

The CWB Association, Welding Foundation and the CWB Group are pleased to invite everyone to the 2023 CanWeld Conference. This years theme will highlight the thriving and diverse maritime communities; focusing on advancements in workforce development, coastal industry and emerging technologies.

CANWELD23 EXPO & CONFERENCE 2023 METAL FABRICATING - WELDING - FINISHING MONCTON New Brunswick OCTOBER 18TH - 19TH









SCHEDULE OVERVIEW

	WEDNESDAY, OCTOBER 18TH, 2023			
7:30 AM - 8:30 AM	Breakfast- Ballroom B & C			
8:30 AM - 9:15 AM	Ballroom B & C I Opening Ceremonies/Keynote Speaker - Terry Young , Impact of Culture in the Workplace			the Workplace
	Room - S	Shediac A	Room-	Shediac B
9:15 AM - 9:45 AM	Chris Pitre, Skarborn Engineering	Profitability – The responsibility of the estimator	Mathieu Roy- Collège Communautaire du Nouveau-Brunswick (CCNB)	CCNB Carrefour des métiers francophones de l'Atlantique
9:45 AM - 10:15 AM	Jim Hansen - Edison Welding Institute	Buried Arc GMAW-B	Terry Young - Kingsclear First Nation	Guide to Indigenization of your Industry
10:15 AM - 10:30 AM	Morning Break- Ballroom B & C			
10:30 AM - 12:00 PM	M - 12:00 PM Sponsor Table Top Exhibits- Mezzanine			
12:00 PM - 1:00 PM	Lunch- Ballroom B & C: Terry Young, Importance of Indigenous Language Use			se
	Room - S	Shediac A	Room-	Shediac B
1:00 PM - 1:30 PM	Ali Nasiri - Dalhousie University Department of Mechanical Engineering	Exploring Arc Welding Process for Additive Manufacturing in Stainless Steel Parts Production and Repair	Vicente Núñez Sánchez - University of Alberta CCWJ	Energy Balance in Gas Metal Arc Welding
1:30 PM - 2:00 PM	Adrian Gerlich - University of Waterloo CAMJ	Advances in Aluminum Welding Technologies	Xinrui Liu - University of Alberta CCWJ	Investigation of Defects Process Map in Friction Stir Welding
2:00: PM - 2:30 PM	Julian Radu/Joyce Lam - PCL Industrial Management Inc.	Grade 91 & Grade 92 CSEF Materials for Power Generation - A Practical Perspective	Gabe Isaac - Joint Economic Development Initiative (JEDI)	Increasing Indigenous Workers in the Skilled Trades
2:30 PM - 2:45 PM	Afternoon Break- Ballroom B & C			
2:45 PM - 3:15 PM	Jim Galloway - Conestoga College	Ar+CO2 Mixture Effects on GMAW-SP of Mild Steel	Rishiekesh Ramgopal - University of Alberta CCWJ	Deposition rate in GMAW of ER1100 and ER5183 Aluminum alloys
3:15 PM - 3:45 PM	Mohsen Keshavarzan & Foroozan Forooghi - University of New Brunswick MAMCE	Electron Backscattered Diffraction (EBSD) Mapping of Solidification Grains and Building Texture During Laser Additive Manufacturing	Michel Gagnon- Airgomig	Santé Et Sécurité Des Soudeurs
3:45 PM - 4:15 PM	Maryam Soleimani- University of Waterloo	Nano-Welding of Metal-Oxide Nanowires with Pulsed Lasers	André Boulianne- CWB Group	Welding Procedures Approval and Welding Consumables Certification
4:15 PM - 4:45 PM	Ballroom B & C I Keynote Speaker- Nisa Kennedy: JEDI, The Continuum of Cultural Safety- A Tool for Indigenous Recruitment and Retention			
7 00 014 40 00 014	Conference Gala and Awards Dinner- Ballroom B & C			
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WELCOME MESSAGES

CWB GROUP

Doug Luciani | President & CEO CWB Group

To the CWB Group community,

As we get closer to CanWeld 2023, the excitement within the CWB Group is tangible. From virtual events to standing side by side with our peers, the growth of our annual conference illustrates our industry's resilience and adaptability. I am pleased to announce that this year's theme, "Joining Communities Through Welding," will focus on Canada's manufacturing heartland region. Furthermore, we will broaden our focus to cover the automation, shipbuilding, and metal fabrication industries.

CanWeld, which takes place on October 18th and 19th at the charming Delta Beausejour Hotel in Moncton, New Brunswick, offers an engaging experience that brings together varied industry contributors. From educators to influencers, suppliers to decision-makers, the convergence of expertise is guaranteed to spark lively debate on current trends, welding breakthroughs, and the critical matter of health and safety.

This year's work with EWI demonstrates our dedication to encouraging collaboration and advancing innovation. We intend to work together to bring the most sophisticated technological advancements to the forefront, as well as provide a global platform for North American enterprises to share their rich knowledge.

CanWeld 2023 is more than a conference; it embodies the vitality and collaboration seen in industries spanning from mining and power generation to fabrication, manufacturing, and beyond. It is our objective to provide a platform for every delegate, whether they work in steel, shipbuilding, pulp, or paper, to connect, engage, and contribute.

We celebrated the spirit of automotive welding last year. While the spotlight is broader this year, our goals remain consistent: to develop connections, highlight our industry's advancements, and forge a brighter future together.

I want to express my heartfelt appreciation to all of our attendees, both returning and new. Your continuous support, especially during difficult times, is the exact basis on which events like CanWeld are built. We are excited to see every one of you, to hear your stories, celebrate your triumphs, and map the course forward together.

Thank you for joining us on this adventure, and here's to making CanWeld 2023 an event to remember!

Doug Luciani

CWB ASSOCIATION

Max Ceron | Director, CWB Association

Welcome to this year's CanWeld 2023 in Moncton, NB - A land of history and resilience going back thousands of years.

As we showcase the industry, the CWB Group is equally proud of our achieve<mark>men</mark>ts and history in Canada and humble to the efforts of many passionate volunteers worldwide who make any of this possible.

For over 100 years, the Association has ensured that the welding and joining communities had a way to network, communicate and support each other. This conference seeks to do it better than ever.

This year, in beautiful Moncton, New Brunswick, we are thrilled to be welcomed into their community to bring CanWeld 2023 to life. We look to respect the lands and history, the languages, and the skills of the community. We are showcasing future technologies, Canadian ingenuity, and our proud members worldwide.

Sessions with local communities, in French for Canada's only officially bilingual province, and with new and fresh speakers that are changing our futures.

As the slogan says in Moncton, "Resurgo," which is Latin for "I rise again," our industry will always rise to the challenge at hand.

I can't wait to see you there!

Max Ceron







DAY 1

WEDNESDAY, October 18th, 2023

SESSIONS

PLEASE NOTE: The session legend is as follows. French sessions are hightlighed in **I** Indigenous sessions are hightlighed in **I**

IMPACT OF CULTURE IN THE WORKPLACE Terry Young | KINGSCLEAR FIRST NATION

The important role that Indigenous languages have on creating a meaningful relationship with the natural world. Indigenous languages are at major risk right now all over Turtle Island (North America) and there is much work that is being done in Wabanaki territory, but Terry will focus on his work within his home community of Bilijk which is a Wolastoqiyik community just outside of Fredericton. This presentation will allow for participants to learn some basic terms in language that can be utilized in the workspaces and in everyday life.

PROFITABILITY - THE RESPONSIBILITY OF THE ESTIMATOR Chris Pitre | President, SKARBORN ENGINEERING

This presentation is directed at anyone involved in preparing and contributing to metal fabrication and erection cost estimates. Accurate cost estimating is key to profitable projects and companies. Key components of an estimate include the obvious ones: contract document review, governing standards, quality requirements, detailing, materials, and equipment. In addition, time and costs relating to welding and above all, labour productivity is often more difficult to determine. Factors that influence welding operating factor determination and factors that effect labour efficiency will be presented. The latter includes general economy, supervision, labour relations, job conditions, equipment, and weather. A selection of sources for determining these and instructions how to calculate an overall efficiency will be provided.

CCNB CARREFOUR DES MÉTIERS FRANCOPHONES DE L'ATLANTIQUE

Mathieu Roy | RSE, Instructeur, COLLÈGE COMMUNAUTAIRE DU NOUVEAU-BRUNSWICK (CCNB)

Le campus du CCNB de Bathurst est le plus important centre d'enseignement postsecondaire des métiers francophones du Canada atlantique ainsi que le centre de formation francophone des métier Sceau rouge du Canada atlantique. Nous avons tous les types de métiers, y compris l'usinage, la fabrication et montage métallique, le soudage et la technologie du génie du soudage, mais sans oublier tant d'autres métiers et professions. Le campus du CCNB de Bathurst est également le plus important centre francophone d'examen CWB au Canada atlantique.







DAY 1

WEDNESDAY, October 18th, 2023

SESSIONS

PLEASE NOTE: The session legend is as follows. French sessions are hightlighed in **I** Indigenous sessions are hightlighed in **I**

BURIED ARC GMAW-B

Jim Hansen | Project Engineer, Arc Welding & Directed-Energy Deposition Processes, EDISON WELDING INSTITUTE

Shipyards have traditionally used submerged arc welding (SAW), flux cored arc welding (FCAW) and gas metal arc welding (GMAW) to fabricate butt joints on thick steel plate. When joining butt joints of ½" or greater, a bevel, along with multiple passes of weld are routinely required. Two-sided welding with a back gouging and grinding process prior to welding the second side is also frequently implemented. Thick section, single-pass welding is possible using a hybrid laser arc welding (HLAW) process, but this technology requires expensive equipment and stringent fit-up quality that can be difficult or costly to achieve in a shipyard environment. Buried arc GMAW (GMAW-B) is a GMAW process variant that provides the ability to weld thick plate (1/2") in one pass using copper or ceramic backing.

GUIDE TO INDIGENIZATION OF YOUR INDUSTRY

Terry Young | Program Manager, KINGSCLEAR FIRST NATION

This session will focus on the importance of Indigenization in the workplace and the important role it plays in allowing for safe space for both the clients and staff alike and create opportunities for dialogue and discussions on very tough issues such as colonization, Indigenous World Views and also partnership building between indigenous communities and industry leaders.

IMPORTANCE OF INDIGENOUS LANGUAGE USE Terry Young | Program Manager, KINGSCLEAR FIRST NATION

The important role that Indigenous languages have on creating a meaningful relationship with the natural world. Indigenous languages are at major risk right now all over Turtle Island (North America) and there is much work that is being done in Wabanaki territory, but Terry will focus on his work within his home community of Bilijk which is a Wolastoqiyik community just outside of Fredericton. This presentation will allow for participants to learn some basic terms in language that can be utilized in the workspaces and in everyday life.



1:00 PM 1:30 PM CANWELD23 EXPO & CONFERENCE 2023 METAL FABRICATING - WELDING - FINISHING

WEDNESDAY, October 18th, 2023

DAY 1

SESSIONS

EXPLORING ARC WELDING PROCESS FOR ADDITIVE MANUFACTURING IN STAINLESS STEEL PARTS PRODUCTION AND REPAIR

Ali Nasiri | Assistant Professor and Canada Research Chair (CRC)-Tier 2, DALHOUSIE UNIVERSITY

Exploring Arc Welding Process for Additive Manufacturing in Stainless Steel Parts Production and Repair. This session presents a case study focused on the feasibility of utilizing a precipitation hardening martensitic stainless steel (PH 13-8 Mo) feedstock wire for both fabricating and restoring injection molding dies using the WAAM technique. The study investigates the mechanical properties, corrosion resistance, and microstructural characteristics of the as-printed and repaired parts. The findings conclusively demonstrate the immense potential of utilizing arc welding as an additive manufacturing process for stainless steel part production and repair, effectively addressing the specific needs of the intended applications. This research was conducted at Dalhousie's Large-Scale Additive Manufacturing Lab, which houses an MX3D-M1, the first WAAM system of its kind in Canada. The lab serves as a hub for turnkey additive manufacturing services in Atlantic Canada.

ENERGY BALANCE IN GAS METAL ARC WELDING

Vicente Núñez Sánchez | Mechanical Engineer, UNIVERSITY OF ALBERTA CCWJ

This work allows to comprehend a part of the theory behind the droplet temperature at the Gas Metal Arc Welding (GMAW) process. Experiments were performed for different aluminum alloys in 0.9, 1.2 and 1.6 mm each. The droplets generated in the process were studied by measuring its heat content and by that, the droplet temperature. An energy balance was performed to reduce the error on the different measurements. The droplet temperatures allows to predict and study different behaviors in the process, such as the difference in deposition rates in alloys and the composition of the vapors present. Compositions are obtained for the vapors through a theoretical model and compared with different studies performed. Relations between current, droplet temperatures and evaporation rates and compositions are obtained and explained.







WEDNESDAY, October 18th, 2023

DAY 1

SESSIONS

ADVANCES IN ALUMINUM WELDING TECHNOLOGIES

Adrian Gerlich | Professor in the Department of Mechanical and Mechatronics Engineering, UNIVERSITY OF WATERLOO CAMJ

There is an increased rate of aluminum alloys expected in coming years considering the expansion of the transportation markets, along with various other industries relying on aluminum for light-weighting of structures. Light-weighting of electric vehicles, high speed trains, and marine vessels will continue to drive the need for aluminum joining in the coming years. New applications will also demand higher strength base materials which demand new welding filler materials and joining technologies. This presentation will outline some of the advances in these areas, including new challenges that these advances may introduce to the market. The latest filler materials will be reviewed which may help increase weldability, along with arc and laser welding technologies that offer higher productivity in high volume production applications, additive manufacturing, and reducing defect rates in conventional arc welding. Recommendations for updates to relevant welding standards are also proposed which can help guide engineers and practitioners to better exploit aluminum in production.

INVESTIGATION OF DEFECTS PROCESS MAP IN FRICTION STIR WELDING

Xinrui Liu | Ph.D. Candidate at Canadian Center for Welding and Joining, UNIVERSITY OF ALBERTA CCWJ

Friction Stir Welding (FSW) has become a prominent solid-state welding process utilized in various industries. However, the presence of welding defects poses a significant challenge that necessitates attention. This presentation has emphasized the importance of comprehending the causes and formation mechanisms of FSW defects to enhance the welding process and prevent defect occurrence.

GRADE 91 & GRADE 92 CSEF MATERIALS FOR POWER GENERATION – A PRACTICAL PERSPECTIVE

Julian Radu | Welding Engineer, PCL INDUSTRIAL MANAGEMENT INC.

The presentation focuses on a practical approach to ensure safe and reliable pressure systems by taking a hard look at the existing requirements, or lack there-of, in the ASME Code and engineering design, and the best practices to be implemented, maintained, and controlled during material procurement, fabrication, and installation.









WEDNESDAY, October 18th, 2023

DAY 1

SESSIONS

PLEASE NOTE: The session legend is as follows. French sessions are hightlighed in **I** Indigenous sessions are hightlighed in **I**

INCREASING INDIGENOUS WORKERS IN THE SKILLED TRADES

Gabe Isaac | Indigenous Projects & Apprenticeship Coordinator - Joint Economic Development Initiative (JEDI)

How do we get more Indigenous people in the trades? Join us to find out how JEDI and CWB Foundation have been working together to promote trades to Indigenous youth. Plus, learn about JEDI's skilled trades initiatives throughout New Brunswick.

AR+CO2 MIXTURE EFFECTS ON GMAW-SP OF MILD STEEL

Jim Golloway | Professor and the Coordinator of Welding Programs, CONESTOGA COLLEGE

When using the spray-transfer mode with GMAW, the most common gas blend for steel applications are mixtures of argon and carbon-dioxide (CO2). In certain applications, CO2 levels as low as 5% (C5) are preferred, and in other cases blends with up to 15% (C15) or higher are specified. Although this process and these effects have been studied for decades, there are still a variety of opinions and misunderstandings on the selection of the 'best' gas for any application. Too often the effects of the gas mix on welding outcomes are not given proper consideration. In this presentation the effects of systematically altering this blend will be explored. The study will examine the effects through various experiments on arc performance, bead-shape and surface appearance, weld penetration profile, deposit microstructure, and microhardness. This selection can also have broader implications on welding cost and quality in some surprising ways.

DEPOSITION RATE IN GMAW OF ER1100 AND ER5183 ALUMINUM ALLOYS

Rishiekesh Ramgopal IBTech in Metallurgical and Materials Engineering, UNIVERSITY OF ALBERTA CCWJ

The reason behind the higher deposition rate in Mg-containing aluminum alloys in gas metal arc welding (GMAW) is explored. Experiments performed on ER1100 (Mg-free alloy) and ER5183 (high Mg alloys) measured current, wire feed speed, and droplet temperature. A non-linear analysis of Joule heating at the electrode extension and an analysis of the power needed to heat the consumable to the droplet temperature were performed.













WEDNESDAY, October 18th, 2023

DAY 1 S

SESSIONS

PLEASE NOTE: The session legend is as follows. French sessions are hightlighed in **I** Indigenous sessions are hightlighed in **I**

ELECTRON BACKSCATTERED DIFFRACTION (EBSD) MAPPING OF SOLIDIFICATION GRAINS AND BUILDING TEXTURE DURING LASER ADDITIVE MANUFACTURING

Foroozan Forooghi | Ph.D. Student & Mohsen Keshavarzan | Research Assistant UNIVERSITY OF NEW BRUNSWICK MAMCE

Closed-loop controlling of temperature and cooling rates during layer-upon-layer metal deposition of laser additive manufacturing (LAM) was implemented to design a solidification strategy and engineer the subsequent phase transformations and grain structure of stainless steels. Directed energy deposition (DED)of two grades of stainless steels, austenitic (316L) and martensitic (410L), without and with solid-state eutectoid austenite to ferrite phase transformation, were investigated to this end.

SANTÉ ET SÉCURITÉ DES SOUDEURS

Michel Gagnon | Président, Henlex Inc.

Compréhension de la dynamique de la fumée de soudage. Qu'est ce qui influence la colonne de convection? Comment contrôler cette colonne de convection. Les trois meilleurs façons de s'assurer que la zone respiratoire des soudeurs est bien protégée.

NANO-WELDING OF METAL-OXIDE NANOWIRES WITH PULSED LASERS Maryam Soleimani | Student, UNIVERSITY OF WATERLOO

Nanomaterials play a pivotal role in diverse fields, including electronics, photonics, energy, catalysts, and environmental applications. To fully exploit their potential, efficient assembly and integration techniques are essential, enabling scalability.

WELDING PROCEDURES APPROVAL AND WELDING CONSUM-ABLES CERTIFICATION

André Boulianne | Manager- Procedures & Electrodes Certification, CWB Group

Overview of the CWB welding procedures review process. How welding procedures are reviewed and qualified against CSA and allied welding standards? Why welding procedures must be accepted by CWB? Why do manufacturers and distributors certify their welding consumables? Where are the CWB-certified welding consumables currently manufactured? What is the certification process? How long does it take? How much can it cost?

THE CONTINUUM OF CULTURAL SAFETY: A TOOL FOR INDIGENOUS RECRUITMENT AND RETENTION

Nisa Kennedy | Provincial Indigenous Employment Coordinator, JOINT ECONOMIC DEVELOPMENT INITIATIVE (JEDI)

A discussion on the elements that make up what it means to provide Cultural Safety in the workplace such as Cultural Sensitivity, Cultural Awareness, and Cultural Competency and how this contributes to recruitment and retention of Indigenous Talent. Touching on the TRC Calls to Action and how Reconciliation impacts us all.









DAY 2

THURSDAY, October 19th, 2023

SESSIONS

PANEL DISCUSSION: THE STATE OF THE TRADES/SKILLS GAP IN INDUSTRY - CANADA & USA

Jason Becker | Welder/Fabricator, UNDERGROUND METAL WORKS

Codes and standards include weld anomaly acceptance criteria that are often based on workmanship Industry across North America is struggling to find skilled trade workers and retain their established workforce. This presentation will focus on the similarities and differences between Canada and the United States in both training and workforce development within our industries.

WELD ANOMALIES AND THEIR DISPOSITION

Aaron Dinovitzer | Structural and Welding Engineer, BMT CANADA LTD

Codes and standards include weld anomaly acceptance criteria that are often based on workmanship criteria. That is, they define the largest geometry or minimum specified properties of an anomaly (e.g., maximum undercut, misalignment, porosity, or material property). The design or acceptance of a weldment can be defined based on geometry (i.e., structural and anomaly size), applied loading and material properties (i.e., minimum specified or actual measured). This presentation will review a range of weld anomalies including geometric imperfections, material property inconsistencies and environment concerns that can be assessed for weldment acceptance for fitness for service.

EFFECT OF ANISOTROPY PARAMETERS AND VARYING FOR MICRO-PLASMA WIRE ARC ADDITIVE MANUFACTURING

Rami Hakim | MASc in Mechanical Engineering and Mechatronics Engineering, UNIVERSITY OF WATERLOO CAMJ

Wire arc additive manufacturing (WAAM) is a metal 3D printing process that employs the use of arc welding processes to generate parts. The advantages of this method such as high deposition rates, low cost, and suitability for the creation of large complex components highlight its potential. However, due to the intense heat input associated with arc welding processes as well as the continuous heating and cooling cycles of WAAM during fabrication, the final part created will result in large temperature gradients between the top and bottom layers, resulting in geometrical deviations from the desired dimensions as well as anisotropy within the final component. Anisotropy is an important phenomenon which can arise in WAAM, thus greatly affecting the mechanical properties and microstructures.









DAY 2

THURSDAY, October 19th, 2023

SESSIONS

HOW COBOTS AND ARTIFICIAL INTELLIGENCE ARE TRANSFORMING WELDING AUTOMATION Matthew Yarmuch | Founder/President, MATTCO ENGINEERING

SOLUTIONS/ NOVARC TECHNOLOGIES

Across all industrial sectors, welding is a critical enabling technology that faces chronic skilled labour shortages. Modern automation technologies are now filling the gaps of welder availability in a safe, reliable fashion. This presentation will explore the evolution of automation technologies, the integration of modern collaborative robots (cobots), and the innovative use of artificial intelligence (AI) and Machine Learning for industrial welding applications.

MODELLING HEAT INPUT IN ELECTRIC RESISTANCE WELDING

Daniele Calista | PhD student at the Canadian Centre for Welding and Joining, UNIVERSITY OF WATERLOO CAMJ

The work to be presented is the first step in establishing a multi-physical understanding of how entrapped oxides, known as penetrators, form and are retained in ERW seams. Since ERW is a complex process involving the interactions of heat transfer, oxidation, electromagnetic effects, and molten fluid flow, understanding each of these mechanisms is crucial to further understand which ones contribute to penetrator defects. The first stage in this overarching thesis work is the analytical modelling of heat input in ERW. To date, industry and academia have largely focused on numerical simulations and industrial trials of the process; however, we aim to develop a useful set of equations for industry that model the ERW process with a minimum required accuracy over a large range of process parameters.

RECENT DEVELOPMENTS IN WELDING RESEARCH AT THE CCWJ

Patricio Mendez | Professor & Weldco/Industry Chair in Welding and Joining, University of Alberta CCWJ

On the process area, the CCWJ has made much progress on the understanding of deposition rate in wire-based processes, with an emphasis on the generation and composition of fumes. This new knowledge is based on experiments measuring droplet temperature in free-flight transfer and detailed analysis of the physics involved. The findings also enabled the understanding of higher deposition rate in Mg-containing aluminum alloys. Significant progress was made also towards understanding the value and variations of voltage in GMAW. A model has been developed to assist in determining bead profile in laser cladding. Another area of interest in the solid-state Friction Stir Welding process, in which we are making progress towards a predictive model and defect formation.









DAY 2

THURSDAY, October 19th, 2023



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HOW TO GROW A BUSINESS FROM AN INDIGENOUS PERSPECTIVE

Ursula M. Bear | Artist- BEAR NECESSITIES

Ursula will be sharing her own personal experiences in starting up a small business, and the struggles that she faced and had to overcome. She'll also discuss when she thought about quitting, the help that was available to her as an indigenous individual, her training and schooling and how she went about growing her business. She'll teach people how to make (and the meaning of) medicine pouches.

MEDICINE POUCH HISTORY AND ACTIVITY

Ursula M. Bear | Artist- BEAR NECESSITIES

This session will show attendees how to make (and the meaning of) medicine pouches.

DEVELOPMENT OF IN-SITU WELD COOLING RATE MEASUREMENT METHODS

Jim Hansen | Project Engineer, Arc Welding & Directed-Energy Deposition Processes, EDISON WELDING INSTITUTE

Some structural carbon steel welding applications have performance requirements that place limits on weld and heat affected zone hardness or require minimum toughness levels to reduce risk of environmental cracking, corrosion, and risk of unstable fracture for fatigue-sensitive structures. A common approach to satisfy these performance metrics is to specify a weld cooling rate during weld fabrication that will achieve target hardness levels and promote desirable microstructures to enhance toughness and ductility.

L'IMPORTANCE DE LA CERTIFICATION CSA 178.2 EN END Frédérick Imhoff | Président, Precision NDT

Les essais non-destructifs sont au cœur du processus qualité des assemblages soudés en offrant un produit fini respectant les normes et les devis en vigueur. La qualification des techniciens en essais non-destructifs est capitale. L'ajout de la certification comme inspecteur en soudage CSA 178.2 permet aux techniciens de mieux comprendre les résultats d'inspection relevés, de souvent suivre toutes les étapes de fabrication et ainsi minimiser le risque de non-conformités majeures lors de l'inspection finale. Cette présentation démontrera l'importance du rôle de l'inspecteur en soudage en prévision des essais non-destructifs finaux.









THURSDAY, October 19th, 2023

DAY 2

SESSIONS

A SIMPLIFIED MODEL FOR DETERMINING THE RESIDUAL STRESSES IN WELDED OVERLAYS

Carter Trautmann | Materials Engineering Student, UNIVERSITY OF ALBERTA CCWJ

This presentation provides a simple equation for determining the residual stress in the solidified weld metal. One of the more significant challenges in welded overlays is how the differential heating and cooling of the overlay and base metal during application can result in significant residual stresses. These stresses can reduce the lifetime of overlays by causing crack initiation and propagation through the overlay.

MECHANICAL PERFORMANCE EVALUATION AND FAILURE CHARACTERIZATION OF GROUPS OF SPOT WELDS USING CAIMAN MODE I COMPONENT TESTS

Mohammad Shojaee | Direct Ph.D. candidate, UNIVERSITY OF WATERLOO

The quality of numerous resistance spot welded connections that assemble automotive structural components influences vehicle crashworthiness and occupant safety. In this study, the sequential failure of resistance spot welds in multi-weld components was examined using the Caimen geometry comprised of two partially joined hat channel rails.

AN INVESTIGATION OF DISSIMILAR WELDING BETWEEN HIGH ENTROPY ALLOY AND ADDITIVELY MANUFACTURED 316L: MICROSTRUCTURAL CHARACTERIZATION AND HARDNESS EVALUATION

Parisa Moazzen | PhD student & Yahya Aghayar | PhD student UNIVERSITY OF NEW BRUNSWICK

This study presents a comparative analysis of the dissimilar welding process between a high entropy alloy (HEA) and additively manufactured 316L stainless steel. The focus of the investigation lies on the microstructural characterization and evaluation of mechanical properties. Microstructural analysis revealed distinct features across the weld interface, fusion zone, and heat-affected zone (HAZ), highlighting the refined equiaxed grain structure in the HEA side and columnar grains in the additively manufactured 316L side.











THURSDAY, October 19th, 2023

DAY 2

SESSIONS

ESTIMATION OF BEAD SIZE AND CATCHMENT IN LASER CLADDING

Nitheesh Kumar Ramasamy | Materials Engineering Student, UNIVERSITY OF ALBERTA CCWJ

This presentation discusses mathematical expressions developed through analytical modeling based on Rosenthal's solutions for estimating the width, height, and catchment efficiency of clad beads from information on known process parameters. Effective thermo-physical properties of the substrate are determined to consider their variation with temperature which is often overlooked.

GENERAL THERMOMECHANICAL MODEL OF FSW BASED ON A CHARACTERISTIC TEMPERATURE FOR DEFORMATION AND HEAT TRANSFER

Sofia Salazar | Welding Engineering Student, UNIVERSITY OF WATERLOO CCWJ

This research addresses the limitations of friction stir welding (FSW) in predicting the ideal temperature required to optimize its results, as well as how welding parameters and material properties influence this prediction. The study introduces a comprehensive model that combines heat transfer and plastic deformation in FSW, incorporating factors such as the temperature near the welding pin and principles from fluid mechanics.

ARC LENGTH BEHAVIOUR AND WELDING VOLTAGE ANALYSIS FOR ALUMINUM GMAW

Eduardo Rocha | Welding Engineering Student, UNIVERSITY OF ALBERTA CCWJ

The heat input is a key component of a welding procedure, which is dependent on several fall voltages that compose the total voltage fall. As current practice is primarily reliant on trial and error to determine voltage settings for a desired heat input, having a means to predict voltage fall is of interest to welding practitioners.







INDUSTRY AWARDS



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GOLD MEDAL AWARD

Award recipient: **Dr. Mitchell Grams**, Apollo-Clad, Edmonton AB



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FELLOW AWARD

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ACADEMIC AWARDS



LEADERSHIP IN WELDING AWARD Award recipient: Vincente Andres Nunez Sanchez, Canadian Centre for Welding and Joining (CCWJ) - University of Alberta



INCLUSIVITY IN WELDING AWARD Award recipient: Alishia Cardanini, Canadian Centre for Welding and

Joining (CCWJ) - University of Alberta



REMARKABLE WELDING PROJECT AWARD Award recipient: Xinrui Liu, Canadian Centre for Welding and Joining (CCWJ) - University of Alberta

2023 CWB GROUP



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OUTSTANDING TEAM MEMBER AWARD Award recipient: Daniele Calista, Canadian Centre for Welding and Joining (CCWJ) - University of Alberta



ADVANCEMENT AWARD Award recipient:

Gabriel Capettini, University of Alberta



CWB WELDING FOUNDATION GRADUATE AWARD FOR WOMEN Award recipient: Maryam Soleimani, University of Waterloo











cisc 📙 icca CANADIAN INSTITUTE OF STEEL CONSTRUCTION







For some Indigenous peoples, Turtle Island refer as two the continent of North America. The name comes from various Indigenous oral histories that tell stories of a turtle that holds the world on its back. For some Indigenous people, the turtle is therefore considered an icon of life, and the story of Turtle Island consequently speaks to various spiritual and cultural beliefs.

Pour certains peuples autochtones, l'Île de la Tortue fait référence au continent nord-américain. Le nom vient de diverses histoires orales autochtones qui racontent l'histoire d'une tortue qui tient le monde sur son dos. Pour certains peuples autochtones, la tortue est donc considérée comme une icône de la vie, et l'histoire de l'Île de la Tortue témoigne par conséquent de diverses croyances spirituelles et culturelles.





https://www.thecanadianencyclopedia.ca/en/article/turtle-island



The circle of the medicine wheel represents the cycle of life. As life and the earth rotate, each human being must move through different parts of the circle in turn to achieve balance. Divided into four, it symbolizes the four sets which make up life and which are necessary for balance: the elements, the cardinal points, the seasons, the main human races.

Le cercle de la roue de médecine représente le cycle de la vie. Comme la vie et la terre tournent, chaque être humain doit circuler tour à tour dans les différentes parties du cercle pour atteindre l'équilibre. Divisé en quatre, il symbolise les quatre ensembles qui composent la vie et qui sont nécessaires à l'équilibre : les éléments, les points cardinaux, les saisons, les principales races humaines

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First Nations Communities

The Wabanaki double-curve is a design element often found beaded onto textiles and etched onto other cultural objects like birchbark containers. The most common example of the double-curve is two opposing incurves with plant-life embellishment at the center. Some curves contain direct meanings that pertain to governance and spirituality - others speak to relationships, such as marriages, families, and communities (as well as our relationality to plants, water, and land).

The St. Lawrence Seaway, A Vital Waterway

The birchbark canoe is our most important technological advancement, as it fosters a continued relationship with the Wolastoq River, our namesake and life source since time immemorial. Traditionally hand-made with materials found throughout the forest, the birch bark canoe was built to withstand shallow and deep water travel. Akwiten (Ah-gwee-den) means "it floats lightly" in Wolastoqey latuwewakon (our language).

Ash basketry was (and still is) an economic necessity for Wolastoqiyik, Passamaquoddy and Mi'kmaq in New Brunswick. For many years, ash baskets were a means of survival in Throughout the 18th and 19th centuries, making and selling basketry to local farmers ensured food and supplies for makers and their families. Over time, the demand for baskets changed from practical to decorative through the different expectations of trade and the tourism industry.

Agriculture Programs

EMMA HASSENCAHL-PERLEY is Wolastoqiyik from Neqotkuk, also known as Tobique First Nation, in New Brunswick. She holds a Bachelor of Fine Art from Mount Allison University ('17) and a Masters of Art in Art History ('22) from Concordia University. Emma is a Visual Artist, Curator, Educator, Co-Author of Wabanaki Modern, and Emerging Art Historian. Her visual art mediums include beadwork, murals, and digital illustration.

emma_hassencahlperley

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