



EUROPEAN UNION



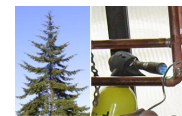
GOVERNMENT OF ROMANIA



SERBIAN GOVERNMENT



Structural Funds
2007-2013



ECOSOLDER

Romania-Republic of Serbia IPA Cross-border Cooperation Programme

Closing Conference

**Achievements of the ECOSOLDER Project.
Recommended applications for ecological filler alloys**

21.11.2014, Hotel Perla, Timisoara



Romania-Serbia

Common borders. Common solutions.



EUROPEAN UNION



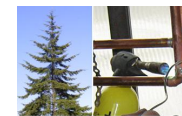
GOVERNMENT OF ROMANIA



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ECOSOLDER

Title: Promoting new ecologic filler alloys for soldering, based on the non-ferrous ore of the Romanian-Serbian cross-border area

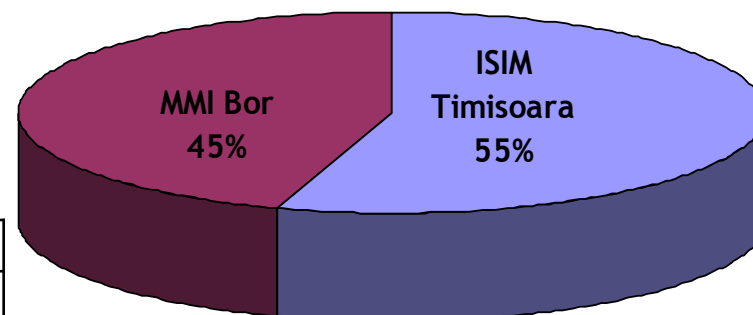
ACRONIM: ECOSOLDER

Project Reference: MIS ETC Code 1409

Lead Partner: ISIM Timisoara, Romania

Partner: Mining and Metallurgy Institute Bor - MMI Bor, Serbia

Total value : 221.123,30 Euro



Project start date	14 th of June 2013
Duration of the project	18 months

Project activities and results

Objectives

- ✓ Creation of a R&D cooperation network between ISIM of Timisoara and MMI of Bor, for soldering filler alloys
- ✓ Innovative and ecological soldering and brazing processes
- ✓ Ecological filler alloys for soldering and brazing
- ✓ Workshops for promoting the new ecologic filler alloys

Target groups

companies of the electronic industry, refrigerator producers, manufacturers and shops for repairs of water, gas and heating installations, shops and individual skilled workers for jewelry and decorating technique.

Project activities and results

Meetings for current issues of the project at ISIM Timisoara and MMI Bor

July 2013



August 2013



February 2014



April 2014



Project activities and results

Data base; update and exchange of data bases between the partners

- information about filler alloys for soldering and brazing, lead-free and without any emissions of toxic substances, technologies for soldering and brazing by various processes, based on electric, flame and laser heating, etc.
- selected documentations about detecting and measuring hazardous substances of gas and fumes, by utilizing filler alloys for soldering and brazing;
- selected papers for friction stir technique and laser technique, that are useful in the project development.
- documentation about furnace soldering and brazing technologies
- selection of non-ferrous materials suitable for soldering;
- technical data for base materials, for filler alloys and fluxes used in the project

<https://www.dropbox.com/home#!/home/a.ecosolder.d-base-share/ISIM-data>

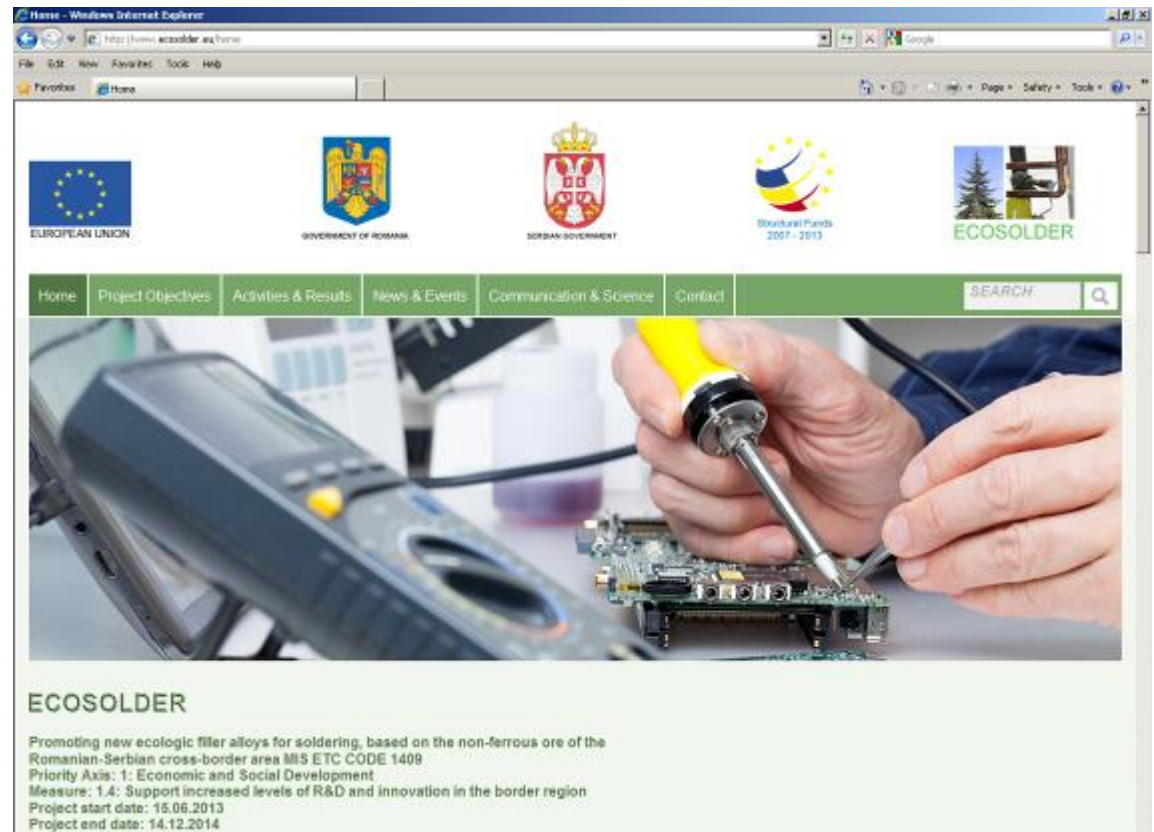
<http://www.ecosolder.eu/>

Project activities and results

Creation of a direct IT connection, website of the project and a R&D cooperation network between ISIM of Timisoara and MMI of Bor, for soldering filler alloys.

<http://www.ecosolder.eu/>

On the website - access to information regarding ecological filler alloys and innovative soldering and brazing processes.



Project activities and results

Website content / sitemap and main structure:

- 1. HOME / about***
- 2. Project Objectives***
- 3. Activities and results***
- 4. News & Events***
- 5. Communication & Science***
 - 5.1 Ecosolder Forum***
 - 5.2 Scientific Database***
 - 5.2.1 Scientific papers***
 - 5.2.2 Technical data for base materials***
 - 5.2.3 Technical data for filler alloys***
 - 5.2.4 Technical data for fluxes***
 - 5.2.5 Soldering and brazing technology***
 - 5.2.6 Others technical documents***
 - 5.3 Weblinks***
 - 5.4 Live-Chat***
- 6. Contact***

<http://www.ecosolder.eu/>

Project activities and results

Elaboration of joint innovation related studies, regarding filler alloys for soldering and brazing, in the cooperation network

ISIM Timisoara - technical reports:

- Studies and experiments regarding behavior of filler alloys and the base materials at soldering and weld-brazing using conventional techniques, as well as ecological new techniques, with innovative character, for soldering of materials: laser and friction stir soldering techniques
- Materials for Al/Al, Al/Al-Si and Al/Steel brazing
- Weld-brazing of titanium to aluminium, using various filler alloys
- Innovative and environmentally friendly bonding techniques using FSW principle, for Al alloys (EN AW 1200, EN AW 5754), Cu99, brass (CuZn39Pb2), steel S235, Ti Gr2, magnesium AZ31B; as similar and dissimilar materials); filler alloy S-Sn97Cu3; soldering flux ALUTIN (for Al alloys) and ROSOL 3 (for copper)

Project activities and results

- Laser soldering of an electronic board
- Electric copper bit soldering of electric contact pieces
- Soldering and brazing experiments using new ecological filler alloys, elaborated in the project
 - soldering (electric copper bit process) of tin-coated copper foil, brass Cu60Zn, S235 steel strips, using S-Sn90In7Ag3, S-Sn96Ag3Cu1, S-Sn97Cu3 as filler alloys and colophon as flux
 - brazing (oxygen-acetylene flame overlap-joint brazing) of S235 steel sheets using B-CuZnSnSiMn elaborated in the ECOSOLDER project, flux-coated rods B-Ag40CuZnSn, B-Ag30CuZnSn as filler alloys, respectively wire-B-Cu63Zn37 as filler alloys and borax as flux.
 - using the mobile system for measuring the concentration of gases and fumes

Procurements - ISIM Timisoara:

- IT equipments
- Mobile systems for measurement of gas and fumes concentration
- Materials and filler alloys for soldering and brazing tests
- Standards

Project activities and results

➤ 4 Scientific papers and articles

- “New approaches in field of friction stir welding (FSW). New techniques for plating and soldering developed using FSW principle/Noi abordări în domeniul sudării prin frecare cu element activ rotitor (FSW). Tehnici noi de placare și lipire dezvoltate pe baza principiului FSW”
Conference SUDURA 2014, 9-11.04.2014, Sibiu
 - “New Ecological Technique for Soldering of Metallic Materials”-7th International Conference TIMA 14 “Innovative Technologies for Joining Advanced Materials”, ISI Proceedings, 19-20.06.2014, Timisoara,
http://www.isim.ro/tima/tima14/doc_pdf/tima14_abstracts.pdf
and published in Advanced Materials Research Volume 1029,
[doi:10.4028/www.scientific.net/AMR.1029.218](https://doi.org/10.4028/www.scientific.net/AMR.1029.218)
 - “Aspects regarding friction stir welding of copper Cu 99”, published in Journal Welding & Materials Testing No.2/2014
http://www.bid-isim.ro/bid_rom.htm
 - “Innovative and ecological joining techniques”- 46th IOC Conference, 01-04.10.2014, Bor, Serbia
- 1 Patent request (A 00254) regarding friction stir soldering was filed at OSIM Bucharest (no. 1830/11.04.2014)

Project activities and results

Publication and promotional materials

- Newsletter - No 1/February 2014 (25 pcs), No. 2/September 2014 (25 pcs)
- Brochure (50 pcs)
- Flyers (100 pcs)
- Leaflets(400 pcs-Ro,En)



Distribution of the publications and promotional materials:

- workshops and conferences
- events organized by ISIM and MMI Bor
- other events with ISIM participation (conferences, workshops, trainings, fairs, etc.)
- visits in industry

Project activities and results

Media campaign

- Two informative materials regarding ECOSOLDER project published in SUDURA Journal No.2/2014 (http://www.asr.ro/html_ro/reviste/2014/ISIM%202014.jpg) and in Welding & Material Testing Journal No. 2/2014.
- Article in BANAT BUSINESS MEDIA, on 14.11.2014, edited by CCIAT Timis
- Promoting on first cover in Journal Welding & Materials Testing No.3/2014
- Press releases



Project activities and results

Media campaign

- Two interviews broadcasted on radio stations in Romania:
Radio Timisoara and Radio Oltenia Craiova
 - first interview - promoting the ECOSOLDER project
 - second interview - invitation to the Closing Conference[www.ecosolder.eu/news and events/media campaign](http://www.ecosolder.eu/news_and_events/media_campaign)
- interviews on 2 TV station on the 1st July at the workshop organized by MMI Bor in Serbia: Regional Television RTV Bor and Sezam TV
<http://rtvbor.rs/dnevnik/14442-dnevnik-01-jul-2014.html> and
www.dailymotion.com/video/x20m88u_vesti-rtv-sezam-01-07-2014_news



Project activities and results

Events - organized by ISIM Timisoara on the ECOSOLDER project

Opening Conference of the ECOSOLDER Project

19.07.2013, Hotel Perla, Timisoara

Presentations:

- Overview of the Project ECOSOLDER. Objectives and expected results (ISIM);
- Presentation of the profile and expertise domains of ISIM Timisoara, Romania;
- Presentation of the Mining and Metallurgy Institute Bor, Serbia
- Actual industrial applications of the soldering and brazing processes (ISIM);
- Eco-solder alloys for multifunctional application (MMI);
- Technical and ecologic characteristics of the filler materials for soldering and brazing developed at the Sudotim AS SRL Timisoara, Romania (SUDOTIM);
- State of the art and trends in the European and International standardization for soldering and brazing (E-QSE Consulting).

Project activities and results



Workshop no.1 - organized by ISIM Timisoara

**“Innovative soldering techniques using ecological filler alloys”,
21.02.2014, Hotel Central, Timisoara**

Presentations:

- Low melting ecological solder alloys based on tin and indium (MMI)
- Achievement of deep groove brazed-joints of sintered tungsten carbides to mild steel support (2%Cr) (SUDOTIM)
- Experiments for dissimilar joining by weld-brazing of aluminum and titanium parts (ISIM)
- Experiments for the innovative friction stir soldering process FSS (ISIM)
- Experiments for laser soldering of an electronic board (ISIM)

Project activities and results



Project activities and results

Participation to Workshop organized by MMI Bor

**“Promoting New Ecological Solders in Romanian-Serbian Cross-Border Area”,
01.07.2014, Hotel Albo, Bor**

Romanian Presentations:

- Experiments for the innovative processes: friction stir soldering (FSS), laser soldering, electric soldering, as well as weld-brazing (ISIM)
- Research to achieve ecological rods for deep joint brazing (SUDOTIM)



Workshop no.2 - organized by ISIM Timisoara

**“Ecologic Alloys for Soldering and Brazing. Brazing and Soldering Procedures”,
26.09.2014, Hotel Central, Timisoara**

Presentations:

- Current stage of the ECOSOLDER project (ISIM)
- Some aspects of Sn-In-Cu ecological solder alloys (MMI)
- Experiments on soldering printed circuit boards, with a new ecologic filler alloy (ISIM)
- Activating precursors in manufacturing coated brazing rods (SUDOTIM)
- Elaboration and qualification of the brazing procedure (ISIM)
- Execution of brazing test samples of S235 steel sheets, with a new brass type (ISIM)

Project activities and results



Conclusions

Cooperation network

- ✓ Development of a R&D cooperation network between ISIM of Timisoara and MMI of Bor, for soldering filler alloys
- ✓ website www.ecosolder.eu

Joint innovation related studies, regarding filler alloys for soldering and brazing, in the cooperation network

- ✓ Complex experiments regarding behaviour of filler alloys and the base materials at soldering, weld-brazing and brazing using ecological soldering alloys elaborated by MMI Bor
- ✓ Patent request filed at OSIM Bucharest

Exchange of databases

- ✓ the exchange of information from the database between partners
- ✓ database that is be available on the website will be updated until the end of project, contribute in this way to promote the project, the ecological filler alloys and innovative processes for joining of metallic materials.

Conclusions

Promotional materials and publications (500 pcs)

- ✓ Flyers, leaflets, 2 newsletters and brochure that were distributed at different events: conferences, workshops, trainings, fairs, directly in industry

Promoting the results of the project

- ✓ to the workshops organized on the project, by ISIM Timisoara and MMI Bor
- ✓ to the Closing Conference of the project, organized by ISIM Timisoara
- ✓ in the scientific papers, at the National and International Conferences in Romania and Serbia
- ✓ in international journals
- ✓ in industrial companies; meetings with specialists from industrial companies from eligible area and distribution of promotional materials.

Media campaign

- ✓ interviews regarding ECOSOLDER Project
- ✓ informative materials in journals and newsletters edited by other institutions
- ✓ press releases during the project



ECOSOLDER PROJECT

successful collaboration between



Romania



Serbia



Thank you for attention !
