



First **IIW** International **C**ongress in **C**entral and **E**ast **E**uropean **R**egion

PROGRESSIVE STRUCTURAL MATERIALS AND THEIR JOINING TECHNOLOGIES

organized under the patronage of Dušan Čaplovič,
Deputy Prime Minister of the Government of the Slovak Republic

on the occasion of **60th** Anniversary of the Výskumný ústav zvaračský – Priemyselný inštitút SR
(Welding Research Institute – Industrial Institute of SR), Bratislava

REGISTRATION FORM PRELIMINARY PROGRAM

14 – 16 October 2009
High Tatras, Stará Lesná, Slovakia

Topics:

1. Modern structural materials and their joining technologies
2. Welding and joining processes
3. Quality requirements for modern production
4. Design, safety and reliability of welded structures
5. Mechanisation and automatization of welding



Welcome to the First IIW International Congress in Central and East European Region

It is with great pleasure that we invite you to High Tatras in Slovakia to participate in First IIW International Congress in Central and East European Region hosted by the Welding Research Institute – Industrial Institute SR from 14 – 16 October 2009.

Three days will feature IIW International Congress and National conference. The events are supported by the International Institute of Welding (IIW) as well as European Federation for Welding Joining and Cutting (EWF).

The Central and East European Region is becoming an important region in political, economic, industrial and scientific terms. Countries such as Austria, Czech Republic, Hungary, Poland, Slovakia, Slovenia and Ukraine are contributing to the expansion of knowledge in the welding and inspection technologies and innovations.

Integrity and reliability of plant and equipment, as well as people, are the key to this development, and the challenges of training, qualification and certification to the highest international standards, will form a major theme throughout three days.

Our theme, “Integration” with Welding and Inspection Technologies, symbolises how the Congress will:

- focus on the common needs of welding-related industries and people of the Region;
- facilitate the sharing and discussion of issues and challenges;
- form cooperative regional plans for development within a sustainable environment;
- explore future regional cooperation in welding and inspection education, training, qualification and certification; and,
- link countries and personnel in the region to the IIW resources, outputs, programmes and benefits.

Building on the outcomes of the Congress sessions and discussions held during these days of the Congress, the Regional Forum will bring together invited representatives of countries in the region to identify common needs and to formulate plans for future cooperative work. Resolutions, to be approved by the whole Congress, will identify these outcomes to carry the initiatives forward in countries throughout the region.

Who should attend? The Congress will be relevant to engineering and technological personnel in pressure equipment, structures, welding and inspection, and educators in a wide range of industries including mining, oil and gas offshore, pipelines, power generation, petrochemical, fabrication and construction, steel and aluminium, pulp and paper, mineral processing, rail and road transport, defence and others.

Delegates are expected to attend from many of the countries in the Central and East European Region, member countries of IIW throughout the world.



Peter Klamo

Director General

Welding Research Institute – Industrial Institute of SR

Hosting Institute:

Welding Research Institute – Industrial Institute of SR, Bratislava, SLOVAKIA

Venue:

Congress Center ACADEMIA, Stará Lesná
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International Scientific committee

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André CHARBONIER, CEO IIW, France

Chris SMALLBONE, past president IIW,

Chairman of Working Group IIW Regional Activities

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Prof. **Luisa QUINTINO**, Chief executive EWF, Portugal

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Gépipari Tudományos Egyesületet, Hungary

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Tibor ZAJÍC,

Výskumný ústav zvaračský – Priemyselný inštitút SR, Slovakia

PRELIMINARY PROGRAM

14. 10. 2009 Wednesday

9,00 – 12,00 Plenary session

L. Mráz	<i>Slovakia</i>	60 years of Welding Research Institute – Industrial Institute SR activities
U. Dilthey	<i>Germany</i>	Key technologies welding and joining
T. Jessop	<i>UK</i>	European Welding Federation – Recent achievements and future challenges
K. Middeldorf	<i>Germany</i>	Economic importance of welding
V. Pilous	<i>Czech Republic</i>	History of welding in Czech and Slovak Republics

12,00 – 14,00 Lunch break

14,00 – 15,30 Technical session – Quality, design and failures of welded structures

P. Bernasovský (Jaeger lecture)	<i>Slovakia</i>	Failure analysis of welded components – importance for technical practice
K. Kálna	<i>Slovakia</i>	New approach in European standards for design and production of steel welded structures
M. Kubica	<i>Poland</i>	Quality requirements of Institute Spawalnictwa based on the structural EA 13445 for manufactures of unfired pressure vessels certified in accordance with the standard EN ISO 3834
V. Kudělka	<i>Czech Republic</i>	Qualification of producer for design of products including welding

15,30 – 16,00 Coffee break

16,00 – 17,30 Technical session – Quality and design of welded structures

J. Koukal	<i>Czech Republic</i>	Expected development of nuclear energy and the status of filler material aproval for welding of nuclear equipment in Czech Republic
J. Barborka – M. Holeša	<i>Slovakia</i>	Repair of some nuclear equipment using TIG surfacing
V. Voštiar – L. Mráz – P. Élesztős	<i>Slovakia</i>	Optimisation of welding process with genetic algorithm
V. Kudělka	<i>Czech Republic</i>	Welding of pressure vessels and equipment, material requirements and technical documents

19,00 – 22,00 Evening program – Slovak evening

15. 10. 2009 Thursday

08,30 – 10,00 Technical session – Quality and design of welded structures

Enzinger N. – Sommitsch C.	<i>Austria</i>	Numerical modeling of innovative joining technologies
M. Slováček – J. Kovařík – V. Diviš – J. Tejč – V. Ochodek	<i>Czech Republic</i>	Using of welding virtual numerical simulation as the technical support for industrial applications
L. Écsi – P. Élesztős	<i>Slovakia</i>	Numerical simulation of phase changes of a cyclically loaded cooled bar using fully coupled thermal-structural finite element analysis
M. Sondel – D. Schwarz	<i>Czech Republic</i>	Welding procedure qualification of the lamell web for modern bridge constructions
J. B. Stav – E. Engh	<i>Norway</i>	New simulation tools in education and training of welding personnel

10,00 – 10,30 Coffee break

10,30 – 12,00 Technical session – Behaviour and properties of materials subjected to welding and/or joining

M. Komócsin	<i>Hungary</i>	Nickel and its alloys and behaviour during welding
T. Šmida, – J. Božanský, – V. Magula	<i>Slovakia</i>	Unconventional peek at weldability of steels
O. Kamynina – A. E. Sytshev – S. G. Vadchenko – L. M. Umarov – I. Gotman – E. Y. Gutmanas	<i>Russia</i>	Highly caloric mixtures for joining composite materials
E. Keehan – J. Zachrisson – L. Karlsson	<i>Sweden</i>	Mechanical properties and microstructure of a high strength steel weld metal – Influence of heat input and interpass temperature

12,00 – 14,00 Lunch break

14,00 – 15,30 Technical session – Behaviour and properties of materials subjected to welding and/or joining

K. Ikeuchi – M. Takahashi – A. Muraoka	<i>Japan</i>	Effects of preheat temperature on microstructure of MAG weld metal for 950 MPa class steel
K. Wichart – M. Stauer	<i>Austria</i>	Influence of post-weld treatments on the fatigue behaviour of welded joints in high-strength steel
L. Mráz – L. Karlsson – M. Vrána – P. Mikula – I. Hamák	<i>Slovakia, Sweden, Czech Republic</i>	The influence of chemical composition on residual stress distribution and fatigue properties of high strength steel welds
F. A. Reyes-Valdés – I. Calliari – V. H. López-Cortés – S. Baldo – G.Y. Perez-Medina – K. Brunelli – V. Garcia-Custodio	<i>Mexico</i>	Welding process parameters impact on the corrosion susceptibility of advanced high strength martensitic steels (AHSS) used in the automotive industry

15,30 – 16,00 Coffee break

16,00 – 17,30 Technical session – Welding processes

J. Bruckner	<i>Austria</i>	The CMT (Cold Metal Transfer) process – news and advantages in industry
S. Akhonin – V. Belous – V. Yu	<i>Ukraine</i>	Narrow-gap TIG welding of titanium alloys with electromagnetic redistribution of thermal energy of the arc
I. Polajnar – B. Spasovic – M. Uran	<i>Slovenia</i>	The influence of various GMAW parameters of Al on bead geometry
Z. Hudec – D. Hrstka	<i>Czech Republic</i>	GMAW fillet weld overwelding solution

18,30 – 19,30 Čabelka Medal Award

19,30 – 22,30 Reception

16. 10. 2009 Friday

08,30 – 10,00 Technical session – Welding processes

T. Shinoda	<i>Japan</i>	Friction technologies to joining and coating process
P. Vilača – L. Quintino – B. Emílio – A. Loureiro – D. Rodrigues	<i>Portugal</i>	Performance of friction stir welding in similar and dissimilar thin plate joining
W. V. Haver – A. Geurten – B. de Meester – J. Defrancq	<i>Belgium</i>	Friction stir overlap welding of thick 2124 aluminium plate
J. Pilarczyk – M. Banasik – S. Stano – J. Dworak	<i>Poland</i>	Laser welding with filler wire
C. Batigun – K. Yurtisik	<i>Turkey</i>	Effect of varying laser-arc hybrid welding parameters on microstructural characteristics of high alloy corrosion resistant steels

10,00 – 10,30 Coffee break

10,30 – 12,00 Technical session – Materials and welded joints for creep applications

M. Uran – V. Krebs – I. Polajnar	<i>Slovenia</i>	Exploring the mechanical properties of RSW joints for different Zn coated steel sheets
M. Matta – M. Gatial – M. D. Tumuluru – Ľ. Kaščák – J. Viňáš	<i>Slovakia</i>	Optimization of resistance spot welding parameters for Hot-dipped galvanized DP600 steel
P. Brziak – P. Bernasovský – A. Britanová – M. Paľo – G. Zima – E. Valacsai	<i>Slovakia</i>	Performance of centrifugally cast tubes for petrochemical industry
T. Vlasák – J. Hakl – P. Brziak – P. Zifčák – P. Bernasovský – A. Výrostková – J. Pecha	<i>Czech Republic, Slovakia</i>	New 23Cr15Ni6Mn1.5W austenitic steel for supercritical boilers
J. Bakajová – K. Bártová – M. Dománková	<i>Slovakia</i>	Influence of annealing temperature on precipitation and corrosion resistance of austenitic corrosion resistant Cr-Mn-N steel

11,30 – 12,00 Closing of the Congress

12,00 – 14,00 Lunch

In conjunction with the Congress the National day „Standardisation, Certification and Testing“ is organized in collaboration with Slovak Welding Society, branch VÚZ-PI SR

Language: Slovak (without translation)

Date: 15 –16 October 2009

Location: hotel FORTON, Stará Lesná, Vysoké Tatry



Levoča



Spišský hrad castle

The **INTERNATIONAL INSTITUTE** of **WELDING (IIW)** and **REGIONAL CONGRESSES**

IIW as the international organization was formed in 1948 to be the global body in the science and application of joining technology providing networking and knowledge exchange. It currently consists of **53** member countries including countries from Central and East Europe. Slovakia is represented by the Welding Research Institute-Industrial Institute SR (VUZ – PI SR) and Slovak Welding Society (SWS), Austria by The Österreichische Gesellschaft für Schweißtechnik (ÖGS) and The Schweißtechnische Zentralanstalt SZA Vienna, Czech republic by Czech Welding Society and Czech Welding Society – ANB Prague, Hungary by Scientific Society of Mechanical Engineering Budapest, Poland by The Welding Institute Gliwice, Slovenia by The Welding Institute, Ljubljana, Ukraine by The Paton Welding Institute Kiev,.

IIW has many technical Commissions and other Working Units that provide a valuable exchange of information and assist global development through welding and allied process technology.

A goal of **First IIW International Congress in Central and East European Region** is to introduce as many people as possible to the activities of the IIW, their Working and Administrative Units, and to encourage their future participation in Annual Assemblies and the work of technical Commissions.

The following IIW representatives will be contributing to this Regional IIW International Congress:

- Ulrich Dilthey, president IIW,
- Luisa Quintino, vice - president of IIW, chairman of Study group Research and Strategy,
- Tim Jessop, president EWF.



Congress Objectives

This Regional IIW International Congress **PROGRESSIVE STRUCTURAL MATERIALS AND THEIR JOINING TECHNOLOGIES** aims to bring together people from a wide range of industry, research and academic backgrounds to provide an environment for discussion of modern trends and current advances in the ever-increasing and demanding field of materials welding and joining, pressure equipment, structures and pipelines, inspection and testing as used in the total product life cycle of practically every component around us.

The specific objectives of holding the First IIW International Congress Central and East European Region **PROGRESSIVE STRUCTURAL MATERIALS AND THEIR JOINING TECHNOLOGIES** are:

- To expose delegates from industry in Slovakia, Austria, Czech Republic, Hungary, Poland Slovenia, Ukraine, to the work of the IIW and the international community, through the numerous experts who will participate;
- To identify the needs of the countries in the region and produce IIW supported programs to help meet those needs, particularly through the efforts of the all countries in the region;
- To have authors from the less developed countries in the region presenting papers on work in their countries;
- To form Regional Groupings of IIW consisting of representatives of the regional countries that could then provide input to the main IIW Commissions.

The Congress will particularly focus on the common needs of the Central and East European Region and will facilitate the sharing and discussion of issues and challenges, and the creation of co-operative plans for future development. The theme of this Congress will follow similar IIW Congress themes of promoting welding and joining for the creation of sustainable development within a sustainable environment.

This Congress is one of the events of successful series held in world. The following congresses after IIW Annual Assemblies were hosted in the Central and East Europe – Czechoslovakia – 1964 (Prag) and 1979 (Bratislava), Austria – 1958, 1988 (Vienna) and 2008 (Graz), Czech Republic – 2005 (Prag), Hungary – 1974 and 1996 (Budapest), Poland – 1968 (Warszaw), Slovenia – 1982 and 2001 (Ljubljana).

Held:

14 – 16 October 2009, High Tatras, Stará Lesná, Slovakia

Congress fee:

350.- EUR (before 15 September 2009)

400.- EUR (after 15 September 2009)

250.- EUR (authors of lecture)

75.- EUR (accompanying person)

(fee covers participation on plenary and technical sessions, proceedings, lunches, coffee/tea, evening events)

Language:

English, Slovak/Czech

(with simultaneous interpretation)

Climate in High Tatras:

Temperature range from 5 to 15 °C
in October – mountain climate

Currency in Slovakia: EUR**Time:** + 1 GMT**Other important links:**

Maps of Slovakia: www.supernavigator.sk

Railway: www.zssk.sk/en

Bus: www.slovaklines.sk

Local info: www.tatry.sk/en

Airports: www.bts.aero (Bratislava),
www.prg.aero (Praha),
www.viennaairport.com (Vienna),
www.airportkosice.sk (Košice),
www.airport-poprad.sk (Poprad)

Transport:**>by plane:**

- fly to Prague
(then take the plane or IC/EC train to Poprad),
- fly to Vienna or Bratislava (then take the plane to Košice,
then IC/EC train or bus to Poprad)
- fly to Košice (then take IC/EC train or bus to Poprad)

>by train:

- take the train to Bratislava then change to Poprad

>by car:

- through any border crossing to Slovakia (favourably from
Bratislava on motorway) direction Poprad, then through
Veľká Lomnica into Stará Lesná.

The organisers assure transportation of participants from Poprad (from the airport or railway station) by car to Stará Lesná. The persons interested in this transportation are kindly asked to announce their arrival to Poprad in advance by email (jevinovak@vuz.sk) or after arrival to Poprad by phone (+421/(0)915/751 758)

>Local transport:

- access to the High Tatras is by the electric railway (TEZ)
which runs from Poprad across the length of the High
Tatras, passing the mouths of almost every valley on the
south side of the mountains.

Congress chairman:

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Welcome to Slovakia

Slovakia is a beautiful country in the centre of Europe. The territory of Slovakia is a part of the Pannonian Basin and the Alpine-Himalayan system – the West Carpathians. That is why also the climate in Slovakia ranges between continental and oceanic. Slovakia as an independent country was established after splitting of Czechoslovakia on 1 January 1993. However, the history of Slovakia reaches back to the Palaeolithic era from which are the oldest finds are discovered on its territory. Since that time many nations went through it, it was assimilated by many princedoms and monarchs and it did not escape even two most disastrous world wars. At present, Slovakia is an independent, democratic state, full of cultural values such as e.g. Spišský hrad castle, Oravský hrad castle, Bojnický hrad castle, Belliar, Saint Elisabeth Cathedral in Košice, Vlkolínec, Čičmany and natural beauties such as the High Tatras, the Low Tatras, Slovak Paradise, Muránska moorland, Dobšinská jaskyňa cave and many others.

Since the year 2004 Slovakia is a member of the European Union and it achieves a remarkable economic growth. Since 1 January 2009 Slovakia has become the 16th member of the European Monetary Union. The capital city is Bratislava through which flows the largest European river – the Danube.

In this era also science, education and new technologies develop rapidly. This was also the reason why doc. PhDr. Dušan Čaplovič, DrSc., the scientist of the Slovak Academy of Sciences and recently also the Deputy Prime Minister of the Government of the Slovak Republic for Knowledge-Based Society, European Affairs, Human Rights and Minorities took the patronage of the congress.



Štrbské pleso lake

Sight-Seeing

► High Tatras (Vysoké Tatry)

The northern border of Slovakia with Poland is delimited by grand mountains of the High Tatras. In 1949 this territory was declared as the first Slovak National Park (TANAP). The highest peak is Gerlachovský štít peak which rises up to 2,654 m above sea level. The deep, originally glacial valleys and limpid mountain lakes contribute to scenic character of the Tatras. The High Tatras are a significant tourist destination because they offer something to its visitors in every season.

► Stará Lesná

The village Stará Lesná is located below the lower border of the High Tatras in Popradská kotlina basin. Since its foundation in the year 1294 up to the present times it has undergone several changes. From the originally agricultural village it has gradually become a sought-after tourist destination and a starting point for many trips into the surroundings. This is a famous place for organising congresses and conferences. The place has a lot of suitable hotels for that purpose.

► Štrbské pleso lake

Štrbské pleso is the second largest lake in the Slovak part of the Tatras, it is the most popular and frequented mountain lake. It is a sought-after destination for tourists, artists and scientists. More than one third of the year its surface remains frozen and even in summer its water does not warm up more considerably. Similarly as other lakes in the High Tatras this one is also of glacial origin.

► Lomnický štít peak

Lomnický štít peak (2,632 m) is the most famous and most popular peak in the High Tatras. You can reach its top by ascent with the assistance of a tourist guide or by a cable car which brings you up from Tatranská Lomnica in several minutes. On the top of the peak you can enjoy not only a marvelous and majestic panorama of the Tatras, but in good weather also the beauties of Slovakia and Poland. The peak is also the seat of astronomic and meteorological workplace and television relay station.

► Levoča

Levoča is a beautiful town since 1950 declared as city conservation reservation. The first written mention of Levoča originates from the year 1249 and only some years later it has become a free royal town. Up today surrounded by a wall its rarity is the largest medieval square of rectangular shape – the largest in Europe. It is a town full of historical monuments – Levočská Town Hall, Cage of Shame, Evangelical Church, town theatre and the most beautiful district house in former Hungary. The most famous of them, however, is Saint Jacob Cathedral which houses one of the largest altars in Europe from the workshop of Master Pavol from Levoča from the 16th century (it measures 18.62 m in height).



Kežmarok

► Kežmarok

Below the foot of the High Tatras lies another town rich in culture and tourist treasures. The historical core of Kežmarok is declared as a city conservation reservation since the year 1950. Here you can namely see a unique square solution – fork-shaped with a town hall in the centre and ended by the Mestský hrad castle. The national cultural monuments include also a wooden Evangelical articular church from the year 1717, Evangelical lyceum from the year 1775 with one of the biggest historical school libraries in Europe and the Late Gothic Saint Cross Basilica which was awarded the title of Basilica Minor by the Pope.

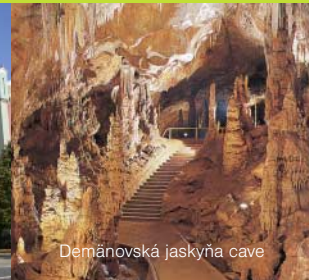
► Spišský hrad castle

With its area of more than 41 thousand m² the national cultural monument – Spišský hrad castle belongs to the most extensive castle complexes in Europe and unanimously it preserves its priority in Central Europe. Since 1993 it is included into the list of UNESCO World's Cultural Heritage. Its construction started already in the 12th century and since then it has undergone the ownership of several royal families, squires, military dignitaries. The medieval importance of the castle proves the fact that nobody succeeded to seize it. In the 18th century the castle was occupied only by the military garrison which left it after fire in the year 1780. At present, it is open up and it is popular not only for the wide public but through its unique character it attracts geologists and also many movie makers.

► Demänovská jaskyňa slobody cave and Demänovská ľadová jaskyňa ice cave

Demänovská jaskyňa slobody cave is the most beautiful cave of extensive system of Demänovské jaskyne caves on the Northern side of the Low Tatras. It was formed in grey-blue (Guttenstein) limestone of the Middle Triassic on six floors. Here you can find yellow, rose, red, purple, in fact, even also grey, dark green up to black colouring of dripstones. The cave pea-ball shaped pearls represent this cave rarity. The still living dripstones and their high glitter contribute to the unique character of this natural phenomenon. The cave comprises together with the adjacent deserted cave the total length of 8,900 m.

The longest parts of subterranean system of Demänovské jaskyne caves are represented by another rarity namely Demänovská ľadová jaskyňa ice cave. Its total length represents 1.7 km out of which 540 m are open to the public. It belongs to the first known caves world-wide. It was already mentioned in the rescript from the year 1299. It consists of grey-blue limestone of the Middle Triassic in four running floors under each other, the last floor is glaciated. It is a splendid natural phenomenon which attracts many domestic and foreign tourists every year.



Demänovská jaskyňa cave