

## PROGRAMME

4<sup>th</sup> European conference on welding joining and cutting

# DEVELOPMENT OF WELDING AND ALLIED PROCESSES AT THE BEGINNING OF THE NEW MILLENIUM

Cavtat-Dubrovnik, 24-26 May, 2001.



## EUROJOIN 4



Organized by the  
**CROATIAN WELDING SOCIETY**  
on the behalf of the  
**EUROPEAN FEDERATION FOR  
WELDING, JOINING AND CUTTING**

## Welcoming address

It is a great pleasure for me to welcome you at the fourth EUROJOIN Conference, organised by the Croatian Welding Society. EUROJOIN conferences are organised every third year by one of the members of the European Federation for Welding Joining and Cutting (EFW). The first EUROJOIN conference was organised in Strasbourg, by the French Institute of Welding IS the second edition was held in Florence by the Italian Institute of Welding (IIS) and the third conference took place in Bern, arranged by the Swiss Welding Society (SVS). The charming town of Dubrovnik, rich of art and history, set in an exciting scenario is an ideal place for this European conference. Apart from listening and discussing the papers that will be presented in the frame of an impressive and interesting program, according to the tradition EUROJOIN 4 will be also a perfect meeting place for all those in Europe who are engaged in welding. This year EFW is having its thirtieth anniversary, as the European Council for Cooperation in Welding (ECCW), from which our federation originated, was established in 1971 by five welding institutes of the European Common Market. Now EFW is rich of about thirty member societies, one each country, from Finland to Spain and from Ireland to Russia. So EFW is today well represented in the whole European Union and in some neighbour countries of European tradition. In these thirty years of life, and specially in the last ten years, EFW carried out a very important activity in harmonising training, qualification and certification of Welding Personnel and certification of Welding Manufacturers. In the countries where an Authorised National Body exists, an European Diploma (and in some cases an European Certificate) can be offered, valid in all EFW countries and well respected all over the world. But the most exciting progress occurred in the last year when, after some time of cooperation with IIW, the European qualification system came to be operated by an IIW body, the IAB (International Authorisation Body) which includes also ANBs, or applicant ANBs, from some countries outside Europe, like Australia, China, Japan, United States. So the former European system for training and qualification of welding personnel is now implemented in four continents. Concerning the certification of companies, the activity is carried on by the Authorised National Bodies for Certification of Companies (ANBCCs), against EN 729/ISO 3834. More recently EFW decided also to deal with environment and it is now preparing an European system for training, qualification and certification of Environment Assessors and for certification of Welding Manufacturers against ISO 14001. All these schemes have been established to serve the industry, improving the image and the status of the welding fabrication so deeply embodied in the manufacturing process. Quality, economics and environment have been recognised as important subjects and they are addressed in the conference, together with design, materials, processes and applications. Conference of such type is also important as a place for dissemination of results and incentive pulse for future scientific research. So I warmly thank the authors for their contributions and the Croatian Welding Society for organising EUROJOIN 4.

And I wish all participants a fruitful meeting and a nice stay in Dubrovnik.



President of the EFW:  
Dr. Giulio Costa

## Welcome to Dubrovnik-Cavtat



Like a sea-shell, full of the sounds of life, Dubrovnik lies on the shores of the Adriatic, in Croatia. Everything there is leads you to it, will one day bring you to it, make a different decision, and you will be the poorer for not having the wealth that is Dubrovnik. Without it, you will not be able to complete your mosaic of the worlds beauty. Even from the cabin of a space-ship Dubrovnik will draw the gaze with the stone bolero of its walls. It is a ship that stands as it voyages, sails as it stands, a dictionary of a city of all the crucial concepts, an interpreter of a city, that interpreting itself also reveals the mystery of your existence. Dubrovnik culture, literature, painting, architecture, music, philosophy, science and diplomacy are an integral part of the cultural heritage of Europe and the world. Dubrovnik is a cultural monument under UNESCOs special protection.

*(by academic Luko Paljetak, poet)*



Cavtat is at the very south of the Republic of Croatia; 18 kilometers from Dubrovnik and only 6 kilometers from Dubrovnik International Airport. The City of Cavtat has a population of some 1,500 inhabitants, and is itself part of the Dubrovnik Riviera. In ancient times, Cavtat was a Greek settlement known as Epidaurum, so its cultural life and historical tradition is thereby enriched.

## General information

**Hosting society: CROATIAN WELDING SOCIETY  
HRVATSKO DRUŠTVO ZA TEHNIKU ZAVARIVANJA**  
I. Lučića 1, HR 10000 Zagreb, Croatia  
tel: (+385) 01 61 68 597  
tel/fax: (+385) 01 61 57 108  
e-mail: [hdtz.cws@fsb.hr](mailto:hdtz.cws@fsb.hr)  
Conference web site: <http://www.eurojoin4.fsb.hr>

### Entry to Croatia

Foreign visitors coming to Croatia will need a valid passport issued by their country. In some cases visa may be required. Visitors are recommended to contact their local Croatian Embassy or Consulate regarding visa requirements.

### How to reach Dubrovnik-Cavtat

Visitors travelling to Dubrovnik by plane can arrive from Zagreb, Roma, London, Tel Aviv, Manchester, Paris etc. Transportation by hotel minibus is arranged, and also public bus services and taxi service from Dubrovnik International Airport are provided. Also, Dubrovnik is well connected with bus lines (International : Frankfurt, Trieste, Sarajevo and Intercity: Zagreb, Split). For those travelling by car, route leads from Zagreb through lovely landscapes across Split to Dubrovnik. Other valuable informations about travelling could be found on web site: [www.eurojoin4.fsb.hr](http://www.eurojoin4.fsb.hr). Depending to the number of participants, charters (bus 50 places; and two airplane lines 20+10 places are available) from Zagreb will be organized on Wednesday, 23<sup>rd</sup> of May.

### Currency

Croatian Kuna (HRK) is used. Exchange rate: 1Euro =appr. 7,66 HRK, 1 DEM=appr.3,92 HRK, 1 USD=appr.8,49 HRK). Money can be changed in any bank or exchange office. All major credit cards are usually accepted in Croatia.

### Time

Croatia has the Central European Time (Summer time GMT+1).

### Medical service

The number for the medical emergency service in Croatia is 94.

### Electricity

The electrical supply in Croatia runs on 220 V, 50 Hz. Visitors from some foreign countries may need an adapter for electrical appliances.



**Patron of the Conference: Ministry of Science and Technology of the Republic of Croatia  
Ministar: Prof.dr.sc. Hrvoje Kraljević**

**Honorable committee**

H. Kraljević  
M. Franz  
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I. Kouskov  
A. Kramar  
Z. Kranjčec  
V. Kranjec

I. Križanović  
T. Martinović  
Z. Mažuran  
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V. Posavec  
P. Speier  
M. Solar  
Z. Tremac

**President of the Conference: Prof.dr.sc. Slobodan Kralj**

**Programme and evaluation committee**

|                 |                |
|-----------------|----------------|
| K. Wichart      | Austria        |
| R. Vennekens    | Belgium        |
| O. Pašić        | BiH            |
| K. Grubić       | Croatia        |
| S. Kralj        | Croatia        |
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| P. Polak              | Slovakia       |
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| L. Johansson          | Sweden         |
| U. Adrian             | Switzerland    |
| K. Yuschenko          | Ukraine        |
| K. Johnson            | United Kingdom |

**Organizing committee**

V. Alar  
T. Aleksandrov  
Š. Andrić  
B. Bauer  
I. Garašić  
I. Juraga

Z. Kožuh, Pres. of the Org. committee  
D. Markučić  
Ž. Oršanić  
V. Panić  
Z. Schaperl  
T. Tomić

**The aim of the Conference**

The main topic of the Conference is welding and the allied processes. The aim is meeting of experts and researchers in the field. Presentation of the related papers and other accompanying events of the Conference will provide favourable environment for exchange of experiences and dissemination of results, survey of the state of the art, present research and future trends in the field. Apart from the Conference itself, a number of accompanying events will be organized such as: exhibition of filler materials, equipment for welding and allied techniques. The Conference and the accompanying social events should provide a relaxed atmosphere, high-quality communication, and fruitful co-operation between scientists, experts, manufacturers and users engaged in the field.

**Topics**

- Development of welding and allied processes
- Development of base and filler materials
- Current state of the art and developments of the equipment
- Criteria governing the selection of the welding equipment
- Problems of weldability of base and filler materials
- Current state of the art and developments of power sources for the high density processes
- Equipment for cutting, brazing and spraying
- Auxiliary equipment (clamps, centralizers, etc.)
- Role of standardization
- NDT equipment
- Health, safety and environment in welding and allied processes
- Automatic devices, robots and their compatibility with the power sources

**The Venue**

The 4<sup>th</sup> European conference on welding, joining and cutting will be held in Cavtat, Hotel Croatia. ([www.hoteli-croatia.hr](http://www.hoteli-croatia.hr)).

**Language**

The official languages of the EUROJOIN 4 will be English and Croatian. Simultaneous translation for English and Croatian will be available where necessary.

**Changes in Programme**

The organizing Committee reserves the right to make any necessary changes in the Programme. Participants are recommended to consult the notice board near the Registration desk daily, for announcements and last minute changes for the programme.

**Registration**

Participants are asked to register as soon as possible by presenting their Enrolment form. The Conference desk will be situated at the Hotel Croatia, and will be open through whole period of the Conference.

**Badges and tickets**

Upon registration, participants will receive a badge and they are asked to wear it at all times. Badge and tickets are required for all events.

**Meals during the conference**

Meals are provided for participants and accompanying persons according to schedule in Enrolment Form.

**Accommodation**

Accommodation for all Conference participants is arranged in Hotel Croatia, Cavtat (e-mail: [info@hoteli-croatia.hr](mailto:info@hoteli-croatia.hr)).

### **Support in organization**

**FACULTY OF MECHANICAL ENGINEERING AND NAVAL ARCHITECTURE, Zagreb, Croatia**  
**ELEKTRODA, Zagreb, Croatia**  
**INA, Sektor tehničkih servisa INE, Zagreb, Croatia**  
**ULJANIK TESU SZZ, Pula, Croatia**

### **General sponsors**

**AO SPETSELECTRODE JSC, Moscow, Russia**  
**ELEKTRODE JESENICE d.o.o., Jesenice, Slovenia**  
**ĐURO ĐAKOVIĆ MONTAŽA, Slavonski Brod-Oberhausen, Croatia/Germany**  
**KORDUN d.d., Karlovac, Croatia**  
**KRAUTKRÄMER an AGFA Company, Hürth, Germany/IDEF, Zagreb Croatia**  
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### **Sponsors**

**BÖHLER SCHWEISSTECHNIK AUSTRIA GmbH, Kapfenberg, Austria**  
**ENIKON, Zagreb, Croatia**

### **Sponsoring members of Croatian Welding Society**

|   |  |
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| <b>Đuro Đaković-Montaža, Slavonski Brod-Oberhausen, Croatia/Germany</b> | <b>Elektroda, Zagreb, Croatia</b>                  |
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| <b>Petrokemija Kutina, Kutina, Croatia</b>                              | <b>Uljanik TESU SZZ, Pula, Croatia</b>             |
| <b>Vatrostalna d.d., Sisak, Croatia</b>                                 |  |

## PROGRAMME

**Wednesday 23.05.2001.**  
16,00-20,00h Registration

**Thursday 24.05.2001.**  
8,00-18,00 h Registration  
9,00-13,00h Conference-Morning Sessions

| Hall Ragusa                       |                                | Eng/Cro  |
|-----------------------------------|--------------------------------|--|
| <b>9,00-9,30 Opening ceremony</b> |                                |  |
| <b>Plenary session</b>            |                                | <b>Chairmen: D. von Hoffe -K.Grubić</b>  |
| 9,30-9,45                         | T. Filetin                     | Development trends of new materials  |
| 9,45-10,00                        | F. Neessen                     | Problems with weldability of base materials -Welding of difficult-to-weld steels |
| 10,00-10,15                       | F. Winkler                     | Potential savings in welding stainless steels using flux-cored wires             |
| 10,15-10,30                       | T.J. Jessop<br>D.N. Shackleton | Recent trends in the implementation of EN 729 (ISO 3834)                         |
| <b>10,30-11,15 Coffee break</b>   |                                |  |

| Hall Ragusa      |   | Eng/Cro   |
|------------------|---|---|
| <b>Session 2</b> |   | <b>Chairmen: A. Stern -Š.Andrić</b>   |
| 11,15-11,30      | H.Herold<br>S. Zaharlev, S.Juettner   | Recent advances in arc welding of magnesium alloys  |
| 11,30-11,45      | V.Georgescu<br>M.Iordachescu<br>B.Georgescu                                     | On the thin aluminium alloys plates welded joints   |
| 11,45-12,00      | G.Kohn<br>A.Stern   | Advanced Welding Processes for Magnesium Alloys   |
| 12,00-12,15      | K.von Hennings<br>A.von Strombeck<br>C.Schilling<br>J.F.dos Santos,A.Mertz      | Preliminary investigation on the application of robotic friction stir welding to magnesium alloys |
| 12,15-12,30      | S.Wiesner M.Rethmeier<br>H. Wohlfahrt   | Welding of ductile aluminium die castings   |
| 12,30-12,45      | A.Stern<br>U. Admon   | On the Origin of Beta Phase Morphology in GTA Welded AZ91 Mg Alloy                                |
| 12,45-13,00      | X.Azpiroz, I.Eizagirre<br>J.Bareda<br>F.Santamaria<br>A.M.Irisarri, J.M. Varona | Study of the influence of welding composition in a thick Ti6Al4v plate                            |

| Hall Orlando     |                                       | Eng   |
|------------------|---------------------------------------|---|
| <b>Session 3</b> |                                       | <b>Chairmen: D.Rehfeldt -I.Samardžić</b>  |
| 11,15-11,30      | L. Dorn<br>S. Goecke                  | ChopArc for superior MAG-Welding of thin sheets > 0,2 mm                            |
| 11,30-11,45      | M. Suban                              | Contribution to the analysis of material transfer in gas-shielded metal-arc welding |
| 11,45-12,00      | T. Pfeifer                            | Modern systems of automatic plasma cutting  |
| 12,00-12,15      | H. Kosler                             | Robotic cell for spot welding of gas cooker grates                                  |
| 12,15-12,30      | D. Rehfeldt<br>R. Wittkopf<br>T.Polte | Test and calibration of welding power sources                                       |
| 12,30-12,45      | D. Rehfeldt<br>T.Polte, C.S. Wu       | Quality determination in arc welding  |
| 12,45-13,00      | D.Dragulescu,M.Toth-Tascau,O.Caus     | Workspace modelling for a welding robot   |

**13,00-14,30h Lunch**  
**15,00-18,00h Conference-Afternoon Sessions**

| Hall Ragusa                     |                                      | Eng/Cro  |
|---------------------------------|--------------------------------------|--|
| <b>Session 4</b>                |                                      | <b>Chairmen: J.Sajer -I. Juraga</b>  |
| 15,00-15,15                     | D. E. Jordan                         | Safety and welding of stainless steels   |
| 15,15-15,30                     | G.Neubert<br>M. Zinke<br>M. Karpenko | New corrosion resistant materials and novel processes in their welding for environmental technology                      |
| 15,30-15,45                     | N. Mišina<br>M. Oršulić<br>B. Mateša | Weldability of dissimilar steels   |
| 15,45-16,00                     | W.Roye<br>S. Kierspel                | Ultrasonic Testing of Spot Welds in the Automotive Industry  |
| <b>16,00-16,30 Coffee break</b> |                                      |  |
| <b>Session 6</b>                |                                      | <b>Chairmen: T.Jessop-D.Markučić</b>   |
| 16,30-16,45                     | P. Dukić, I.Dukić<br>R. Basara       | Integrity assessment procedure for welded joints   |
| 16,45-17,00                     | D. Boehme<br>R. Huber                | Quality Assurance for Thermal Spraying by Implementation of New QM Standards and Regulations for Personnel Qualification |
| 17,00-17,15                     | H.J Salzburger<br>H. Mohrbacher      | In-line Quality-Control of Laser Welds of Tailored Blanks by Couplant Free Ultrasonic Inspection                         |
| 17,15-17,30                     | E.Schneider                          | Ultrasonic Evaluation on Welding Stress State and Characterization of Microstructural State of Al-Welds                  |
| 17,30-17,45                     | Z.Belinić<br>Z.Devila<br>M.Pacak     | Importance and role of site manager during the assembly of equipment for gas field IVANA                                 |

| Hall Orlando                    |  | Eng  |
|---------------------------------|--|--|
| <b>Session 5</b>                |  | <b>Chairmen:G.Hernandez Riesco -V.Ivušić</b>   |
| 15,00-15,15                     | M.Vural<br>T. Gulmez<br>S. Anik<br>O.Eski                                | Effect of weld heat input on the boroncarbide precipitation in GMA welded cold formed S700MC Steel |
| 15,15-15,30                     | B. Godec<br>V. Grdun<br>I. Kovše   | Welding fine grained construction steel Niomol 490K  |
| 15,30-15,45                     | H. Herold<br>N. Woywode<br>J. Pieschel                                   | Production-conditional cracks by unfavourable welding design and manufacture                       |
| 15,45-16,00                     | A.Stern, U.Admon<br>M.Aizenshtein<br>V.Shribman<br>Y.Livshitz<br>O.Gafri | Bond Structure in Electromagnetic Pulse Welds of Similar and Dissimilar Metals                     |
| <b>16,00-16,30 Coffee break</b> |  |  |
| <b>Session 7</b>                |  | <b>Chairmen: J. Pilarczyk -T.Filetin</b>   |
| 16,30-16,45                     | L. Karlsson<br>E.-L. Berqvist<br>H. Larsson                              | Application of Friction Stir Welding to Dissimilar Welding   |
| 16,45-17,00                     | P. Bernasovsky<br>T.Žaček<br>P. Brziak                                   | Problem with the welding of the exploited centrifugally cast tubes in pyrolysis furnaces           |
| 17,00-17,15                     | F.G.Cesari, G. Ferrari<br>V. Molinari, P. Battistella<br>M. Rogante      | A Simplified Evaluation Model of Residual Stresses Distribution in Welding                         |
| 17,15-17,30                     | V. Goncalves<br>M. Napoleao<br>S. Vidal                                  | Resistance Spot Welding of Zinc Coated Steel in Car Industry                                       |

**19,00h Welcome reception (Hotel Croatia- Swimming pool terrace )**

**Friday 25.05.2001.**  
**9,00-13,00h Conference-Morning Sessions**

| Hall Ragusa  |  | Eng/Cro  |
|--|--|--|
| <b>Session 8</b> Chairmen: <b>O.Pašić-Z.Kožuh</b>                |  |  |
| 9,00-9,15  | O.Pašić<br>H. Pašić                            | Weldability of thermal non- treatable aluminum alloys by use of laser technology     |
| 9,15-9,30  | H. Staufer                                     | Laser hybrid welding   |
| 9,30-9,45  | H. Haferkamp, M. Goede<br>J. Bunte             | Laser welding of metal foams   |
| 9,45-10,00   | I. Polajnar<br>D. Bračun<br>J. Možina          | Identification of electrode tip shape in resistance spot welds by laser profilometry |
| 10,00-10,15  | T.Iamboliev<br>S.Katayama<br>A. Matsunawa      | Criteria for Solidification Modes in Stainless Steel Laser Welds                     |
| <b>10,15-11,00 Coffee break</b>                                  |  |  |
| <b>Session 10</b> Chairmen: <b>J.F. Oliveira Santos-Š.Andrić</b> |  |  |
| 11,00-11,15  | K. Dilger<br>D. Hasenberg                      | Exact and reproducible dosage of adhesives in automated processing                   |
| 11,15-11,30  | I.Santos<br>J.P.Duarte<br>L.Quintino           | Micdrill- Microdrilling of metallic materials for engineering applications           |
| 11,30-11,45  | A.Silva<br>L.Quintino<br>H.Gouveia             | Developments on Tailored Welded Blanks Technology                                    |
| 11,45-12,00  | M.Junkar<br>D.Kramar                           | Selecting Best Cutting Process Alternative   |
| 12,00-12,15  | M. Dundjer<br>I. Samardžić<br>J. Malina        | Weakening in Arc Welded Joints due to Temperature Field Nonstationarity              |
| 12,15-12,30  | S. Rešković<br>Vj. Novosel Radović<br>Z. Fried | The reason why Scab of Impeder in High Frequency Tube Welding Processes occurs       |
| 12,30-12,45  | I. Samardžić<br>B. Despotović<br>N. Mišina     | Weldability of new composed materials in steamblock manufacturing                    |
| 12,45-13,00  | L.Costa  | Risk from Health in welding  |

| Hall Orlando  |  | Eng   |
|---|--|---|
| <b>Session 9</b> Chairmen: <b>D.Dehelean-I.Juraga</b>     |  |   |
| 9,00-9,15   | D. Dehelean<br>D. Savu   | The development of the high deposition rate GMA welding processes   |
| 9,15-9,30   | G. Rihar   | Mass flows in fusion welding  |
| 9,30-9,45   | G.B. Melton<br>S. Mulligan   | Tandem MIG Welding for Improved Productivity  |
| 9,45-10,00  | K.Dilger<br>S. Boehm   | Innovative bonding technology for the lightweight vehicle construction  |
| 10,00-10,15   | T.Hoffmann<br>J.Sajer  | New welding processes for quality and effective welding of high alloyed materials in building of process plants                             |
| 10,15-10,30   | A.Balogh   | Process Parameters of Manual Metal Arc Welding  |
| <b>10,30-11,00 Coffee break</b>                           |  |   |
| <b>Session 11</b> Chairmen: <b>P.Bernasovsky -N.Krnić</b> |  |   |
| 11,00-11,15   | E.Constantin<br>M.Iordachescu<br>V. Constantin                           | Mathematical modeling for mass transfer's dynamics through the welding arc  |
| 11,15-11,30   | E.Scutelnicu<br>E.Constantin   | Effects of process on copper - carbon steel joints  |
| 11,30-11,45   | T.Pedersen   | The next generation software for welding specification management   |
| 11,45-12,00   | Lj.Pedišić<br>G.Marić,K.Grilec<br>T.Čaletad.Šimić<br>A. Lepušić          | Monitoring of Tractor Reductor's Condition by Oil Analysis  |
| 12,00-12,15   | N. Krnić   | Reduction of Heat Dissipation in Underwater Wet Welding - a Novell Approach   |
| 12,15-12,30   | H.Nishikawa<br>K.Yoshida<br>T.Maruyama<br>T.Ohji ,Y.Suita<br>K.Masubuchi | Characteristics of Hollow Cathode Arc as a welding heat source - Ignition process and melting property-                                     |
| 12,30-12,45   | A.Lauro<br>M.Mandina<br>C. Servetto                                      | Accelerated Creep Tests on Welded Joints in 9Cr-1Mo-Nb-V (P91 type) Ferritic Steel for both High Temperature and High Pressure Power Piping |

**13,00-14,30h Lunch**  
**14,30-17,00h Conference-Afternoon Sessions**

| Hall Ragusa   |  | Eng/Cro  |
|---|--|--|
| <b>Session 12</b> Chairmen: <b>R.Vennekens-K.Grubić</b> |  |  |
| 14,30-14,45   | T.Ammann                                 | Gas Shielded Arc Welding of duplex Steels  |
| 14,45-15,00   | Z.Salopek                                | Application of shielding gases for welding - low activity gas mixtures   |
| 15,00-15,15   | K.Grubić<br>V.Panić<br>N.Šakić           | Influence of type of shielding gas upon the loss of chemical elements and mechanical properties of weld metal at MAG welding |
| 15,15-15,30   | M. Fortain<br>G. Plottier<br>J.Y. Mouton | How to improve GTAW,PAW and MAW processes of Nickel base alloys.Don` t forget the way of gases                               |
| <b>15,30-15,45 Coffee break</b>                         |  |  |

| Hall Orlando  |   | Eng  |
|---|---|--|
| <b>Session 13</b> Chairmen: <b>J.Tušek-N.Štefanić</b> |   |  |
| 14,30-14,45   | G. N. Polichtchouk<br>J. V. Kouskov<br>U.D. Brunsnitsyn | The experience of development of rutile electrode coatings using the methods of computer modeling and prediction of slag systems properties on the basis of equilibrium positions phase charts |
| 14,45-15,00   | F.Wedberg   | Tools for MMA Electrode Development -Arc Welding Process Statistical Analysis Combined with Design of Experiment Software  |
| 15,00-15,15   | J. Tušek, S. Camernik<br>D. Arbi, F. Markelj<br>B. Zorc | Modelling of a Crystal Grain in Weld of Ferritic Stainless Steel   |
| 15,15-15,30   | H.Gouveia,S.Raposo<br>V.Ferreira<br>A.Eustaqio          | AMIGA-Self teaching welding machine  |
| <b>15,30-15,45 Coffee break</b>                       |   |  |

| Hall Ragusa   |                        | Eng/Cro |
|---|------------------------|---------|
| <b>Session 14</b> Chairmen: <b>L.Quintino-S.Kralj</b> |                        |         |
| <b>15,45-16,30</b>                                    | <b>Poster session</b>  |         |
| <b>16,30-17,00</b>                                    | <b>Closing remarks</b> |         |

**17,30-20,00h Excursion to City of Dubrovnik (cultural events)**  
**20,30h Conference dinner (ATLAS Club Nautika)**

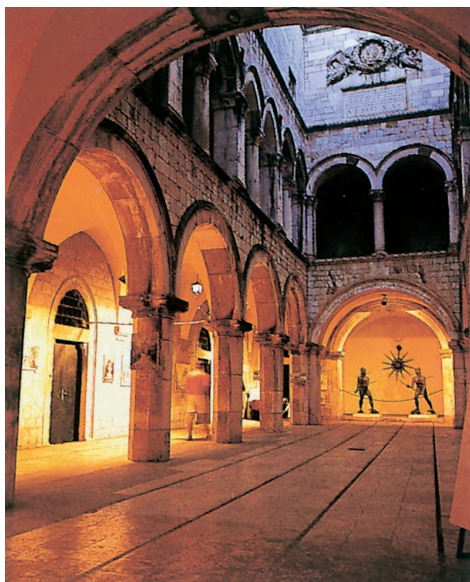
## Poster session

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|---|---|---|---|
| H. Nies<br>D. Haupt<br>F. Mueller<br>G. Habeković<br>V. Orešković | Flux Core Wire Welding in the Shipyards   | Z. Hell<br>N. Vulić<br>S. Šimundić<br>Z. Ivanović Surjan<br>M. Andrijašević<br>D. Gugić<br>G. Jelić | Ship- product uniting classic materials for welding and polymers  |
| Z. Schauperl<br>V. Ivušić<br>K. Grilec                            | Effects of substrate hardness upon the tribologic properties of surfacing layers  | F. Cajner<br>M. Stupnišek   | Influence of Annealing on Deformability of Welded Tubes   |
| I. Mavrić   | Robot technology in the modern shipbuilding   | B. Mateša<br>M. Husnjak   | Assessment of residual stresses through the cross-section of clad plates applying surface layer removal method                |
| K. Grubić<br>I. Juraga  | Effect of gases at laser welding of duplex stainless steels upon metallurgical, physical and corrosion properties of the welded joint | S. Petrović<br>B. Mateša<br>L. Kosec  | Joining of exotic materials by welding using high energy density proces (explosion)   |
| M. Gojić<br>D. Marijan<br>L. Kosec                                | Corrosion properties and microstructure of welds in pipes made of St. 37.2 steel grade  | V. Petrović<br>B. Mateša<br>V. Kosec<br>S. Petrović   | Explosion cladding of tantalum in three-layer combination   |
| K. Grubić<br>G. Erceg   | Influences of parameters of pulsed TIG welding upon the quality of weld on the high alloyed steel                                     | V.V. Alehnovich<br>A.V. Alipfanov   | Calculation of characteristics of intermediate layings is packed chemical compound used in welding by pressure by means of PC |
| N. Šakić<br>N. Štefanić   | Methods of optimization of welding processes - state of the art and future trends   | D.M. Ihailescu<br>V. Constantin<br>D. Iordachescu<br>A. Mihailescu                                  | GMAW torches for special processes  |
| V. Ivušić<br>S. Kralj<br>Ž. Oršanić                               | Characterization of hard surfaced layers  | D. Mihailescu<br>E. Constantin<br>A. Mihailescu   | Hyperbaric testing stand for underwater welding   |
| S. Kralj<br>Z. Kožuh<br>I. Garašić                                | Effects of waterproof coating upon the characteristics of welded joints made in seawater  | A. Liouchinskiy   | Low-temperature diffusion welding   |
| S. Kralj<br>B. Bauer<br>Z. Kožuh                                  | Weldability of steels with higher Ceq level at laser welding  | P. Babics   | The development of nuclear welding requirements in Hungary  |
| P. Fogarassy<br>F. Rotaru   | Residual stress analysis in brazed joints   | X. Azpiroz<br>C. Jimenez<br>I. Eizagirre<br>J. Bareda<br>F. Santamaria<br>A.M. Irisarri             | Comparative study of autogenously A2017 welds made by plasma, laser and friction stir welding process                         |
| D. Markučić<br>J. Štepanić  | Reproducibility of underwater nondestructive testing  | J. Martikainen<br>T. Heinisuo   | Repair welding of NiAl bronze material  |
| H. Mecke<br>W. Fischer<br>E. Hettkamp<br>J. Schupp                | Magnetic influenced MIG - Welding   | V. Tkalčević<br>D. Pulić  | Safety of welded connections in civil engineering according to Eurocode   |
| V. Georgescu<br>D. Iordachescu<br>B. Georgescu                    | Pneumatically operated equipment for pressure welding in magnetic forces field  | G. Vručinić   | Welding of CuNi 10 Pipeline   |
| N. Despot<br>D. Karlovčan<br>Z. Mrčela                            | Welding of Natural gas sealine IVANA A -GARIBALDI K   | D. Kirša<br>M. Tudja  | Quality assurance for materials used in water distributions in pharmaceutical industry  |
| S. Pašić  | Oxidation potential of shielding gas in high power GMA welding procedure  | K. Grubić<br>V. Panić   | Influence of the type of shielding gas on the weld geometry   |
| V. Krstelj<br>A. Lypolt   | NDT personnel certification   |   |   |
| B. Kovačević<br>M. Streny   | Modern endoscopic inspection  |   |   |

**Saturday 26.05.2001.**

**Excursion by boat (visit to the construction site of bridge steel construction across Rijeka Dubrovačka; cruise along Dubrovnik`s coastal area and islands- lunch included)  
Return to Dubrovnik and Cavtat**

### Excursion to City of Dubrovnik



#### Cultural event

Part of the excursion to City of Dubrovnik will be visit and concert in Rector`s Palace, one of the most famous historical monuments in Dubrovnik.

#### The Rector's Palace (15th & 17th century)

The whole of the Dubrovnik's history has passed through this beautiful though not too luxury palace. Like the Republic, the palace too, had to go through troubled times in the past - it has been destroyed in gunpowder explosions several times, then it was shaken by earthquakes. The Rector of Dubrovnik used to live in this palace during the time of his one month's mandate. The Rector's Palace was also the seat of the Small Council, i.e., the Dubrovnik government.



## Excursion by boat

Attractive construction site of the bridge across Rijeka Dubrovačka will be visited by boat. The visit to the construction site will be the part of cruise through Elaphite archipelago, several small islands of astonishing beauty and rich history.



## Hotel accommodation

CROATIA HOTEL lies in a beautiful position on a peninsula overlooking the Adriatic on one side and the picturesque old City of Cavtat on the other. The world famous medieval walled City of Dubrovnik can be seen from some hotel terraces. The main activities of the Croatia Hotel are provision of accommodation services and the organisation of conferences. In addition, Hotel Croatia operates restaurants, bars, leisure, sport, recreation and other tourist services.

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