PROCEEDINGS
12th International Electronics Recycling Congress IERC 2013
January 16 – 18, 2013, Salzburg, Austria

Patronage:
Federal Ministry of Agriculture, Forestry, Environment and Water Management, Austria
European Electronics Recyclers Association (EERA)
European Committee of Domestic Equipment Manufacturers (CECED)
Japan Electronics and Information Technology Industries Association (JEITA)
Global Lighting Association
DIGITALEUROPE
ORGAULIME
PlasticsEurope
WEEE Forum
The European waste management strategy is guided by the principles of precaution and sustainability. The aim is to achieve the objectives of European waste management through an optimal mix of waste prevention, re-use, recycling, and other forms of recovery and disposal. Every precept and every instrument must be measured according to the relevant principles and obligations rather than becoming an end in itself.

The majority of goods production relies on the continuous mining of raw materials. Not only the huge consumption of fossil energy resources, but also the vast quantities of mined mineral raw materials are still on the rise. Waste management supplies the economy with secondary raw materials and energy sources. Due to the scarcity of resources, secondary resources and the corresponding processing technologies, but also re-use, are becoming increasingly important. The objective is to further increase the contribution of waste management to sustainable material flow and resource management.

In order to be able to make a major contribution to the raw material base, waste needs to be evaluated based on various criteria such as relevance to raw materials, the level of contaminants in the context of waste treatment, raw material requirements, but also in consideration of environmental impact and climate protection.

In addition, the knowledge base requires further improvement. There are incentives and guidelines for the further development of collection systems, reclaiming, recovery and disposal technologies and their capacities as well as the use of secondary raw materials and substitute fuels with effective removal of contaminants. The choice of desirable treatment channels should be encouraged through economic incentives.

Stemming the flow of secondary raw materials out of the EU is a central concern. Appropriate measures should be taken to secure the most important secondary materials for the European economy, as well. For the sake of value creation, waste as a carrier of important secondary materials, especially waste electrical or electronic equipment or end-of-life vehicles should be kept inside the EU.

The next three days are going to be challenging. The IERC 2013 is a very important event and I believe we can all look forward to many interesting presentations, exhibitions as well as mutually fruitful discussions and collaboration. I wish every success and a nice stay in Salzburg.
FOREWORD

Welcome to Salzburg – the hometown of Amadeus Mozart and “Red Bull”

In the name of the Steering Committee I welcome you to Salzburg for the 12th International Electronics Recycling Congress. Our industry faces the WEEE recast, which promises higher recycling targets and greater sustainability through recycling and efficient use of resources. When we look back at the beginning of the WEEE, we see that we had a huge and fast growing waste stream with no effective processes for managing the millions of tons of these materials. With the WEEE directive came clear processes and regulations for this enormous waste stream. At this time almost all the electric and electronic scrap had a negative value. This situation led to the rapid growth of complex and effective processes such as collecting systems, recycling fees and recycling funds, different recycling technologies, standards, take back systems, logistic- and recycling industry and so on… The WEEE directive brought about a sophisticated domestic European recycling industry with a huge variety of stakeholders. Coinciding with the dramatic increase in the collection of WEEE informal recycling sectors, particularly in developing countries, also grew rapidly and began competing for these raw materials – with much lower cost structures due to less strict and sometimes non-existent environmental and safety controls. This highly unlevel international playing field and the total lack of law enforcement are the critical factors impacting the health of our domestic recycling economy. The WEEE recast has the aim of consistent development towards more effectiveness in materials recovery, collecting and logistics. We hope that the politicians and authorities of our civilized countries will organize the law enforcement to be just as effective. The still fast growing electrical and electronic waste stream that once carried a significant negative value, high treatment and disposal costs has changed in the last years, thanks to many of the people in this room, to a huge global resource recovery stream with an average positive value. It seems reasonable to ask: Does a positive value stream really need so much regulations and stakeholders? We will see that the next steps in WEEE will be the development from effectiveness to efficiency. In other words: The industrialization of the whole WEEE industry with worldwide, clear, lean and effective processes and standards has already started. The whole value chain will be streamlined towards efficiency. All the stakeholders of the WEEE industries stand before the challenge of global industrialization and efficiency in the whole value chain (production – use – collecting – recycling – production). The materials recovery, and the closed resource loop will become for the whole industry and production countries more and more important. In our industry you need common knowledge about market development and technologies, raw materials, commodity prices, legal requirements for collection, transportation, recycling and you have to take care of the constant change of the electronics products we are talking about. IERC 2013 will give you the platform to discuss such issues. It is a growing, innovative, neutral and very effective platform to meet clients and competitors, listen to market trends and the news of the speakers, discuss with the authorities, see the hottest products of the exhibitors and make business in a relaxed atmosphere.

I look forward to meet you in beautiful Salzburg – a town full of pioneers and success stories.
<table>
<thead>
<tr>
<th>Key Messages</th>
<th>Speaker</th>
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<tr>
<td>STRATEGIES IN CHALLENGING TIMES</td>
<td>ANDERS JANSSON Stena Metall President and CEO Sweden</td>
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<td>MAXIMISING THE OPPORTUNITIES AND MINIMISING THE RISKS OF ELECTRONIC WASTE IN AFRICA</td>
<td>PROF. OLADELE OSIBANJO Basel Convention Coordinating Centre for Training &amp; Technology Transfer for the African Region (BCCC-Africa) Federal Ministry of Environment Nigeria</td>
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<td>HOW STANDARDS CONTRIBUTE TO LEVEL PLAYING FIELDS</td>
<td>KLAUS HIERONYMI Hewlett-Packard Global Resource Efficiency and Circular Economy Strategies</td>
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<td>RECYCLING OF RARE EARTH IS OUR’S</td>
<td>FRÉDÉRIC CARENCOTTE Solvay Group Industrial Director Rare Earth Systems France</td>
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<td>THE CHINA RECYCLING INDUSTRY IS TRANSFERRING</td>
<td>MIKE CHEN WorldScrap.com President China</td>
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The 12th International Electronics Recycling Congress IERC 2013 will be held at the:

Salzburg Congress
Auerspergstraße 6
5020 Salzburg, Austria
Phone +43 662 889870
Fax +43 662 88987210
www.salzburgcongress.at

Salzburg Congress is located in the centre of Mozart’s city. You can easily reach the congress centre by all modes of transport.

Salzburg – The city of Mozart
UNESCO nominated Salzburg’s city centre as part of the world’s cultural and natural heritage. Now the city officially ranks among the most beautiful cities in the world, certainly one deserving a high degree of protection.

For the participants of the congress a number of rooms are held at a special rate until December 14, 2012 at the hotels mentioned below. Reservation after this date will be subject to space and rate availability. If you wish, you may also extend your stay at the same rate.

Sheraton Salzburg Hotel *****
Auerspergstraße 4, 5020 Salzburg
Phone +43 662 889990
Fax +43 662 881776
www.sheraton.com/salzburg
next to the congress centre

Hotel Bristol Salzburg *****
Makartplatz 4, 5020 Salzburg
Phone +43 662 873557
Fax +43 662 8735576
www.bristol-salzburg.at
5 minutes walking distance to the congress centre

Hotel Crowne Plaza Salzburg ****
Rainerstraße 6–8, 5020 Salzburg
Phone +43 662 889780
Fax +43 662 878893
www.imlauer.com
2 minutes walking distance to the congress centre

Best Western Hotel Imlauer ****
Rainerstraße 12, 5020 Salzburg
Phone +43 662 889992
Fax +43 662 8899271
www.imlauer.com
(non smoking hotel, free parking!)
5 minutes walking distance to the congress centre

Hotel Zum Hirschen Achat Plaza ****
Saint Julien Straße 21–23, 5020 Salzburg
Phone +43 662 889030
Fax +43 662 8890358
www.zumhirschen.at
5 minutes walking distance to the congress centre

www.sheraton.com/salzburg
www.bristol-salzburg.at
www.imlauer.com
www.zumhirschen.at

www.salzburg.info
**CONGRESS PROGRAM IERC 2013**

**TUESDAY, JANUARY 15, 2013**
17.00 – 19.00  Registration

**WEDNESDAY, JANUARY 16, 2013**
08.30 – 09.30  Registration and welcome coffee

09.30 – 11.00  Keynote speakers from industry and authorities
  “Welcome and Introduction”
  Dr Viktor Haefeli, Chairman of the Steering Committee

**KEYNOTE SPEAKERS**
“Trading on the London Metal Exchange (LME)”
Christian Schirmeister, J.P. Morgan, United Kingdom

“Strategies in challenging times”
Anders Jansson, Stena Metall, Sweden

Surprise Keynote Speaker

**PRESENTING THE COWBELL AWARD 2013**

11.00 – 11.30  Coffee break

**Session 1: Dealing with unlevel playing fields around the world?**
**Session Chairman:** Victor Duart, IBM Corporate Environmental Affairs, Spain

11.30 – 11.50  “Creating system of WEEE collection – Problems in Eastern Europe”
  Artur Augustynowicz, Hermes Recycling sp. z o.o., Poland

11.50 – 12.10  “Environmental damages caused by commodities theft – What we can change”
  Christoph Werth, NOEX AG, Germany

12.10 – 12.30  “Prostitution in the waste industry! Are we, the recyclers, prostituted for the producers of WEEE?”
  Poul Bengt, Ragn-Sells Danmark A/S, Denmark

12.30 – 14.00  Lunch

14.00 – 15.30  **PANEL DISCUSSION: “FREE TRADE, FAIR TRADE OR NO TRADE”**
  **Moderator:** Dr Mike Biddle, MBA Polymers, Inc., USA
  **Participants:** Mike Chen, WorldScrap.com, China
  Stefan-Georg Fuchs, Aurubis AG, Germany
  Prof. Oladele Osibanjo, Basel Convention Coordinating Centre for Training & Technology Transfer for the African Region, Nigeria
  Dr Allon Walton, University of Birmingham, United Kingdom

15.30 – 16.00  Coffee break

**Parallel Session 2: Strategic materials recycling**
**Session Chairman:** Dr Thomas Marinelli, Philips Lighting B.V., Netherlands

16.00 – 16.30  “Recycling of rare earth magnets”
  Dr Allon Walton, University of Birmingham, United Kingdom

16.30 – 17.00  “Recycling challenges and opportunities in developing countries”
  The “Producer Alliance” Perspective
  Jean Cox-Kearns, DELL Global Takeback, Ireland

17.00 – 17.30  “Recycled materials in consumer products – A mental step change for consumers and companies alike”
  Cecilia Nord, Electrolux AB, Sweden

17.30 – 18.30  “Bierfass” reception in the exhibition hall sponsored by

19.30  Networking dinner
## Congress Program IERC 2013

### Thursday, January 17, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Parallel Session</th>
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<tbody>
<tr>
<td>08.00 – 09.00</td>
<td>Welcome coffee</td>
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<tr>
<td>09.00 – 09.30</td>
<td><strong>Session 3: Main challenges in WEEE 2.0</strong>&lt;br&gt;Session Chairman: Dr Jaco Huisman, Delft University of Technology, Netherlands</td>
<td><strong>Parallel Session 3: Optimizing pre processing</strong>&lt;br&gt;Session Chairman: Venkatesha Murthy, Vans Chemistry Pte. Ltd., Singapore</td>
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<tr>
<td>09.30 – 10.00</td>
<td>“WEEE2 – Standalone directive or an integral part of the EU’s resource efficiency and Eco design strategies”&lt;br&gt;Sigrid Linher, ORGALIME disbl, Belgium</td>
<td>“REDWAVE XRF – New applications in sensor-based-sorting using X-ray fluorescence”&lt;br&gt;Marin Weiss, REDWAVE a trademark of BT-Wolfgang Binder GmbH, Germany</td>
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<td>10.00 – 10.30</td>
<td>“Producer and product responsibility – Renewal or replacement because of a paradigm shift?”&lt;br&gt;Hans-Jochen Lückefett, WEIEE Services GmbH, Germany</td>
<td>“Recycling of highly functional and strategically important metals from WEEE – Current status and future perspectives”&lt;br&gt;Prof. Vera S. Rotter, Berlin University of Technology &amp; Prof. Sabine Fiamme, Münster University of Applied Sciences, Germany</td>
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<td>10.30 – 11.00</td>
<td>“How WEEELABEX will contribute to a green economy”&lt;br&gt;Pascal Leroy, WEIEE Forum, Belgium</td>
<td>“Becoming more effective in treating WEEE scrap”&lt;br&gt;Dieter Jerschl, Eldan Recycling, Germany</td>
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<tr>
<td>11.00 – 11.30</td>
<td>“The cutting edge technology of LCD treatment”&lt;br&gt;Jan Visser, Coolrec bv, Netherlands</td>
<td><strong>Parallel Session 4: Technology developments</strong>&lt;br&gt;Session Chairman: Prof. Hsiao-Kang Ma, National Taiwan University, Taiwan</td>
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<td>11.30 – 12.00</td>
<td>“Facts &amp; figures of display take back and recycling in Turkey”&lt;br&gt;Murat Ilgar, Exilcom Recycling Ltd., Turkey</td>
<td>“eVOLV™: The cleantech solution to electronic waste”&lt;br&gt;Michael B. Korzenski, ATMI, Inc., USA</td>
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<td>12.00 – 12.30</td>
<td>“Material recovery of CRT panel glass in glass wool production”&lt;br&gt;Martin Fišer, ASEKOL s.r.o. &amp; Jan Brázd, KNAUF INSULATION, spol. s r.o., Czech Republic</td>
<td>“Impacts of shredding technology for efficient WEEE recycling”&lt;br&gt;Jörg Krönig, Vecoplan AG, Germany</td>
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<td>12.30 – 14.00</td>
<td>Lunch</td>
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<td>14.00 – 14.30</td>
<td>“The role of EOLE standards in leveling the playing field”&lt;br&gt;Libby Chaplin, Arcadian Solutions &amp; Anne Peters, Gracestone, Inc., USA</td>
<td><strong>Session 5: Standards more effective than legislation?</strong>&lt;br&gt;Session Chairman: Dr Sven Grieger, ENE EcologyNet Europe GmbH, Germany</td>
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<td>14.30 – 15.00</td>
<td>“Product sustainability standards and the impact on electronics design and recycling”&lt;br&gt;Carl E. Smith, EPEAT &amp; Call2Recycle®, Christina Bocher, DEKRA &amp; Colin Proietto, ULE, USA</td>
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<td>15.00 – 15.30</td>
<td>Coffee break</td>
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<td>15.30 – 17.00</td>
<td><strong>Panel Discussion:</strong> “How Standards Can Contribute to Level Playing Fields”&lt;br&gt;Moderator: Klaus Hieronymi, Hewlett-Packard</td>
<td><strong>Participants:</strong>&lt;br&gt;Representative of European Commission, Belgium&lt;br&gt;Christian Dworak, BSH Bosch und Siemens Hausgeräte GmbH, Germany&lt;br&gt;Lynn Rubinstein, R2 Solutions, USA&lt;br&gt;David Scuderi, Samsung Electronics, United Kingdom (invited)&lt;br&gt;Carl E. Smith, EPEAT &amp; Call2Recycle®, USA&lt;br&gt;Norbert Zonneveld, EERA, Netherlands</td>
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<td>From 17.00</td>
<td>Cocktail reception in the exhibition hall</td>
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MOONTAUNKE BRIXLEGG AG
BRIXLEGG

08.30 Departure by bus to Montanwerke Brixlegg AG
10.30 Arrival at Montanwerke Brixlegg AG
10.30 – 12.30 Visit of the copper smelter
14.30 Arrival at Salzburg Airport
14.45 Arrival at the Salzburg Congress Centre

Montanwerke Brixlegg AG is Austria’s only copper producer and has a history stretching back more than 500 years. Today Montanwerke is one of the leading secondary smelters in Europe.

Core business is recycling copper and other precious metals from scrap and in further steps process it into cathodes and billets. For these two highly pure copper products the total output is over 200’000 tons per year.

www.montanwerke-brixlegg.com

* No guarantee on arrival time due to traffic conditions.
PLANT TOURS IERC 2013
FRIDAY, JANUARY 18, 2013

MÜLLER-GUTTENBRUNN, METRAN AND MBA POLYMERS, AMSTETTEN/KEMATEN

08.00  Departure by bus to Müller-Guttenbrunn Group
10.00  Arrival at the above mentioned 3 companies
10.00 – 14.30  Visit of the shredder plant of Metall Recycling Mü-Gu
              Visit of the metal separation plant of Metran
              Visit of the plastic recycling plant of MBA Polymers
17.00*  Arrival at Salzburg Airport
17.15  Arrival at the Salzburg Congress Centre

The Metall Recycling Mü-Gu in Amstetten de-pollutes the E-Waste in an environmentally friendly manner and each of the de-polluted fractions are disposed of in line with the E-Waste directive. The selective shredder separates high quality ferrous metal scrap; most non ferrous metals are further extracted and concentrated by type of metal (copper, aluminium etc.) by the company Metran GmbH.

Metran also creates a valuable plastics fraction, which is delivered to MBA Polymers for further processing. Even metals <1mm can thus be extracted and re-introduced into the recycling cycle. MBA Polymers recovers high-quality post-consumer ABS, HIPS and PP resins for use in demanding applications. Premium grades are offered under the EvoSource™ brand and are either UL-HB recognized, impact modified and/or available in different colours – replacing virgin plastics and closing the loop. These post-consumer plastics reduce energy consumption by over 80% and protect the environment from between 1 and 3 tons of CO2 emissions, compared to the production of one ton of “virgin” plastics from petrochemicals. The technical visit will include the MBA Polymers plant in Kematen/Ybbs in Lower Austria, which is one of the most advanced plastics recycling facilities in the world, covering approximately 20’000 m², with a processing capacity of 40’000 tons per year. MBA Polymers Austria employs a staff of 75 highly qualified personnel, operating and supervising the individual production stages, quality assurance, and preventive maintenance.


* No guarantee on arrival time due to traffic conditions.
SAH STAHLWERK ANNAHÜTTE
AINRING/HAMMERAU (GERMANY)

08.30  Departure by bus to Stahlwerk Annahütte
09.00  Arrival at Stahlwerk Annahütte
09.00 – 11.00  Visit of the steelworks
11.30* Arrival at Salzburg Airport
11.45  Arrival at the Salzburg Congress Centre

Please note: To wear sturdy, closed-toed shoes is a must. We also recommend to wear stain-resistant clothing.

Whether stabilizer or gear shaft, driller or cutter, in tunnels, runways or skyscrapers – steel from Annahütte has proven itself worldwide in the automotive, tool industry as well as in technical engineering.

The starting product for SBQ bars and threadbars is a 1,500 kg steel billet that is heated to 1,150 °C in a walking beam furnace and then rolled out under enormous pressure to a length up to 1,500 meters. Annahütte rolls and refines steel bars to the desired designs of customers who process them into chains and wrenches, connecting rods, cams and steering shafts. If you drive an European car, it is most likely equipped with components made of Annahütte steel.

For technical engineering designs, the Stahlwerk Annahütte develops and produces threadbar systems in concrete and pre-stressed steel quality. Whether in the foundations of Berlin’s government building, in the new World Trade Center in New York or on the new ICE high speed railway – SAH threadbar systems have proven themselves globally in major construction projects as structural engineering, bridges, tunneling and mining. Annahütte is the world market leader in the segment of hot-rolled threadbar.

As part of its constant research and development work with its own R&D department, SAH has setup cooperation’s with other companies and universities.

www.annahuette.com

* No guarantee on arrival time due to traffic conditions.
With our high-tech equipment, up to 15,000 tons of used electrical appliances can be processed annually in an environmentally-friendly way. Through the use of this equipment, Saubermacher helps to ensure that the entire added value remains in Styria.
A large exhibition area will be offered to companies wishing to display their products or advertising materials. The fees for an exhibition booth for the full time of the congress are:

- Booth 6 m²  2 m × 3 m  EUR 3'500.–
- Booth 12 m²  3 m × 4 m  EUR 4'900.–

Space is limited, so take your chance and book your exhibition booth today!
EXHIBITORS
AS PER SEPTEMBER 28, 2012
Registration for the congress should be made by means of the registration form. Participants registering and paying before November 30, 2012 will benefit from a reduced registration fee. The registration fee includes congress, entrance to the exhibition, proceedings and luncheons.

### Registration Fees

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<th>Event</th>
<th>Before Nov. 30, 2012</th>
<th>After Nov. 30, 2012</th>
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<tr>
<td>Fee for participants</td>
<td>€ 1'490.–</td>
<td>€ 1'590.–</td>
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<tr>
<td>Fee for speakers</td>
<td>€ 890.–</td>
<td>€ 990.–</td>
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<tr>
<td>Fee for students</td>
<td>€ 590.–</td>
<td>€ 690.–</td>
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<tr>
<td>Networking dinner (Jan. 16, 2013)</td>
<td>€ 100.–</td>
<td>€ 120.–</td>
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<tr>
<td>Networking dinner for spouse (Jan. 16, 2013)</td>
<td>€ 120.–</td>
<td>€ 140.–</td>
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### Plant Tours (Jan. 18, 2013):

- Montanwerke Brixlegg AG
  - € 40.–
- Müller-Guttenbrunn, Metran, MBA Polymers
  - € 40.–
- SAH Stahlwerk Annahütte
  - € 40.–
- Saubermacher Dienstleistungs AG
  - € 40.–

All prices excl. 20% Austrian VAT

**Congress registration on site € 100.– surcharge**

### Additional Proceedings

If it is not possible for you to attend the congress, you may purchase the complete proceedings at € 350.–. Participants will get the proceedings free of charge.

### Payment

Payment should be made in EUR by bank transfer or by credit card. Wire payment to:

- **Beneficiary:** ICM AG
- **Bank:** Neue Aargauer Bank, 5400 Baden, Switzerland
- **IBAN:** CH41 0588 1044 7941 7200 0
- **Swift code:** AHHBCH22XXX

On Wednesday, January 16, an unforgettable networking dinner will be organized in beautiful Salzburg.

Do not miss this perfect possibility to meet your business partners and register to this evening now!
The city of Salzburg, best known as the birthplace of Mozart, has a very proud history and is able to magic its visitors back in time. Salzburg is a World Metropolis, Cultural Centre, Festival and Mozart city all rolled into one.

Numerous cultural museums and exhibitions are waiting to be visited. Salzburg offers Tradition and Innovation and also of course outstanding Architecture. There are only a very few cities with such outstanding baroque work within its many churches. Also worth a mention is the Hohensalzburg Fortress a symbol of the Mozart city and the largest complete fortress in middle Europe.

Salzburg, situated on the Salzach (Salt) river is also a city embedded within an imposing mountain world. Discover and experience with us this fascinating city and the amazing natural beauty within the area.