Australia)*



Artist and Stainless Steel Welder Mike (Michael) van Dam was born in New Zealand and lives in Queensland, Australia, with his wife and two children and is a world-renowned stainless-steel sculptor.

Mike is an award-winning and internationally recognized artist who has a strong background in creating iconic and important sculptures that have been placed all over the world and have attracted various prestigious artistic awards. Mike's sculptures have been placed in central iconic locations such as Sydney Harbour, Hayman Island, Israel and Greece.

Mike creates highly aesthetic artwork and has been mentioned as *"one of the most innovative and eminent contemporary realist and hyper-realist international artists"* by the Rarity Gallery, Mykonos, Greece.

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Exhibit "Unchain the Family"

In line with fundamental humanitarian principles, any plan for improving the SDGs, must have as a main objective, the improvement of the quality of life of people in the country and its biodiversity. Most people simply want a job, personal security and health for their family, a decent roof over their heads, education for their children, food in their stomachs and a sustainable positive environment around them benefitting biodiversity.

The five pieces represent a family of a father, mother and three children of different ages.

Symbolically the chains restrain the family members from achieving their potential. Lack of education and job opportunities, poverty, hunger, lack of security, are some of the consequences of not being free and unrestrained. By unchaining them, setting them free of the constraints existing in so many situations, particularly with the opportunities of lifelong learning, both the individuals and the family as a whole can benefit and improve their quality of life.

The five figures are made from approximately 1200 metres of 4mm 316 stainless steel chain.

Each link has four welds made by Tungsten Inert Gas Welding (GTAW) and are easy to clean and blend in well with the links.

Dimensions of Exhibit

The largest piece is approximately
150 cm high x 100 cm wide x 100 cm long

Unchain the Family
Mike van Dam

Teresa Seaton *(Canada)*

Teresa had been working in advertising for over 20 years and after attending some stained glass courses in 2000; freelancing as a graphic designer; hobby artist for 10 years; she became a full time artist in 2010. She opened her own studio gallery, (Teresa Seaton Stained Glass Studio in 2013, closed in 2022).

Her studio was used to showcase other regional artists. She has enjoyed the learning opportunities and experiences allowing her to change her career with many subsequent success stories.

Her works comprise colourful mosaics of glass panels soldered with spun wire. Her craft is referred to as copper foiling technique, the process by which the fine edge of each piece of glass is wrapped with a continuous strip of copper foil establishing a surface on which the solder will adhere. Copper foil comes in thicknesses from 3/16”to ½” and comes in backing colours of copper, silver and black. This technique allows for more intricate patterns than leaded windows and because of the 60% tin composite in the solder, it results in a more structurally sounder window. Most of her flat panels will be framed in a ¾” zinc frame.

Teresa uses her knowledge and experience to train more people both for hobbies as well as giving opportunities for possible careers. She is based in Ontario, Canada and many of her Exhibits can be seen in public spaces and galleries around Ontario.

Teresa has a successful series of Exhibits known as Garden Hearts and recently, her piece Garden Hearts IV was commissioned for the Dan Lawrie International Sculpture Collection and installed in the Royal Botanical Gardens, Burlington, Ontario, Canada.

The Exhibits featured here have requirements for a number of key skills with the fabrication for the Exhibits being provided by Bob Young from Ancaster, Ontario, and powder coating by Metal Works Powder Coating, Ancaster, Ontario.

The complexities of soldering stained glass and other examples of Teresa’s work are shown in the excellent article by Alexandra Quinones in the November 2023 issue of the American Welding Society (AWS) Welding Journal.

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Exhibit “Garden Hearts IV”

The colours for the stained glass were inspired by the growth cycle of the Ostrich Fern, native to eastern Ontario.

Dimensions of Exhibit

210 cm high x 180 cm wide x 5 cm deep

Exhibit “Garden Hearts III”

The client’s choice of a muted pallet for the stained glass fits in with her garden practices. Since the Exhibit was in a protected placement Teresa chose to keep the frond concentric circles solid using her traditional copper foiling technique.

Dimensions of Exhibit

167 cm high x 107 cm wide x 2.5 cm deep

Garden Hearts III
Teresa Seaton

Garden Hearts IV
Teresa Seaton

Leah Applejohn *(Canada)*

Leah left school to follow a practical hands on career rather than a desk type job and has been a journeyperson welder for over 20 years as well as developing an interest in welded art. She was fully supported by her mother and father in choosing welding as a career choice. Her work experience involved long shifts including night shifts which she feels are the most difficult type of work.

Her determination and love of working with metal led to her becoming a welding instructor at the Northern Alberta Institute of Technology (NAIT), Edmonton, where she also expanded her welded art interests including holding welded art classes. She now works in a company supplying heavy equipment to the mining industry as a welder and still continues her welded art from her garage and wherever else gives her the inspiration.

The support of her family and employers as well as the opportunities offered by the Canadian Vocational, Education and Training (VET) system have enabled her to obtain the learning opportunities and experiences to achieve the quality of life and further opportunities that she has today.

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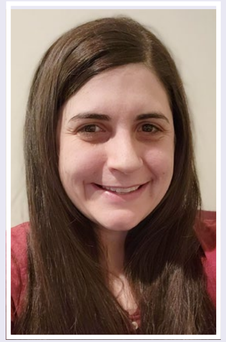

Exhibit “Gods of Welding”

The exhibit Gods of Welding typifies the grit, determination,and hard work it takes to be in the welding industry and the love for the craft.

As metal, fire and electricity go along with welding, it inspired Leah to go in a direction with a Viking or Nordic mythical theme, thus Gods of Welding was created. The exhibit is made using Gas Metal Arc Welding (GMAW), Gas Tungsten Arc Welding (GTAW), plasma cutting and Oxy- acetylene processes. It is fully made with mild steel and a few little copper highlights in the eyes of the wolf, dragon and Viking. Every piece is cut out and shaped by hand using hammer and anvil, or heating and bending tools, along with welded accents.

Dimensions of Exhibit

240 cm high x 150 cm wide x 50 cm deep

Gods of Welding
Leah Applejohn

Bulgarian Welding Society (BWS)

The Bulgarian Welding Society (BWS) is a not-for-profit organisation with members, comprising individual and corporate, universities and industrial companies, grouped in different industrial branches across Bulgaria. Since 1960, BWS has been the Responsible Member of the 51 Member Country International Institute of Welding (IIW).

It was founded in 1949 as "Section Welding" of the Bulgarian Scientific and Technical Union and in 1991 was re-established as an independent non-profit making organisation.

As part of the global community, BWS also embraces collective international action, cooperating and collaborating where applicable to apply global solutions to global challenges.

BWS's excellent national and international networks of individuals and organisations, including the International Institute of Welding (IIW), European Welding Federation (EWF) and SEENET (South East European Network), enables it to cooperate and collaborate with many of them and leverage many activities and technologies to improve quality of life in the region.

BWS and the Bulgarian welding industry have also implemented a number of strategies involving the education, training, qualification and certification of Bulgarian personnel through the IIW and EWF.

BWS has also incorporated the organisation of welding skills and welded art competitions into its strategies to improve the image of welding and increase the attractiveness of welding careers at all qualification levels.

Bulgarian Welding Society (BWS) Welded Art Competitions

In March 2024, BWS held a national competition "Best young welder 2024" which included a presentation of a welded art collection on a previously announced theme. The competition was attended by 20 students from 10 professional high schools from all over the country. The competition was held for the fifth consecutive year under the auspices of the Bulgarian Ministry of Education and Science and with the assistance of the Bulgarian Welding Society (BWS).

The students presented to the jury and their peers their works on the topic "Quality Education Sustainable Development Goal 4-Through the Eyes of Young Bulgarian Welders".

The compositions were evaluated on criteria such as: compatibility with the declared theme, strength, functionality and performance.

All 10 Exhibits were excellent in complying with the theme and four Exhibits have been featured in the 2024 IIW Digital Collection:

- **Education Opens the Doors to the Future**: Martin Ivelinov Slavol and Jordan Vaskov Jordanov.
- **Unity in the World**, Martin Nedev Nedev and Milen Yulianov Jordanov.
- **The Professions**, Georgi Georgiev and Kaloyan Surchelov.
- **Three Pillars of Education**, Tonio Vildanov Aladzov and Tihomir Miroslavov Ivanov.
- The following high schools took part, PGT, Samokov, PG "Ivan Hadjienov", Kazanlak, PG "St. Dimitar Solunski", Beloslav, PGMET "Hristo Smirnenski, Knezha, PGM, Zlatitsa, PG, Sandanski, PZHPT, Pernik, PG, Lom, PTG "Ivan Raynov", Yambol, PTG "Vasil Levski", Gorna Oryahovitsa
- By linking with the BWS website, you can view the Exhibits for the 2024 competitions.

Martin Ivelinov Slavol *and* Jordan Vaskov Jordanov *(Bulgaria)*

Martin Ivelinov Slavol and Jordan Vaskov Jordanov were the representatives from PG "St. Dimitar Solunski", technical school in Beloslav, a town close to the Black Sea. They wished to produce an Exhibit which was dedicated to a broader perspective of education.

Quality education is the foundation for improving people's lives and drives sustainable development. Over the years, great progress has been made in Bulgaria towards increasing access to education at all levels and increasing the number of enrolments in schools, especially for women and girls.

Basic literacy skills have improved significantly, but efforts are still needed to make greater progress. As elsewhere in the world, education in Bulgaria is undergoing continuous development.

Martin and Jordan believe that education creates habits and culture in people. It educates and builds up people's abilities and qualities, and as they say "It opens the doors of the future and the windows to the world."

The journey from the inkstand to the laptop is long, but the ideas and purpose of the educators are always the same.

In 1835, the first secular school in Bulgaria was opened, the Aprilov high school in Gabrovo, where the inkstand with the pen was used by the thirsty-for-knowledge children. Today, 189 years later and 2,348 more schools, thousands of children with the same enthusiasm as before continue to seek knowledge in various fields, but already using a book and a laptop.

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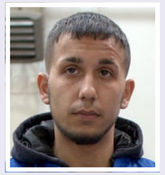
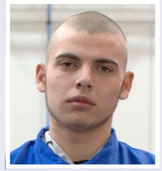


Martin Ivelinov Slavol



Jordan Vaskov Jordanov

Exhibit "Education Opens the Doors to the Future"

With their Exhibit, Martin and Jordan show exactly how time changes the means, but not the idea and the desire.

They have made an inkstand, a book, a pencil, a triangle and a laptop out of steel. On the arch they placed the MES logo representing mathematics, chemistry and music

Gas Metal Art Welding (GMAW) with both inert and active gases were used together with several type of cutting – laser and mechanical. Carbon steel was used for the base of the laptop and aluminium for the ink container. The first letters of the Cyrillic alphabets are depicted on the book leaves. For this Exhibit and the whole concept of showing how important it is to manage this vital resource and that it is essential for humanity as a whole, Martin and Jordan won first prize in the Bulgarian Welding Society (BWS) 2024 welded art competition.

Dimensions of Exhibit

45 cm high x 70 cm diameter

Education Opens the Doors to the Future
Martin Ivelinov Slavol and Jordan Vaskov Jordanov

Tonio Vildanov Aladzov *and* Tihomir Miroslavov Ivanov *(Bulgaria)*

Tonio Vildanov Aladzov and Tihomir Miroslavov Ivanov were the representatives from technical school PGMET "Hristo Smirnenski", in Knezha. They wished to show their positive view on education through their welded art composition which was made in the workshop for teaching practice in their school with the help of their teachers Mr. Nikolay Nikovski-St. teacher Practical Training, Eng. Valentina Buchelska - St. teacher Practical Training and Eng. Nelly Avramova – St. teacher Theoretical Training.

Through their Exhibit they hoped to show their respect for their teachers and their education.

They therefore focused their welded art composition on owls which are symbols of wisdom and knowledge. Both Tonio and Tihomir are only16 years old and have natural ability and passion for welding and their work shows a great eye for detail.

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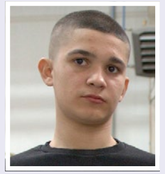
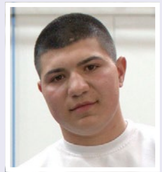
Exhibit "Three Pillars of Education"

The Exhibit is of three owls, an open book and an inkstand, where the owl is a symbol of wisdom, knowledge and insight.



Tonio Vildanov Aladzov



Tihomir Miroslavov Ivanov

The three owls represent the teacher-student relationship. The biggest one is the teacher and the two smaller ones, the pupils.

The book is a source of knowledge and the textbook is a guarantee of quality education.

The inkstand emphasizes the traditions of the Bulgarian school, which should be known and kept.

The whole Exhibit was made from scrap metal that they found. The materials used were waste bearings, sheet material and various other scrap.

Stainless steel sheet was used for the base. Bearings of different diameter were used for the eyes and for the bodies.

The feet and the heads of the owls were finished with rebar. The creativity of the artists allowed them to tack weld the balls for eyes. For the two smaller owls, nuts were also used.

Welding processes used were both Shielded Metal Arc Welding (SMAW) and Gas Metal Arc Welding (GMAW) with inert gas shielding.

Dimensions of Exhibit

45 cm high x 65 cm wide x 35 cm deep

Three Pillars of Education
Tonio Vildanov Aladzov and Tihomir Miroslavov Ivanov

Georgi Georgiev *and* Kaloyan Surchelov *(Bulgaria)*

Georgi Georgiev and Kaloyan Surchelov are students from the Professional School for Production Technologies in Lom, northwestern Bulgaria. Through their Exhibit, they wished to present their view of quality education and the professions and specialities existing in their area.

Lom has seen development in almost all sectors of the industry. These include mechanical engineering, car-building, sugar and confectionery production, brewing, tailoring production among others. Lom is the second largest port on the Danube in the Bulgarian section with extremely well developed loading and unloading facilities and other port activities.

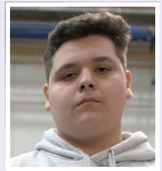
With the guidance of their teachers, Georgi and Kaloyan decided to create an Exhibit showcasing the professions and specialities studied in the school, all of them being closely related to the traditional and future industrial developments of the town.

These include:

- Road transportation equipment operator;
- Economical Informatics specialist;
- Lifting and transport equipment operator;
- Forwarder-logistic specialist;
- Mechanical engineering specialist;
- Port mechanic;
- Alarm and security equipment operator; and
- Electrical equipment operator.

Together with their teachers, who diligently apply innovative and non-standard methods and approaches in training, students strive to obtain a truly quality education, being increasingly aware of how important it is to them to obtain successful results for employment in industry.

Georgi Georgiev



Kaloyan Surchelov

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Exhibit “The Professions”

The materials used to create the welded art Exhibit were obsolete or scrap parts from various machine assemblies and systems, including round, profile and sheet material.

The welding process used was Shielded Metal Arc Welding (SMAW) with some additional operations being performed such as cutting, grinding, bending and straightening.

Dimensions of Exhibit

75 cm high x 75 cm wide x 100 cm deep

The Professions
Georgi Georgiev and Kaloyan Surchelov

Martin Nedev Nedev *and* Milen Yulianov Jordanov *(Bulgaria)*

Martin Nedev Nedev and Milen Yulianov Jordanov were the representatives from technical school PTG "Ivan Raynov" in Yambol.

They are both studying Mechatronics and have made their welded art presentation focusing on unity in the world that encompasses achievement of the other United Nations Sustainable Development Goals (SDGs) and mainly improving access to technology and knowledge as an important way to share ideas and foster innovation.

For them, it is vital that the whole Earth as a planet and all continents on it, help each other in implementing the economic, social and ecological goals.

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Exhibit "Unity in the World"

The Exhibit depicts the globe using curved bars and on it with thin sheets of stainless steel are situated the continents and two humans reaching to each other. Gas Metal Arc Welding (GMAW) using inert gas shielding was used and the sheets were cut with the help of a CNC machine. The symbol of the gymnasium is inside a circle made from a scrap machine

Milen Yulianov Jordanov and Martin Nedev Nedev

rack with the letters and digits cut in suitable form. The book is vital for education and that is why it has also a place in the Exhibit. The logo of the school is laser engraved in stainless steel plate.

Dimensions of Exhibit

60 cm high x 45 cm wide x 35 cm deep

Unity in the World
Martin Nedev Nedev and Milen Yulianov Jordanov

Respect for Educational Institutions

Sir Eduardo Paolozzi's bronze sculpture, **Master of the Universe** (1989), has been installed outside the Edward Boyle Library at the University of Leeds. The piece was donated by Douglas Caster, who completed his degree in Electronic and Electrical Engineering at Leeds in 1975.

Mr Caster said: "The sculpture represents how I feel about my education at Leeds: exposure to different kinds of knowledge that came together and enriched my life. I hope it inspires generations of students to stay curious and keep learning so that they may also continue to enrich their lives."

Josh Harris with his Exhibit **Normally Closed** shows his respect for his employer The United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry of the United States and Canada or "UA" as it is commonly known. This is the organisation for which Josh works at its UA Steamfitters Local 601 training centre in Milwaukee, Wisconsin.

UA has been training and certifying welders for over 130 years, longer than anyone else in American industry, and invests close to $250 million a year to train apprentices and journey-workers.

The Government of Haryana, understanding the emphasis of the Government of India towards skill and entrepreneurship development, launched India's first Skill University in 2016. The Shri Vishwakarma Skill University was established at the village of Dudhola in the district of Palwal. The **SVSU Logo** Exhibit by **Ajay Dagar** and **Deepanshu** was based on the University's logo. Holistically, the logo resembles a thoughtful mind integrating knowledge, value, ethics and skills for innovative thinking.

The Exhibit **The Horse: A Welded Exploration of Strength and Movement**, is a collaborative team effort of **Principal Dr. Rajat Kumar Panigrahi** and a team at ITI Berhampur. Notably, the team comprised both male and female trainees, highlighting the institute's commitment to making quality education accessible to all.

The Exhibits in this section illustrate the respect for learning organisations.

- **Master of the Universe**, Sir Eduardo Paolozzi (United Kingdom).
- **Normally Closed**, Josh Harris (USA).
- **SVSU Logo**, Ajay Dagar and Deepanshu (India).
- **The Horse: A Welded Exploration of Strength and Movement,** ITI Berhampur (India).

Sir Eduardo Paolozzi *(UK)*

Paolozzi was a Scottish artist and sculptor, considered by many as a pioneer of pop art. He was elected to the Royal Academy in 1979 and was appointed Her Majesty's Sculptor in Ordinary for Scotland in 1986 – a position he held until his death in 2005.

The bronze sculpture, 'Master of the Universe' (1989), has been installed outside the Edward Boyle Library at the University of Leeds. The piece was donated by Douglas Caster, who completed his degree in Electronic and Electrical Engineering at Leeds in 1975.

Mr Caster said: "The sculpture represents how I feel about my education at Leeds: exposure to different kinds of knowledge that came together and enriched my life. I hope it inspires generations of students to stay curious and keep learning so that they may also continue to enrich their lives."

As well as providing grants for engineering students, he established the Douglas Caster Cultural Fellowships in Poetry, which gave emerging writers the time to devote themselves to their work, while inspiring students to write.

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Exhibit "Master of the Universe"

Showing a mechanical figure crouched over a mathematical diagram, the sculpture is based on an imaginative drawing by artist and poet William Blake, depicting physicist and mathematician Sir Isaac Newton.

Sir Eduardo Paolozzi is quoted "While Blake may have been satirising Newton, I see this work as an exciting union of two British geniuses. Together, they present to us nature and science, poetry, art, architecture – all welded, interconnected, inter-dependent".

The foundry made moulds to cast the piece in sections in bronze, which were then welded together to create the final image.

"The process follows along that concept of man and machine; man in metal; the robotic; as opposed to a stone carving which has a softer look about it", explains Brian Caster, Douglas's brother and a student, then friend, then collaborator of Paolozzi's, who cast the piece.

There is a short Instagram clip with Brian's narration excerpted from the University's Public Art Audio Tour:

https://www.instagram.com/reel/C4NctuAMQkM/?utm_source=ig_web_copy_link&igsh=MzRlODBiNWFlZA==

Dimensions of Exhibit

143 cm high x 100 cm wide x 181 cm long

Master of the Universe
Sir Eduardo Paolozzi

Josh Harris *(USA)*

Using his welding expertise to make art has allowed Josh to express his creativity in a way he was unable to in the past. Establishing roots as a steamfitter in the piping industry, becoming a full-time welding instructor as well as a certified welding inspector, influencing the future of his trade in a positive way, and making an above average living is directly related to him continually progressing his welding knowledge and skills.

At the UA Steamfitters Local 601 training facility, instructors are available to all members wanting to come in to get up-to-date training in different welding processes and operating different equipment used in the piping industry.

Since there is a shortage of certified pipe welders in the industry and the demand continues to grow, Josh helps run an Accelerated Welding Programme where students who successfully complete the program as certified welders in multiple processes earn the opportunity to start their five year steamfitter apprenticeship at a higher pay scale than a traditional apprentice. The program also provides a pathway for people already in the welding industry to become Steamfitters

Josh also uses his artwork to help spark interest in the skilled trades for people at orientations and trade shows. He also shares his artwork with current students and fellow tradespeople to show that the skills we use to make a living can be used as a rewarding hobby as well.

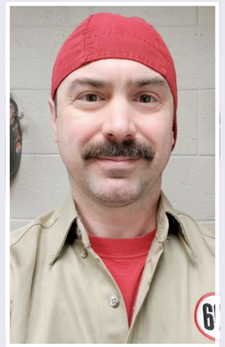

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Exhibit “Normally Closed”

The Exhibit was named “Normally Closed” because it describes a default valve position that blocks or prevents flow in a piping system and a blind flange is something that is installed to close off a piping system. The Exhibit symbolises that learning to weld, and using his welding skills professionally, has opened doors (valves) in his life (system) and created a flow of opportunities for that which would otherwise have been closed or not there at all.

The valve handles and blind flange base were salvaged from a project Josh worked on, the leaves are hand crafted from sheet metal with Gas Tungsten Arc Welding (GTAW) veins, and the stem and roots are round stock with multiple layers of Shielded Metal Arc Welding (SMAW) beads for texture.

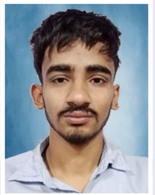
Dimensions of Exhibit

75 cm high x 60 cm wide

Normally Closed
Josh Harris

Ajay Dagar *and* Deepanshu *(India)*

Ajay Dagar



Deepanshu

The artists are final year students of Diploma in Vocational Studies in Mechanical Manufacturing and based their exhibit on the Shri Vishwakarma Skill University, Palwal, Haryana's logo.

The Shri Vishwakarma Skill University has a culture of encouraging the correct values to be adopted by all people connected with it and shows this through its logo which was thoughtfully designed in an open competition in 2017 by young minds, who think freely and view things from different perspectives.

The motto has been adopted from Shrimad Bhagwat Gita (Chapter 2. Verse 50), and means that yoga is excellence at work. Any work becomes valuable if done with full concentration, dedication and skill.

The blue colour of the logo denotes that the University is committed to uphold the dignity of skills and labour. Seven dots represent saptarishis in the universe who are collectively bringing the unrevealed wisdom, philosophy, science and knowledge of cosmos to connect with human mind to skill them to think out of the box, with infinite limits. The centrepiece collectively represents the spirit of ideation, creativity and progress encompassing the best of traditional and modern values and wisdom. The pen nib and spanner remind us to work with our own hands to acquire knowledge and skill, until perfection is achieved. The Wi-Fi symbol and the monitor stand for the global connectivity and digital learning. The red arrow is indicative of sustained progress with adaptability to change. It also bridges the shift between our roots and the future via the means of technology.

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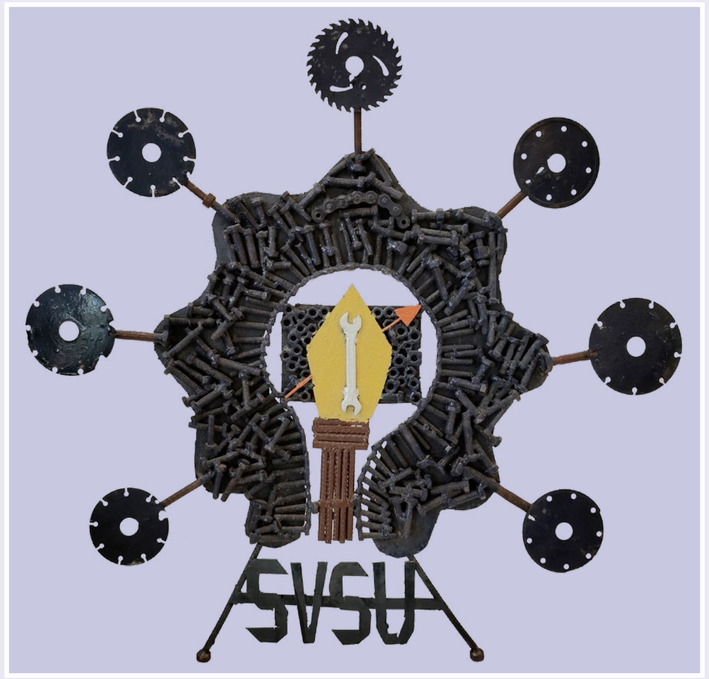
Exhibit "SVSU Logo"

Shri Vishwakarma Skill University, Palwal, Haryana Logo exhibit is exemplary artisan fabricated by using waste metals and materials. Different sizes of nuts, bolts, iron rods, gear chain, spanner, stone cutter and mild steel sheet have been used for fabricating the exhibit and painted with the blue colour. Welding was performed with Shielded Metal Arc Welding (SMAW).The exhibit is perfectly showcasing commitment of the pioneering skill university in the country to uphold the dignity of skills and labour.

Dimensions of Exhibit

76.2 cm high x 74.93 cm wide x 2.54 cm deep



SVSU Logo
Ajay Dagar and Deepanshu

Industrial Training Institute, Berhampur, Ganjam *(India)*

The Exhibit is a collaborative team effort of Principal Dr. Rajat Kumar Panigrahi along with trainer Anil Kumar Mishra and five students, Barsha Nahak, Sunanda Swain, Upasana Dash, Basudev Swain and Narayan Pradhan. Notably, the team comprised both male and female trainees, highlighting the institute's commitment to making quality education accessible to all. This unique combination of artistic vision, technical skill, and equal opportunity, makes "The Horse" a truly inspiring piece.

"The Horse" aims to embody the spirit of SDG 4: Quality Education. Through its form and materials, it emphasizes themes of equal access to education in the TVET sector, environmental sustainability, and lifelong learning through the "Waste to Wealth concept" leading to a green economy.

By breathing new life into discarded materials, it highlights the potential for transformation through education. The sustainable approach underscores the importance of responsible resource management, another crucial aspect of SDG 4.

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Principal Dr. Rajat Kumar Panigrahi along with trainer Anil Kumar Mishra and five students, Barsha Nahak, Sunanda Swain, Upasana Dash, Basudev Swain and Narayan Pradhan

Exhibit "The Horse: A Welded Exploration of Strength and Movement"

The sculpture is crafted entirely from upcycling metal scraps like automobile parts, bike cranks, waste iron rod from demolished buildings, GI sheet from a water tank and repurposed toilet doors.

The Exhibit utilizes shielded metal arc welding (SMAW) to join the metal pieces. The intricate details achieved through techniques such as grinding and shaping, depict various educational tools and symbols. Grinding techniques are employed to create smooth transitions and define the horse's form. It was shaped mostly with the aid of tools such as angle grinder, bench vice and ball peen hammer. It has been beautifully painted with the 2K paint and coated with anti-corrosion chemicals to ensure its longevity and aesthetic appeal.

The horse itself represents perseverance and the journey of lifelong learning. Its form is both powerful and elegant, suggesting the strength and grace gained through education.

Dimensions of Exhibit

304 cm high x 243 cm long x 76 cm wide, weight 600 kg

The Horse:
A Welded Exploration of Strength and Movement
Industrial Training Institute, Berhampur, Ganjam (India)

Technologies

The roles of technological institutions to lifelong learning are critical to the positive progression of SDG 4.

For example, the roles of universities in education, training, technology development and technology transfer can also be illustrated by the welded art Exhibits in the IIW 2024 Digital Collection.

- **Furrow Fields in Autumn,** Milan Maronek, (Slovakia), Slovak University of Technology, Bratislava.
- **Composition on Effort and Balance No 1**, Ioan Both (Romania), Politehnica University of Timisoara (UPT).
- **Harmonic Growth,** Markus Köhler (Germany), Technische Universitat Braunschweig.
- **Synapses of Growth:The Evolution of Lifelong Learning,** Markus Domogala (Australia), University of Sydney.
- **The Hidden Cloud of Knowledge**, Vladislav Yakubov (Australia), University of Sydney.

Marcus Köhler believes that social and technical developments in general, as well as in welding technology specifically, are characterized by a continuous process of learning and improvement. This can take place in various ways, including systematic learning approaches, learning from mistakes, or engaging playfully with materials and concepts.

A significant contribution to these socio-technical developments comes from the opportunity for continuous personal development and the acquisition of new skills. In this context, the university setting and its open access represent important tools for primary and secondary education opportunities in line with the UN Sustainable Development Goal SDG 4, benefiting both students and academic or teaching staff alike. Besides strategic personal development goals, having the freedom and opportunity to test scientific developments in the context of art and craftsmanship can lead to a deeper understanding of the process capabilities, reveal further potentials for improvement and therefore add extra value to an evolving learning curve.

In the realm of SDG 4, **Vladislav Yakubov** also believes that the fusion of education, technology, and diverse perspectives catalyses transformative learning experiences essential for achieving inclusive and equitable education. The purpose of education is to give the individuals ability to learn lifesaving skills, helping develop mind, body and soul through creativity, critical thinking and problem solving. Fostering imagination and creativity by uncovering different perspectives via new learned tools enabling one to perceive complexities and beauty beyond surface appearance.

Milan Maronek *(Slovakia)*

Milan works as a professor and Head of the Department of Welding and Materials Joining at the Slovak University of Technology in Bratislava – Faculty of Materials Science and Technology. For him, photography is a kind of magic where words cannot describe what we see, feel and perceive at a given moment. He photographs through his heart and tries to make his photos look aesthetic and emotional to the viewer. The current image editing technologies give the photographer unexpected possibilities in this area. Nevertheless, he prefers composition purity and simplicity.

In his Art of Welding series, he tries to bring the viewer closer to the world of technology and welding from the perspective of fine art photography. Working with liquid metal, flame, electric arc, concentrated energy sources, or looking into the microscope eyepiece brings him an endless amount of inspiration. It then allows him to work with light tonality, colour accent and contrast, depth of field, structure and shape of objects and their motion blur to catch the viewer's eye and introduce them to the fascinating world of hidden reality.

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Exhibit "Furrow Fields in Autumn"

The efficiency and service life of heat exchangers required for affordable and clean energy also depend on the materials that are used for their production and the technologies by which heat exchangers are manufactured. Welding and surfacing are the dominant technologies in their production. The technologies and lifelong learnings involved in the joining and surfacing processes and materials used in protecting the waterwall have improved over time leading to numerous benefits, including in particular, the continuous supply of energy.

This is analogous to how the improvements in technologies available in agriculture have enabled farmers throughout the ages to progress from using a hoe, a beast of burden-pulled plow, to a tractor and modern farm implements in producing the furrows in a field thus improving productivity, quality and yield with improved soil structure and irrigation.

Furrow Fields in Autumn
Milan Maronek

Ioan Both *(Romania)*

Ioan Both is a Senior Lecturer within the Steel Structures and Structural Mechanics, Department of Politehnica University of Timisoara (UPT).

Parasite 2.0 is a design and research agency based in Milan and London. Founded in 2010 by Stefano Colombo, Eugenio Cosentino and Luca Marullo, they investigate the status of human habitats, acting within a hybrid of architecture, design, and scenography.

Parasite 2.0's artists worked on an aesthetic interpretation of Ioan Both's research into the production systems of structural elements such as beams, columns and corrugated slabs. Artistically interpreting "effort" and "balance" in engineering vocabulary, the work drew attention to how these words also signal modern working conditions.

The result was a sculpture "Composition of stress and balance n. 1" which was a part of the Exhibition "BRIGHT CITYSCAPE. Turn Signals – Design is not a dashboard" curated by Martina Muzi, co-produced by FABER and Politehnica University of Timisoara (UPT), in the context of Timisoara 2023 European Capital of Culture.

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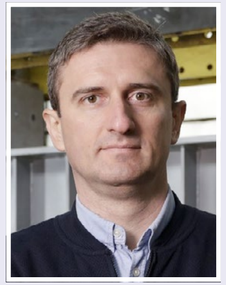
Exhibit "Composition on Effort and Balance No. 1"

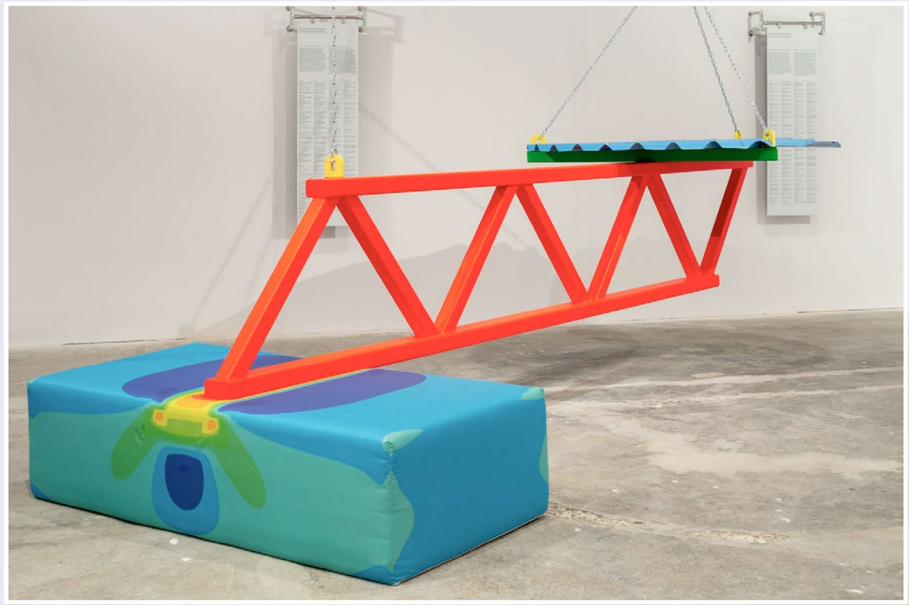
The sculpture serves as a 3D diagram of the invisible forces in a construction. It stands out as a methodical teaching tool to express the structure's structural principal and secondary systems. By resting on a specially printed mattress, the work expresses the necessity of a resting position for the main structure, the truss beam, which acts as a support for the secondary elements providing support for the cladding system, the corrugated web. The tendency to reach increased heights is expressed by the chain connected to a tall standing structure.



All this is expressed by the colouring of the elements, red suggesting the high importance of the main structure, green guiding the thoughts to the specific attention on the support structure of the comforting blue cladding system. The pattern of the mattress reflects the stress distribution from the load transmitted by the truss.

The sculpture was produced with the technical and material support of SC Profile Galvanized SRL.

Parasite 2.0 Design Team



Composition on Effort and Balance No. 1
Ioan Both

Markus Köhler *(Germany)*

Markus is a researcher at the Institute of Joining and Welding at the Technische Universität Braunschweig in Germany with research focused on the material properties of wire arc additive manufactured materials. In the course of building numerous laboratory samples, he found himself captivated by the aesthetics of welding processes and the allure of distinct surface textures resulting from additive manufacturing. His journey began with capturing the essence of welding through photography, gradually evolving to explore different shapes and patterns found in nature through the additive manufacturing process, combining technical applications with the appreciation for the beauty inherent in welding.

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Exhibit “Harmonic Growth”

The systematic development of additive manufacturing processes with metal materials has recently opened extensive possibilities for the production of components with increasing complexity in a quick and resource-efficient manner. In the case of Wire Arc Additive Manufacturing (WAAM), mechanized conventional welding processes are used to create complex shapes layer by layer from individual weld beads. Thereby, the WAAM process is characterized by high build rates, but results in comparatively rough surfaces, with optically and haptically distinctive wave structures.

The advanced geometric freedom of additive manufacturing processes also provide extended design opportunities, rethinking form and function. In this context, nature offers extensive inspiration for technical innovations by analyzing natural patterns and structures and their implementation for technical applications. A well-known example of this is the Fibonacci sequence found in the animal and plant kingdoms and its mathematical description.

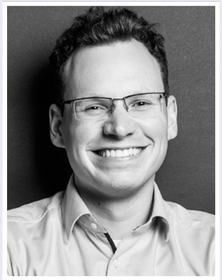
The concept of the Fibonacci sequence forms the basis of harmonious descriptions in mathematics, engineering, and art, on which the stainless steel body of the exhibit is based. In contrast to the raw steel appearance, the base, inspired by its natural origin, is built from a wooden disc.

Dimensions of Exhibit

30 cm high x 15 cm wide

A Harmonic Growth
Markus Köhler

Markus Domogala *(Australia)*



Markus is a PhD candidate at the University of Sydney, collaborating with the Australian Nuclear Science and Technology Organisation (ANSTO). His research focuses on residual stress and material characterization in Wire-Arc Additive Manufactured (WAAM) large-scale components.

With a background in mechanical engineering and materials science, Markus returned to academia after years in industry, driven by a dedication to continuous learning. He is fascinated by the nanoscale beauty of material science, revealing the intricacies of metallurgy invisible to the naked eye.

Laser cladding is an advanced surface engineering technique where a high-powered laser melts a coating material and deposits it onto a substrate, creating a metallurgical bond. This results in a dense layer with superior properties such as increased wear resistance, corrosion resistance or hardness, making it an ideal process for enhancing the performance and extending the life of critical components.

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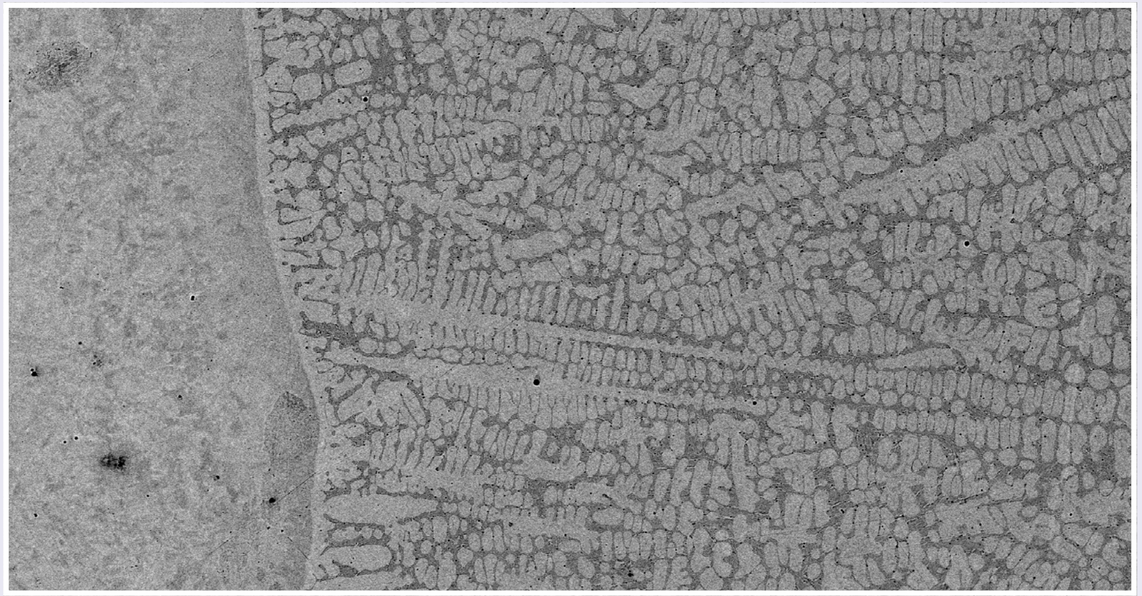
Exhibit “Synapses of Growth: The Evolution of Lifelong Learning”

This mesmerizing electron image reveals the fusion of an Fe-Cr laser cladded layer on a 4140-steel substrate, produced by LaserBond Ltd in Australia. The intricate cladding dendrite structure, reminiscent of a neuronal network, symbolizes the interconnectedness of knowledge, skills, and experiences throughout life, based on the fundamental substrate representing our core values and personality.

Much like the synapses that connect and transmit information within the human brain, these dendrites symbolize the interconnectedness of knowledge, skills, and experiences throughout the continuum of life.

Each branching pathway represents a nexus point, where education, training, and career paths intersect and evolve, forming a resilient network of growth and adaptation. As we contemplate this captivating tableau, we are reminded of the profound synergy between education and the unfolding journey of personal and professional development.



Synapses of Growth: The Evolution of Lifelong Learning
Markus Domogala. Photo Credit LaserBond Ltd

Vladislav Yakubov *(Australia)*

Dr Vladislav Yakubov is currently an additive manufacturing postdoctoral research associate at the University of Sydney (USyd) in Australia. His work focuses on additive friction stir deposition (AFSD), which fabricates structures layer-by-layer using a rotating tool piece, to which is fed aluminium feedstock through its centre. No melting occurs during processing; instead, pressure, high velocity, and friction fuse metal in its plastic state. As a result, process energy use is relatively low, no solidification cracking occurs, and little residual stress is present. Since the material undergoes a high degree of deformation at the rotating tool head, dynamic re-crystallisation occurs, which leads to fine grain size.

AFSD is an innovative process that provides energy-efficient, large-scale additive manufacturing of a variety of alloy systems. Importantly, it can also utilise waste material from other processes, further reducing environmental impact and contributing to closing the recycling loop.

The aims of SDG 4 are to ensure accessibility and equality in educational opportunities and promote lifelong learning for everyone. One of the ways this is achieved is through the development of effective, innovative teaching methods and the support of research and educational technologies.

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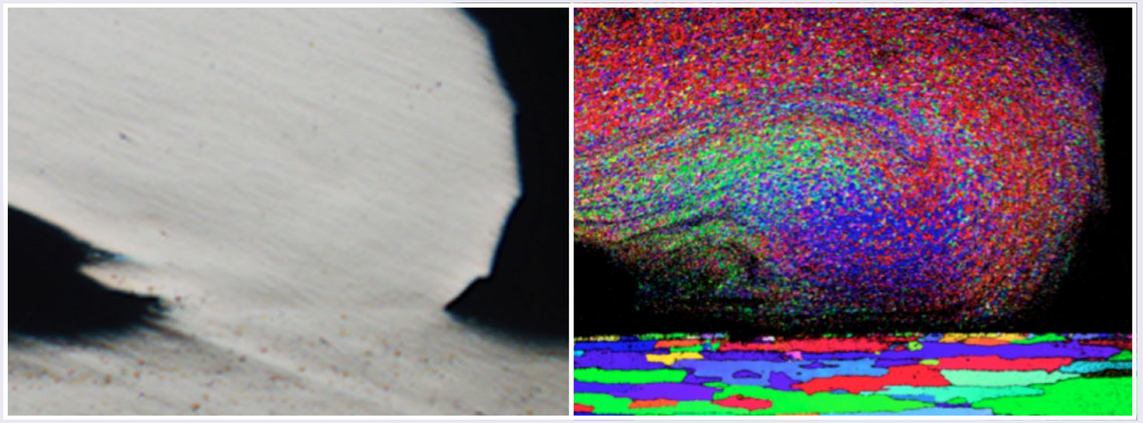
Exhibit “The Hidden Cloud of Knowledge”

In the context of this Exhibit, two different perspectives are shown via conventional and more sophisticated microscopy tools. The first optical microscope image (left) presents a superficial view of the printed cross-section with minimum information. The more detailed electron diffraction image (right) provides more comprehensive perspective vital for better understanding of this manufacturing process. The image unveils the beauty of the unique microstructure with different grain size and orientation, showcasing the material dynamic flow and unknown defect represented as lack of bonding - the bead flows like a “cloud” over the substrate.

Novel characterisation tools can often reveal hidden clues that are not visible to the untrained eye. By embracing equitable and accessible education, society can nurture a culture of continuous learning, improving quality of life and understanding on an individual and societal level.

This Exhibit is part of a project funded by a Sustainable Development Goals grant at USyd to develop solid-state additive manufacturing (AM) processes for recycled aluminium alloys in collaboration with University College London (UCL), University of Sheffield, Advanced Manufacturing Research Centre (AMRC) North West, and the Australian Nuclear Science and Technology Organisation (ANSTO). The images have been taken at Sydney Microscopy and Microanalysis at the University of Sydney.



The Hidden Cloud of Knowledge
Vladislav Yakubov

The Indian Institute of Welding (IIW-India)

On a similar basis as other IIW Members, as part of the global community, IIW-India also embraces collective international action, cooperating and collaborating where applicable, to apply global solutions to global challenges. For example, IIW-India is working in line with the Indian Government's national initiatives to help India to achieve the United Nations Sustainable Development Goals (SDGs) by 2030.

A downloadable report "IIW-India and India's National Welding Capability and their Significance to the UN Sustainable Development Goals (SDGs)" is available on:

http://iiwindia.com/wp-content/uploads/2022/02/IIW-India-NWC-Report-on-UN-SDG.pdf

IIW-India also places great emphasis on SDG 4 since it can have such a positive effect on all the other SDGs.

On 1st May 2024, IIW released the report "The Importance of a Country's Welding Industry, its National Welding Capability (NWC) and Their Significance to the UN Sustainable Development Goals (SDGs)", https://iiwelding.org/iiw-jointothefuture/iiw-and-sustainable-development/.

IIW-India President Deepak Acharya was also a member of the IIW Task Group preparing the IIW report. Together with Chris Smallbone, he presented a Keynote Address **Assisting India in Building-up Its National Welding Capability (NWC) and Progressing the UN Sustainable Development Goals (SDGs)** at the IIW International Congress in Bangalore, India on 22nd January 2024.

IIW-India's Welded Art Exhibitions
Welded Marvels 2023 – Project Trash to Treasure

As a part of its drive to improve India's National Welding Capability (NWC), IIW-India has introduced strategies to help alleviate the skills shortages in the welding field in line with Indian Government initiatives. One of these strategies is linked to skills competitions and welded art competitions and IIW-India has a fine record in holding such events.

In 2020, it held a welded art Exhibition as part of the 5th IIW International Congress and Weld India Exhibition 2020 in Navi Mumbai from 06 to 09 February, 2020 and a welded art national competition on Welded Marvels "Project Trash to Treasure" in February 2022, and displayed the Exhibits during its National Welding Seminar 5-7 May 2022 in Pune.

In 2021, it conducted the first 'Welded Marvels - Project Trash to Treasure' competition with 9 entries. In 2022, 24 entries were received for the competition. Again in 2023, it conducted the 'Welded Marvels 2023 - Project Trash to Treasure' with 28 entries and the awards were presented to the winners during the IIW International Congress (IC 2024) at Bengaluru.

The competition was organised in association with the Association of Welding Products Manufacturers (AWPM) and ably supported by M/s Ador Welding Ltd., Mumbai.

Four of the Exhibits are featured in this Collection under different sections.

- **Transport Tank**, Mustak Vaghela, Dashrath Parmar, Melsinh Parmar, Pratik Parmar
- **Welder-Welding Operator**, Mayank Sharma
- **Solar Tree**, Narayan Dash
- **SVSU Logo**, Ajay Dagar and Deepanshu

In addition from India, "The Horse: A Welded Exploration of Strength and Movement", a collaborative team effort of Principal Dr. Rajat Kumar Panigrahi and a team at ITI Berhampur, is featured under the Respect for Educational Institutions section.

Mustak Vaghela, Dashrath Parmar, Melsinh Parmar *and* Pratik Parmar *(India)*

The team of four artists, consisting of Mustak Vaghela, Dashrath Parmar, Melsinh Parmer and Pratik Parmar, are employed at INOXCVA which is the largest cryogenic equipment manufacturer for the industrial and health care sector in India.

During the Covid-19 pandemic, demand for oxygen was running rampant and there were massive shortages around the country to the detriment of so many of the population.

In 2022, INOXCVA built new plant to ensure that future supplies of oxygen would be optimized. This also necessitated that the other types of equipment, such as transport tanks to transfer the oxygen by road to where it is required including in remote areas, would be available.

INOXCVA has introduced innovative education and training courses to ensure that besides having the workforce to manufacture such critical equipment, it is also giving opportunities to both males and females to pursue careers in the welding industry.

The team entered the IIW-India National Competition for “Welded Marvels 2023 – Project Trash to Treasure” with the Exhibit “Transport Tank”.

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Left to right: Sanjay Patil, Pratik Parmar, Melsinh Parmar, Asha Parmar, Mustak Vaghela, Dashrath Parmar

Exhibit “Transport Tank”

A key objective of the IIW-India competition was to use scrap parts and the range of parts used in this Exhibit included stainless steel plate, perforated GI sheet, hexagon nut, stainless steel tube and pipe, bearing, square tube.

TIG filler SS wire ER-308LSi, 1.2 mm diameter was used.

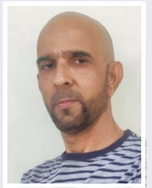
Dimensions of Exhibit

40 cm high x 40 cm wide x 100 cm long

Transport Tank
Mustak Vaghela, Dashrath Parmar, Melsinh Parmar and Pratik Parmar

Appreciation

Jitendra Solanki *and* Pijushkanti Patra *(India)*



Jitendra Solanki

Pijushkanti Patra

In a harmonious fusion of artistry and sustainability, the team of dedicated artists and welders from Infine Art Ventures LLP, India, has breathed life into six captivating sculptures and art installations for KAMOA Copper SA, the vanguard of global copper production.

Kamoa Copper, in the Democratic Republic of Congo (DRC), which employs people from its surrounding communities, is investing in skills development and has established the Kansoko Training Centre aimed at providing opportunities for its Congolese employees to gain skills in mining, concentrator, and engineering maintenance.

Through innovative and conscientious mining practices, the company aims to minimise its environmental footprint and contribute to a sustainable future. These sculptures stand as a testament to the freedom granted by KAMOA Copper SA, a freedom to thrive in a world where quality copper coexists harmoniously with ecological and social responsibility.

Crafted from scrap metal, these sculptures transcend mere artistic expression; they embody a profound commitment to the principles of reduce, reuse, and upcycle. This project was commissioned and funded by MSS SARL, DRC, a vendor company with 2200 Indian and Congolese employees at the mine, to beautify the roundabout at the entrance to the mine and showing respect to Kamoa Copper SA for the collaboration in improving the lives of so many indian and Congolese families.

Each sculpture tells a story—a story of a company dedicated not only to extracting copper from the earth but to doing so with utmost responsibility. The human faces depicted symbolize the sturdy trunk of a tree, grounding KAMOA Copper SA in a commitment to its people, stakeholders, and the environment. Meanwhile, the butterflies, gracefully adorning the heads, represent the branches of responsibility, spreading the wings of sustainable practices.

Four sculptures are featured. There was a conscious decision to choose the materials to create the sculptures. TMT bars, metal strips, washers and the scrap generated by cutting the butterflies were chosen.

Contact info

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Curator: Sachin Kaluskar, Designated Partner, Infine Art Ventures LLP, Vadodara (India)

Project commissioned and funded by: MSS SARL, DRC

Project was carried out for: Kamoa Copper SA, DRC

Exhibit “TMT Bars”

In the visage of the sculpture, a powerful narrative unfolds as the face takes shape through the utilization of TMT bars. These bars, synonymous with the backbone of infrastructure development, mirror the robust commitment of KAMOA Copper SA towards advancing the infrastructure landscape in the Democratic Republic of Congo (DRC).

TMT bars, recognized as vital elements in construction, become emblematic of the colossal infrastructure push orchestrated by KAMOA Copper SA within the DRC. As each bar intertwines to form the facial structure, it symbolizes the interconnectedness of KAMOA Copper SA’s endeavours with the foundational development of the nation.

This artistic choice goes beyond aesthetics; it encapsulates the very essence of KAMOA Copper SA’s role in shaping not just the copper industry but also contributing significantly to the broader socioeconomic development of the DRC. The sculpture becomes a tangible representation of progress, where TMT bars serve as both the literal and metaphorical building blocks, manifesting the company’s commitment to fortify the infrastructure and propel the nation towards a prosperous future. In every twist and turn of the TMT bars, the sculpture echoes the resonant heartbeat of KAMOA Copper SA, harmonizing with the pulse of infrastructure development in the Democratic Republic of Congo.

Dimensions of Exhibit

243 cm high x 243 cm wide x 182 cm deep

Exhibit “Washers”

In the embodiment of diversity and unity, the face of this sculpture comes to life through a unique medium—washers. Each washer intricately arranged signifies the coexistence of diverse ethnicities and nationalities working harmoniously towards a shared vision at KAMOA Copper SA. This artistic choice goes beyond aesthetics, serving as a profound representation of the amalgamation of cultures and backgrounds within the company.

Washers, typically utilitarian objects, transform into symbols of unity as they collectively shape the facial contours. The mosaic of washers reflects the varied origins of individuals, from Canada, South Africa, India, China, to the Democratic Republic of Congo (DRC), converging under the banner of KAMOA Copper SA. The sculpture becomes a living testament to the company’s commitment to fostering an inclusive and collaborative environment.

As each washer contributes to the overall visage, it mirrors the collaborative spirit at KAMOA Copper SA, where individuals from different nations seamlessly blend their skills and perspectives. The sculpture becomes a celebration of the strength derived from diversity, echoing the idea that the collective efforts of people from various backgrounds are essential in achieving the ambitious goals set by KAMOA Copper SA. Through washers, one not only crafts a face but also a powerful symbol of unity, where diversity is not only acknowledged but embraced as an integral part of the journey towards shared success.

Dimensions of exhibit

243 cm high x 243 cm wide x 182 cm deep

Exhibit “Metal Strips”

In the intricate tapestry of this sculpture created for KAMOA Copper SA, the face emerges as a poignant tribute to the Democratic Republic of Congo (DRC). Crafted meticulously from metal strips, it resonates with the red strip on DRC’s flag – a powerful symbol representing “the blood of the country’s martyrs.” This artistic choice not only aligns with the visual elements of the DRC’s emblem but serves as a profound statement of shared heritage.

The red striking strip, intricately woven into the sculpture, becomes more than a visual representation; it becomes a narrative thread, intertwining the commitment of KAMOA Copper SA with the historical and cultural fabric of the DRC. This sculpture transcends its artistic purpose, evolving into a testament of the company’s dedication to the legacy and resilience of the Congolese people.

In using metal strips as the face of this creation, one elevates the sculpture to embody not just aesthetic beauty but a shared narrative of sacrifice and progress. KAMOA Copper SA’s endeavour mirrors the indomitable spirit of the DRC, forging a harmonious connection between the company’s commitment and the nation’s rich history. Together, the sculpture stands as a symbol of unity, where the metal strip becomes a bridge between art and heritage, intertwining the legacy of KAMOA Copper SA with the vibrant tapestry of the Democratic Republic of Congo.

Dimensions of Exhibit

243 cm high x 548 cm wide x 234 cm deep

Exhibit “Scrap Generated from Cutting Butterflies”

In a captivating twist of creativity, the face of this sculpture emerges from a source deeply connected to its own creation—the scrap generated by cutting the butterflies. This ingenious use of material not only breathes life into the facial features, but also embodies a powerful message of sustainability. By utilizing the leftover scrap to form the face, one advocates for the principles of reduce, reuse, and upcycle, creating a harmonious narrative within the sculpture.

The metamorphosis of the butterflies, representing freedom and the transformative journey of KAMOA Copper SA’s copper production, gives rise to a face that serves as a symbolic trunk—a testament to responsible practices. The very scrap that could have been discarded finds new purpose, echoing the commitment to minimize waste and embrace eco-friendly approaches.

This artistic choice transcends mere aesthetics; it becomes a visual manifesto for environmental consciousness. The sculpture encapsulates the essence of KAMOA Copper SA’s dedication to sustainability, where even the remnants of one creative process become the foundation for another. It stands as a reminder that beauty and responsibility can coexist, urging viewers to contemplate the journey from scrap to sculpture and, in doing so, instilling a sense of collective responsibility for a greener and more sustainable future.

Dimensions of exhibit

243 cm high x 487 cm wide x 234 cm deep

The roundabout at the entrance to Kamoa Copper SA mine

The roundabout at the entrance to Kamoa Copper SA mine

Welded Art Collections, Presentations and Links

Introduction

IIW welcomes readers submitting links on welded art collections and presentations to be considered for inclusion in the list below.

Collections and Links

IIW previously held four welded art photographic exhibitions, one live in Slovakia in 2019 and due to the Covid-19 Pandemic, virtual ones in 2020, 2021 and 2023.

- The live exhibition in Slovakia https://www.flickr.com/photos/iiw2019/sets/72157709860492162
- The IIW digital document "Welded Art Virtual and Live Exhibitions and Competitions-2022 Digital Collections" contains various interesting links and was made available to the public after the 2022 IIW Annual Assembly in Tokyo. https://www.iiw2022.com/files/IIW2022_Welded_Art.pdf
- IIW 2023 Digital Collection Welded Art Photographic Exhibition-Sustainable Development Goals (SDGs) was very successful with 36 participants from 16 countries and has been published globally https://iiwelding.org/wp-content/uploads/2023/07/IIW-2023-Digital-Collection-UN-SDGs-Single-Page.pdf

Papers and Presentations on Welded Art

- **IIW NWC Resource Centre Document Number: IIW NWC-0028-2024**, 2022 WildThings NSW Virtual Welded Art Biodiversity Photographic Exhibition & Digital Collection, WildThings NSW Inc, Chris Smallbone, President, WildThings NSW.
- **IIW NWC Resource Centre Document Number: IIW NWC-0050-0024**, A Glass Act. Teresa Seaton is a stained glass artist who solders her way to beautiful creations, Alexandra Quinones, Welding Journal, Pages 12-15, November 2023. **Acknowledgement:** This article was published by the American Welding Society in the Welding Journal's Nov. '23 magazine. Visit https://www.aws.org/publications/WeldingJournal.
- The Wonderful World of Welded Art, Chris Smallbone, WELD Magazine, CWB Group, Winter 2022 **https://www.weldmagazine.com/weldmagazine/weld-winter2022/MobilePagedArticle.action?articleId=1842505#articleId1842505**
- The Wonderful World of Welded Art, Chris Smallbone, Indian Welding Journal, 2022, Vol 55, Issue 4.p46, ISSN 0046-9092

The ASR International Conference "Welding 2024" also included a section dedicated to Welded Art in which four papers were presented:

- M. Paladi (Politehnica University Timisoara) – Electric arc – Connecting science and art
- L. Popescu (Union of Artists of Romania) – Sparks and welds that thrill
- B. Nueleanu (Union of Artists of Romania) – Welding, a creative spark
- I. Both (Politehnica University Timisoara) – Symbolic exhibit for structural engineering

IIW Vision, Mission and Core Values

Vision

The leading global welding community linking industry, research and education

Mission

Advance welding and joining through a worldwide network

Core Values

IIW is committed to the advancement of welding and joining for a safer and sustainable world

IIW operates based on mutual respect for diversity, culture and languages

For the production of the IIW 2024 Digital Collection we would like to thank Chris Burns of A for Art Pty Ltd for his excellent layout and design skills.
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