65th Annual Assembly of the International Institute of Welding

DENVER
8-13 July 2012

July 8-13, 2012 Denver, Colorado, USA “America’s Mile-High City”

Accompanying International Conference on Welding for Repair and Life Extension of Plants and Infrastructure

www.iiw2012.com

Hosted by the American Council of IIW
Experience the unique Rocky Mountain West, including:

- Nearby Rocky Mountain and Black Canyon National Parks
- Fine dining, breweries, shopping and spas
- Downtown Aquarium and Denver Zoo
- Museums of Old West history, gold mines, and dinosaur parks
- U.S. Mint and Air Force Academy
- American Indian, Mexican, and Wild West cultural experiences
- Major League Baseball and golf
Enjoy the many entertainment, historic and cultural facilities in Denver, including the following:

- Colorado History Museum, with its displays of Native Americans, cowboys, pioneers and miners.
- Denver Art Museum, with its renowned collection of Native American and western art.
- Downtown Aquarium, featuring more than 15,000 fish and mammals, including live Sumatran tigers. Dine in the Aquarium Restaurant surrounded by free-swimming sharks.
- Enjoy major league baseball with the Colorado Rockies at 50,000-seat Coors Field in Downtown Denver.
- Denver Museum of Nature and Science, the fourth largest of its kind in the U.S, features dinosaur exhibits, gems and treasures from around the world.
- Denver Zoo is home to more than 3,500 animals, including Amur leopards, king cobras, black rhinos, gorillas and much more.
- Denver Botanic Gardens, considered one of the best in the nation, with themed gardens and 15,000 plant species.
- Red Rocks Park and Amphitheatre, combining stunning natural beauty with outdoor musical concerts.

Visit Colorado’s four National Parks:

**Rocky Mountain National Park**
View herds of stately elk (wapiti), mountain wildflowers, and scenic alpine vistas.

**Mesa Verde National Park**
Visit the ancient cliff dwellings of Puebloans, who occupied southwestern Colorado more than 1,400 years ago.

**Great Sand Dunes National Park**
Explore the tallest dunes in North America, amid 13,000-ft mountains, alpine lakes, tundra and ancient forests.

**Black Canyon of the Gunnison National Park**
No other canyon in the U.S. combines the narrow opening, sheer walls and startling depths of Black Canyon.
The IIW American Council is extremely pleased to welcome IIW Delegates and guests to what is certain to be one of the most memorable and enjoyable Annual Assemblies ever. Join us in the beautiful city of Denver in mid-summer, Colorado’s most welcoming time of year. The 2012 IIW Annual Assembly will combine excellent meeting facilities and accommodations with unparalleled local attractions, technical and social tours, and a world-class technical conference. We consider it a great honor to host this international event at the gateway to the Rocky Mountain West.

Damian Kotecki and Thomas Mustaleski
Planning Committee Co-Chairs

Denver, Colorado – America’s Mile-High City
People have always been drawn to Denver as a place of great natural beauty and personal opportunity. Among the first were the Native American tribes of the Sioux, Cheyenne, Apache, Ute, Arapaho and Crow, and these were followed by Spanish explorers, mountain men who trapped and traded furs, and those who felt the lure of gold discovered here in the mid-and late-1800s. Denver is still growing, and presently has a population of nearly 2.8 million, making it the 21st largest urban center in the United States. Today, Denver offers attractions for every taste, including a vital arts community, shopping and entertainment, fine dining, museums, parks, sports facilities, and a friendly atmosphere that welcomes all.

The Venue
The 2012 IIW Annual Assembly will be held at the Hyatt Regency Denver and the adjacent Colorado Convention Center. This AAA Four-Diamond hotel is in the center of it all, with excellent meeting facilities and a wide variety of arts, entertainment, and sports facilities just a stroll away.

Language
English is the official language of the IIW Annual Assembly and the IIW International Conference.

Travel
Located in north-central Colorado, Denver has a major international airport that can be easily reached from both east and west coasts of the United States. Direct flights reach Denver in 2 to 3 hours from Los Angeles, Chicago, New York, Washington, D. C., and other major U.S. cities.

American Evening
The American Evening on Monday, July 9, will feature a live rodeo at the Jefferson County Fairgrounds. The event will showcase some of the best rodeo cowboys and cowgirls in Colorado competing in Bronc Riding, Team Roping, Steer Wrestling, Barrel Racing and Bull Riding. Couple this with authentic western cuisine, live music and dancing, and you have an American Evening that will be one of the highlights of the Annual Assembly.
Invited Presentations

Houdremont Lecture – Welding and Materials Considerations for Repair and Life Extension

Session 1 – Design and Risk Assessment for Repair
• Underwater Hot Tapping
• Fracture Mechanics for Fitness-for-Service Applied to Repairs
• Qualifying Repair Procedures
• Risk Assessment and Repair Decision-Making
• Welding Repair Procedure Compendium

Session 2 – Automated Procedures for Extreme Environments
• Pulsed-Laser Deposition Repair of Directionally Solidified Superalloy Blades
• Novel Repair Methods for Gas Turbine Engine Components
• Remote and Robotic Repairs in Radiation Environments

Session 3 – Repair of Nuclear Plant and Components
• In-Situ Repair Welding of Steam Turbine Shrouds and Blades
• Metallurgical and Computational Design of Welding Consumables for High Irradiation Environments
• Nuclear Plant Repair
• Failure of Dissimilar Welds and High-Temperature: Causes and Cures

Session 4 – Repair and Life Extension of Power Generation Plant and Equipment
• Solutions for Repair of Creep Strength Enhanced Ferritic Steels
• Opportunities for Life Extension of Power Plants through Repair
• Residual Stress Improvement Techniques for Weld Repairs
• Outgassing, De-embrittlem ent, Preheat and Postheat Issues for Repair

Session 5 – Repairs for Cyclical Service
• Repair of Bridge Structures
• Testing to Qualify Repairs for Cyclic Service
• Repairs for Offshore Structures
• Fracture Mechanics Assessment of a Failure Case at a Steel Tower of a Wind Energy Converter
• Shipyard Repairs with High-Energy Processes

Session 6 – Repair for Energy Applications
• Repairs for Corrosion and Hydrogen Service
• The Evolution of Predicting Burn-through for In-service Welding
• Control of Hydrogen Cracking for In-service Repair of Pipelines
• FEA Tools for Developing Repair Procedures
• Undersea Pipeline Repairs
• The Future Role of NDT as Part of Predictive Maintenance Strategies

Session 7 – Codes and Standards
• Qualifying Repairs for High-temperature Service
• Selection of Consumables for High-temperature Repairs
• FFS for High-temperature Repair Procedures – R5 Document
• How International Pressure Vessel and Piping Codes View Repairs
• Qualifying Repairs for Ultra-high-temperature Service

Session 8 – Repair of Machinery and Equipment
• Repair Challenges for Construction Equipment
• Boiler Repairs
• Innovative Repair Methods for Turbine Blades

Session 9 – Repair of Special Materials
• Hardfacing/Overlay for Repair
• Dissimilar Metal Welding Solutions to Repairs
• Repair of Aluminium Structures
• Weld Overlay Repair of Stainless Steel Piping for Nuclear Applications

Session 10 – Expert Panel Q&A on Repairs