



Recovery of Materials and Energy for Resource Efficiency

September 3-5, 2007, Davos, Switzerland

R'07 World Congress, Davos, Switzerland, September 3 – 5, 2007

Recovery of Materials and Energy for Resource Efficiency

www.r07.org

Final Program

Invited Plenary Speakers

- September 3: Thomas E. Graedel, Yale University, U.S.A.
Louis Schlapbach, Empa, Switzerland
Friedrich Schmidt-Bleek, Factor 10 Institute, France
Alexander Wokaun, ETH and Paul Scherrer Institut, Switzerland
- September 4: Gabi Hildesheimer, Swiss Association for Environmentally Conscious Management, Switzerland
Kit Strange, Resource Recovery Forum, United Kingdom
- September 5: Bas de Leeuw, United Nations Environment Programme (UNEP)
Migen Dibra, Migen Dibra Law Firm, Canada



Materials Science & Technology

SATW

Schweizerische Akademie der Technischen Wissenschaften
Académie suisse des sciences techniques
Accademia svizzera delle scienze tecniche
Swiss Academy of Engineering Sciences



Sunday, September 2

15:00 – 19:00 Registration desk open

Foyer A2

15:00 – 19:00 **Informal Get-together**

Foyer A1

Monday, September 3

07:30 Registration desk open

Foyer A2

08:30 – 09:00 **Opening Session, Part I**

Theatersaal

(Theatre Hall)

Chaired by Edelmann, Xaver

Welcome Address

Edelmann, Xaver, R'07 Congress Chairman, Empa, Switzerland

Welcome Address

Dändliker, René, President, Swiss Academy of Engineering Sciences, SATW, Switzerland

Welcome Address

Lardi, Claudio, Member of the Cantonal Government of Graubünden, Switzerland

Welcome Address

Li, Jinghai, Vice President, Chinese Academy of Sciences, P.R. China

09:00 – 10:30 **Opening Session, Part II**

Theatersaal

Chaired by Edelmann, Xaver

Material Productivity for a Future World

Schmidt-Bleek, Friedrich, Factor 10 Institute, France

The 2000 Watt Society – a Swiss Vision for the Energy Future

Wokaun, Alexander, ETH and Paul Scherrer Institut, Switzerland

Materials for Energy Technologies and Sustainability

Schlapbach, Louis, Empa, Switzerland

10:30– 11:00

Foyer A1

Coffee Break

11:00 – 12:30 **A1 Automotive Industry**

Theatersaal

Chaired by Reuter, Markus A.

State-of-the-art Design for Recycling of Automobiles

van Schaik, Antoinette, Netherlands

Achieving High Recycling Rates for Plastics?

Ignatenko, Olga, Netherlands

Take Back Systems for Workshop Disposal and Warranty Part Management

Winter, Achim, Germany

11:00 – 12:30 **B1 Energy Efficiency in Process Engineering**

Aspen I

Chaired by Zhang, Suojiang

Energy Efficiency of Extraction and Recycling Processes and On-line Control, Optimization and Automation

Kongoli, Florian, Canada



Aspen I

Energy Efficiency of Photocatalytic Gas Cleaning
Krammer, Gernot, Norway

Catalysis for Environmental Processes, Efficient Energy Conversion and Increasing Efficiency of Fossil Fuel
Anikeev, Vladimir, Russian Federation

Energy Saving in Extractive Distillation Using Flowsheet Integration
Xiang, Shuguang, China

11:00 – 12:30

Pischa

C1 Waste Water Treatment

Chaired by Baumgartner, Peter

Thermo-chemical Treatment of Sewage Sludge Ashes Aiming at P-fertiliser Products
Adam, Christian, Germany

Treatment of Biodegradable Wash Waters with Simultaneous Recovery of Fuel Gas Using a New Upflow Granular Anaerobic Sludge Reactor (UGAS-R)
Abbasi, S. A., India

The Use of Life Cycle Assessment (LCA) for Mittal Steel Poland S.A. Water Treatment Processes – Krakow Plant Case Study
Boguslaw Bieda, Poland

Recovery of Acrylic and Acetic Acid from Effluent
Shan, Xinchang, China

11:00 – 12:30

Parsenn

D1 Plastics Recycling

Chaired by De Groot, Hans / Zhang, Suojiang

PET-Bottle-to-Bottle-Recycling – Key Success Factors – 6 Years Experience in Switzerland
Geisselhardt, Patrik, Switzerland

Tyres and Plastics Wastes Kinetic Study
Miranda, Miguel, Portugal

The Recycling of Plastics Wastes from Discarded TV Sets in the Context of LCA: A Sensitivity Analysis to Find Alternatives for Lowering the Environmental Burden
Dodbiba, Gjergj, Japan

Effects of the Number of Reprocessing Passes on Polypropylene/Lignocellulosicfiber Composites
Viksne, Armanda, Latvia

11:00 – 12:30

Jakobshorn

E1 Life Cycle Thinking and Management

Chaired by Caduff, Marloes

Keynote Lecture: The Challenge of Open Cycles – Barriers to a Closed Loop Economy Demonstrated for Consumer Electronics and Cars
Hagelüken, Christian, Germany

A Life-Cycle Inventory Tool for the Treatment of Alternative Fuels and Raw Materials in the Cement Industry
Boesch, Michael, Switzerland

History and Methodology of the Sankey Diagram
Schmidt, Mario, Germany

Optimization of the Waste Management System of an Italian Industrial Area by Life Cycle Assessment
Tarantini, Mario, Italy; Speaker: Scalbi Simona, Italy

12.30 – 14:00

Foyer A1

Lunch Break

14:00 – 14:30

Theatersaal

Invited Plenary Lecture

Chaired by Reuter, Markus A.

Metal Stocks and Sustainability
Graedel, Thomas E., Yale University, U.S.A.



14:30 – 16:00

Theatersaal

A2 Cement Industry

Chaired by Reh, Lotar / Bassan, Mario

Combined Manufacturing of Portland Cement and Slag Cement
Shi, Daming, Canada

Simulation, Evaluation and Optimisation of Alternative Fuels in an Existing Cement Manufacturing Process
Kääntee, Ursula, Finland

The Use of Alternative Fuels and Raw Materials in Swiss Cement Industry – A Commitment to Industrial Ecology
Monteil, Michel B., Switzerland

Experience with Co-processing Waste Material in Cement Kilns in Developing Countries
Mutz, Dieter, Switzerland

A Metabolism Analysis of Typical Production Systems in the Cement Sector in China
Li, Xiaoqing, China

14:30 – 16:00

Aspen I

B2 Energy Recovery and Power Generation

Chaired by Ludwig, Christian / Zevenhoven, Ron

Energy Recovery from Solid Waste Using Non-combustion Processes
Worrell, William, U.S.A.

Thermal Energy Recovery from Municipal and Industrial Reclaimed Water – An Important Approach for Circular Economy in P.R.China
Zan, Cheng, China

Evaluation of Efficiency of Power Plants Using Hydrothermal Processes
Hirosaka, Kazuma, Japan; Speaker: Hasegawa Tatsuya, Japan

Online Trace Elemental Analysis of Process Gases – A Key to Optimization and Assessment of Renewable Power Plants
Wochele, Jörg, Switzerland

14:30 – 16:00

Pischa

C2 Toxic Waste Treatment

Chaired by Fahrni, Hans-Peter / Caduff, Marloes

Thermochemical Conversion of Asbestos Containing Radionuclides and Toxic Metals
Timmons, Dale, U.S.A.; Speaker: Blanchot, Patrice, U.S.A.

Investigation of Heat and Mass Transfer Processes in Plasma Shaft Furnace for Toxic Waste Treatment
Mosse, Alfred, Belarus / Sauchyn, Vasili, Belarus

Experimental Quantification of Contaminant (Im)Mobilization Kinetics - Uranyl Sorption/Desorption from Iron Oxides
Regenspurg, Simona, Switzerland

14:30 – 16:00

Parsenn

W1 Workshop: Plastics Recycling in the North-South Context, Part I

Chaired by Geisselhardt, Patrik, Switzerland / Schelker, Raymond, Switzerland

In this workshop we compare, discuss and develop plastics recycling systems in the North-South-Context. Therefore we start in part I with presenting two different two different examples: one is a system in Costa Rica ; the second one is PET Recycling in Switzerland. In part II we discuss the different systems, their advantages and disadvantages. We establish critical success factors and look at opportunities (like to fight against poverty) and have a look, what know-how is needed to establish a sustainable recycling system in the south.

16:00 – 16:30

Foyer A1

Coffee Break

16:30 – 18:00

Theatersaal

A3 Coal Combustion Products

Chaired by Reh, Lothar / Itoh, Hideaki

Keynote Lecture: Coal Combustion Products – Valuable Raw Materials for the Construction Industry
vom Berg, Wolfgang, Germany



Theatersaal

Recycling of Coal Dust and Coal Tar in Blast Furnaces – SAIL's Experience
Das, Asok Kumar, India

Recultivation of Landscape by Coal Combustion Products Utilisation
Svoboda, Miroslav, Czech Republic

16:30 – 18:00

Aspen I

B3 LCA in Waste Treatment and Recycling

Chaired by Hellweg, Stefanie / Strange, Kit

Keynote Lecture: LCI Modelling Approaches Applied on Recycling of Materials in View of Environmental Sustainability, Risk Perception and Eco-efficiency
Frischknecht, Rolf, Switzerland

LCA Applied to Innovative Solutions for Recovery and Recycling Waste
Scalbi, Simona, Italy

Ecosolvent: A Tool for the Environmental Assessment of Waste-solvent Treatment in Chemical Industry
Capello, Christian, Switzerland

Life Cycle Modeling of Industrial Wastewater Treatment Systems
Köhler, Annette, Switzerland

16:30 – 18:00

Pischa

C3 Organic Municipal Solid Waste

Chaired by Sharma Vinod Kumar / Huwiler, Theo

Ecological and Energetic Comparison of Different Technologies to Treat the Organic Fraction of Municipal Solid Wastes
Edelmann, Werner, Switzerland

Solid Waste Disposal of Colombo Municipal Council (CMC) / Sri Lanka.
Herath, Malani, Sri Lanka

Treatment of "Hard" Bio-wastes with Resource Recovery by Termite Action - a New Frontier in Solid Waste Management
Ganesh, P. Sankar, India

16:30 – 18:00

Parsenn

W1 Workshop: Plastics Recycling in the North-South Context, Part II

Chaired by Geisselhardt, Patrik, Switzerland / Schelker, Raymond, Switzerland

Advantages and disadvantages of different plastics recycling systems. We establish critical success factors and look at opportunities (like to fight against poverty) and have a look, what know-how is needed to establish a sustainable recycling system in the south.

18:00 – 20:00

Foyer A1 and
Konferenzsaal
(Conference Hall)

Welcome Reception and Poster Award



Tuesday, September 4

08:30 – 09:00

Theatersaal

Invited Plenary Lecture

Chaired by Hilty, Lorenz

Promoting Sustainability: A One Stop Shop for Efficiency Tools

Hildesheimer, Gabi, Swiss Association for Environmentally Conscious Management, Switzerland

09:00 – 10:30

Theatersaal

A4 Construction Materials I

Chaired by Bassan, Mario / Simon, Franz-Georg

Agent Based Modeling (ABM) for Analyzing Demand for Recycled Mineral Construction Material

Knöri, Christof, Switzerland

Potentials for Mineral Construction Wastes as Secondary Resources in Switzerland – a Case Study on Concrete Wastes

Seyler, Christina, Switzerland

Self Compacting Concrete with Powdered Minerals

Mueller Anette, Germany / Seifert, Gabi, Germany

Use of Recycled Aggregates for Structural Elements Made with High-Performance Concrete

Bassan, Mario, Italy

09:00 – 10:30

Aspen I

B4 Closing the Loops – Opportunities and Limits

Chaired by Zevenhoven, Ron / Reh, Lothar

Keynote Lecture: Thermodynamics and Resource Consumption – the Case of Copper Production and Recycling

Gössling-Reisemann, Stefan, Germany

CO₂ Sequestration by Carbonation of Minerals and Industrial By-products in Finland

Zevenhoven, Ron, Finland

Study on Approaches of Circular Economy Technologies Utility for Biomass Energy in China's Rural Areas

Shang, Jie, China

09:00 – 10:30

Pischa

C4 Materials and Energy from Biomass

Chaired by Zhang, Suojiang / Sharma, Vinod Kumar

Biomass Refinery System under Closed Environmental Situation, Case Study at Miyako-Island, Japan

Shinogi, Yoshiyuki, Japan

Lignin: An Alternative Source for the Production of Chemicals?

Voitl, Tobias, Switzerland; Speaker: Rudolf von Rohr, Philipp

Potentials and Challenges of Bioplastics – Insights from a German Survey on "Green" Future Markets

Beucker, Severin, Germany

Material Flow Management of Biomass Residues

Krause, Susann, Germany

Comprehensive Utilization of Process Residues in Light Industry: The Technological Scheme in China

Xu, Guangwen, China; Speaker: Wan, Yinhua

09:00 – 10:30

Parsenn

D4 Electrical/Electronic Waste and Producer Responsibility

Chaired by Röthlisberger, Andreas / Kongoli, Florian

Keynote Lecture: Better Take Back Legislation?

Hieronymi, Klaus, Germany

Costa Rica's first EPR Model towards a Sustainable Management of E-Waste

Roa-Gutierrez, Floria, Costa Rica



Parsenn

The Role of Computer Refurbishing in Green Industrial Parks
Seldman, Neil, U.S.A.

The "Green E-Waste Channel" as an Environmental Friendly and Socially Responsible Concept to Manage E-Waste In Emerging Economies
Bondolfi, Anahide, Switzerland

09:00 – 10:30

Jakobshorn

E4 Political and Legal Frameworks

Chaired by Strange, Kit

The Ecology of Wasting
Huls, J. Michael, U.S.A.

Recovery Rates as a Tool for Goal-oriented Treatment of Cooling Appliances
Rechberger, Helmut, Austria

Factor Analysis to Decrease Municipal Waste and to Convert City to 3R Society
Okayama, Tomoko, Japan

10:30 – 11:00

Foyer A1

Coffee Break

11:00 – 12:30

Theatersaal

A5 Construction Materials II

Chaired by Bassan, Mario / Simon, Franz-Georg

Mechanical Properties of Crumb Rubber Modified Asphalt Using the Dry Process
Pasetto, Marco, Italy

Effect of the Addition of Woodwork Activity Waste and Aggregate Crushing Waste on the Thermo-Mechanical Properties of Sand Concretes
Bederina, Madani, Algeria

Study of Treated Rubber Waste in Soil Stabilised Blocks
Parasivamurthy, Prakash, India

11:00 – 12:30

Aspen I

B5 Municipal Solid Waste Incineration

Chaired by Ammann, Pierre / Morselli, Luciano

Thermal Treatment of Municipal Solid Waste Incineration ESP Ash
Xiao, Yanping, Netherlands

Removal of Chloride and Recovery of Valuable Metals from Bottom Ash for Recycling
Ito, Ryoji, Japan; Speaker: Dodbiba, Gjergj, Japan

Characterization of a New Adsorbent Developed from Waste Ash
Zhang, Fu-Shen, China

11:00 – 12:30

Pischa

C5 Biofuels

Chaired by Ludwig, Christian / Sharma, Vinod Kumar

Hydrothermal Methane from Biomass
Haiduc, Anca Gabriela, Switzerland; Speaker: Dr. Christian Ludwig, Switzerland

Optimization of Bio Methanation and Composting for Managing Sugar Processing Waste
Ariyaratne, Hiromi, Sri Lanka

Characterization and Optimization of Animal Manure for Biogas Production
Eze, Ifeanyi, Nigeria

NOx Emissions Control by Decoupling Combustion Technique during Biomass Combustion
Gao, Shiqiu, China

Transesterification of Soybean Oil to Biodiesel Using CaO as a Solid Base Catalyst
Wang, Yujun, China / Liu, Xuejun, China

11:00 – 12:30

Parsenn

D5 Electrical/Electronic Waste Recycling

Chaired by Hagelüken, Christian / Reuter, Markus A.

WEEE Treatment in Europe – Facts and Figures
Kolba, Helmut, Germany



Parsenn

From Dismantling-factories to Dismantling-parks: Improving the Technology of Manual Dismantling Processes of Small Electric and Electronical Appliances via Software Modules and Product Analysis
Spitzbart, Markus, Austria

Optimal Recycling for Printed Wiring Boards (PWBs) in India
Rochat, David, Switzerland

Material Flow and Economic Analysis as a Suitable Tool for System Analysis under the Constraints of Poor Data Availability and Quality in Emerging Economies.
Streicher-Porte, Martin, Switzerland

11:00 – 12:30

Jakobshorn

E5 Socio-Economic Aspects

Chaired by Luger, Tobias / Sarwar, Ivan

From System Theory to Practical Implementation - a Transdisciplinary Approach to Develop a Nationwide Systemic Landfill Rating
Lang, Daniel J., Switzerland

Miniaturization of High-Tech Products Reduces Raw Material Prices
Boutellier, Roman, Switzerland / Rohner, Nicolas, Switzerland

Re-Approaching the Supply Chain Re-Engineering towards Global Sustainability
Malindretos, George, Greece

12.30 – 14:00

Foyer A1

Lunch Break

14:00 – 14:30

Theatersaal

Invited Plenary Lecture

Chaired by De Groot, Hans

Developments and Trends in European Municipal Solid Waste Management Policy and Practice
Strange, Kit, Resource Recovery Forum, United Kingdom

14:30 – 16:00

Aspen II

A6 Construction Materials III

Chaired by Bassan, Mario / Simon, Franz-Georg

Impact of Waste Co-incineration on Heavy Metal Concentration of the Clinker in Japan
Takahashi, Fumitake, Japan

Comparative Studies about the Composition of C&D Recycled Aggregates from Different Sources
Angulo, Sérgio C., Brazil / Mueller, Anette, Germany

Dredged Sediments Characterization and Contaminant Speciation after Phosphate Treatment
Yacoubi, Nadia, France

14:30 – 16:00

Aspen I

B6 Metal Recovery

Chaired by Kongoli, Florian / Reh, Lothar

Resource Recovery of Rare Metals from Cemented Carbide by Hydrothermal Nano-Process
Itoh, Hideaki, Japan

Assessment of the Resource Efficiency of Remelting and Refining of Coated Magnesium.
Meskers, Christa, Netherlands

Recycling of Aluminum Scrap
Zhang, Lifeng, Norway

Pyrometallurgical Systems for Recycling and Thermal Treatment of Industrial and Municipal Wastes
Ye, Guozhu, Sweden; Speaker: Burström, Eric, Sweden

The Good Using of the Useful Elements from the Pb-Cu Crusts Resulted from the Copper Removal
Butnariu Ilie



14:30 – 16:00

Pischa

W3 Workshop: Biofuels – from Waste or Agriculture? Part I

Chaired by Zah, Rainer, Switzerland / Ludwig, Christian, Switzerland

In this workshop we will discuss future opportunities and risks of producing biofuels (and biomaterials) from waste. Some of the questions addressed will be:

1. Which waste fractions have the highest potential for fuel production?
2. What are the most efficient conversion technologies for biogenic waste from an environmental and economic perspective?
3. Should biogenic waste rather be used for fuel production or for co-generation?
4. What is the future role of biogenic waste in facing the global energy crisis?

14:30 – 16:00

Parsenn

W4 Workshop: Electrical/Electronic Waste Recycling, Part I

Chaired by Schluep, Mathias, Switzerland

Keynote lecture: Case Studies in Developing Countries – an Overview

Boeni, Heinz, Switzerland

Waste electrical and electronic equipment (WEEE), or e-waste contains both valuable and toxic materials and has been subject to regulations in most industrialized countries. The workshop aims to identify the major challenges and needs associated with the management of e-waste in countries with different cultural and economic backgrounds. We will identify differences between developing and industrialized countries and elaborate on strategies for the exchange of knowledge and experience between North and South as well as South and South.

Global initiatives such as the “Swiss Knowledge Partnerships in e-Waste Recycling” program and the UN Initiative StEP are addressing the issue. The workshop features several international experts from these two initiatives. Local experts from developing countries, who currently are implementing e-waste management systems in their countries will be attending and supporting the workshop.

Part 1: Major challenges in e-waste management: The workshop participants identify the major challenges associated with the management of e-waste as an emerging problem as well as a business opportunity of increasing significance. They analyse and compare experiences gained in the implementation of e-waste management systems in both developed and developing countries. In Part 1 lessons learnt from e-waste projects in developing countries will be introduced.

14:30 – 16:00

Jakobshorn

W5 Workshop: Zero Waste, Part I

Chaired by Anthony, Richard, USA / Huls, Michael, USA

Participants of this workshop will be given a short exam and an opportunity to obtain a Temporary Certificate of Completion in Integrated Resource Management jointly issued by CRMTI and R'07. It is organized in four (sub-)sessions:

Session 1 Integrated Resource Management: Techniques and implementation of a variety of programs and actions that change waste management into resource management.

Session 2 Organics Resource Management: Participants will learn about the technologies, siting, environmental impacts, and marketing as it is currently done by many practitioners.

Session 3 Supply and Demand: Participants will learn about profiling their wasted resources as a supply for end uses, and learn critical aspects about markets and market demand, from local development to international trade.

Session 4 Moving Business to Clean Production and the Triple Bottom Line: This session is intended to bring participants up to speed with the need to move businesses to clean production, and to understand and adopt the triple bottom line as a resource management principle of business.

16:00 – 16:30

Foyer A1

Coffee Break



16:30 – 18:00

Aspen II

A7 Steel Industry

Chaired by Fahrni, Hans-Peter

Keynote Lecture: Generation and Utilization of Residues and By-products in the German Steel Industry
Endemann, Gerhard, Germany

Integrated Planning of the Recycling of EAF dusts
Froehling, Magnus, Germany; presented by Bartusch, Hauke, Germany

The Use of EAF Steel Slags in Hydraulically Bound Mixtures for Road Foundations: A Laboratory Characterization
Pasetto, Marco, Italy

Treatment and Characterization of Electric Arc Furnace Slag for Cementitious Properties
Muhmood, Luckman, India; Speaker Vitta, Satish, India

16:30 – 18:00

Aspen I

B7 Energy Management

Chaired by Itoh, Hideaki / Zevenhoven, Ron

Waste of Energy in Information Technology: Sustainability Considerations
Broda, Hellmuth, Switzerland

Energy Management: Optimisation of the Use of Steam in the Textile Industry in Mauritius
Elahee, Khalil, Mauritius

Energy Production Systems with a Low Environmental Impact: The Case of the Polymer Electrolyte Membrane Fuel Cells (PEMFCs)
Fontananova, Enrica, Italy

Study on China's Implicit Energy Exported in the Last Decade
Li, Zhou, China

16:30 – 18:00

Pischa

W3 Workshop: Biofuels – from Waste or Agriculture? Part II

Chaired by Zah, Rainer, Switzerland / Ludwig, Christian, Switzerland

16:30 – 18:00

Parsenn

W4 Workshop: Electrical/Electronic Waste Recycling, Part II

Chaired by Schluemp, Mathias, Switzerland

Keynote Lecture: Solving the E-Waste Problem – the UN Initiative StEP
N.N.

Global knowledge partnerships: The second part of the workshop aims to identify strategies and tools to support global knowledge partnerships for e-waste management. International exchange is needed in order to close the knowledge and technology gaps and tackle the major challenges as identified in the first part of the workshop.

16:30 – 18:00

Jakobshorn

W5 Workshop: Zero Waste, Part II

Chaired by Anthony, Richard, USA / Huls, Michael, USA

19:30 – 23:30

Theatersaal

Congress Banquet



Wednesday, September 5

In parallel with the R'07 Congress, the SATW Annual Congress "Spreading Innovation between Asian Nations and Switzerland" will take place on September 5. This congress is open to R'07 participants. Please find the program in your congress folder.

08:30 – 09:00

Theatersaal

Invited Plenary Lecture

Chaired by Kongoli, Florian

Overview of the Legal Status of Recent Mergers and Acquisitions in Recycling and Metal Industries

Dibra, Migen, Quebec Court of Appeal, Canada

09:00 – 10:30

Theatersaal

A8 Recovery from Solid Waste

Chaired by Zevenhoven, Ron / Zhang, Suojiang

Keynote Lecture: Recovery of Metals from Solid Industrial Wastes

Mishra, Brajendra, Kroll Institute for Extractive Metallurgy, Colorado School of Mines, U.S.A.

Preparation and Properties of CaO-Al₂O₃-SiO₂ Compounds for Recycling of Steel Slag, Paper Sludge and Coal Fly Ash

Kobayashi, Atsushi, Japan / Okada, Kiyoshi, Japan

Solid Waste as an Economic Generator for Sustainable Development

Mahoney, Patrick F., Ireland

Solid Waste Material Characterization and Recognition by Hyperspectral Imaging Based Logics

Bonifazi, Giuseppe, Italy

09:00 – 10:30

Aspen I

B8 Industrial Symbiosis

Chaired by Anthony, Richard

Why Resource Recovery Parks?

Anthony, Richard, U.S.A.

Case Studies to Recycle Materials in the Manufacturing Industry

Stucki, Gerhard, Switzerland

A Regional Industrial Symbiosis Methodology and its Implementation in Geneva, Switzerland

Massard, Guillaume, Switzerland

Agro-Industrial Symbiosis and Population's Living Condition Improvement in North Nigeria

Schwab-Castella, Pascale, Switzerland

09:00 – 10:30

Pischa

C8 Battery Recycling

Chaired by Kongoli, Florian / Worrell, Bill

Lead Recycling and Battery Grid Making in a Single Emission-free Process

Warlimont, Hans, Germany

Environmental Evaluation of Treatment Scenarios for Waste Batteries (Alkaline and Zinc-Coal Fraction) Collected in Belgium

Briffaerts, Katleen, Belgium



09:00 – 10:30
Parsenn

W6 Workshop: Emerging Technologies and Scarce Metals, Part I

Chaired by Wäger, Patrick, Switzerland

With introductory presentations by Daniel Lang, Christian Hagelüken and others.

The aim of this workshop is to discuss the role of emerging technologies in inducing metal scarcities and the possibilities of the recycling industry to prevent or counteract such scarcities. Invited experts will give short presentations on issues such as:

1. How can "scarcity" be defined? How do metal scarcities emerge? How shall metal scarcity be measured?
2. For which metals are scarcities to be expected in the next decades? Based on what figures and assumptions?
3. What is the role of emerging IC and energy technologies in inducing metal scarcities? Which technologies are expected to significantly increase the metals demand? Will substitution effects occur?
4. How can recycling industry contribute to the prevention of metal scarcities induced by emerging technologies and to reduction of dependencies on primary production?

Following the presentations, common denominators and controversial issues shall be identified in a discussion with the workshop participants. As an output of the workshop, action recommendations for relevant actors (science, policy makers, producers, recycling industry) shall be formulated.

10:30 – 11:00
Foyer A1

Coffee Break

11:00 – 12:30
Theatersaal

A9 Sustainable Resource Management

Chaired by Worrell, Bill

Life Cycle Management Strategies Applied to Waste Prevention
Morselli, Luciano, Italy / Carrillo Viviana, Italy

Using a Landfill as Construction Site – a Geochemical Risk Assessment at Smokey Mountain
Regenspurg, Simona, Switzerland

Evaluation on Progress of Building a Resource-Efficient and Environment-Friendly Society in China
Wang, Yi, China

Constructed Wetlands – Ecohydrology Approach To Water Resources Management
Belic, Anđelka, Yugoslavia

11:00 – 12:30
Aspen I

B9 Management Methods

Chaired by Geisselhardt, Patrik / De Groot, Hans

Business Process Design in Extended Supply Chains
Herrmann, Christoph, Germany, presented by Luger, Tobias, Germany

Resource Management Audits – A Proven Tool to Develop P3 in Municipalities and Industries
Huls, J. Michael, U.S.A.

Rational Energy Use and Waste Minimization Goals Based on the Use of Production Data
Posada, Enrique, Colombia

Management of Options for Sustainable Waste Management in Switzerland
Spörri, Andy, Switzerland

11:00 – 12:30
Pischa

C9 Resource Statistics and Material Flow Analysis

Chaired by Ludwig, Christian / Caduff, Marloes

Energy and Material Stream Mapping
Schmidt, Mario, Germany

Waste Input-Output Material Flow Analysis of Metals and Plastics in the Japanese Economy
Nakamura, Shinichiro, Japan

Accounting for Steel Stock in Japan
Daigo, Ichiro, Japan



Pischa

Patterns of Historic Iron Stocks in Use and Implications for Primary and Secondary Resource Use
Mueller, Daniel, U.S.A.

11:00 – 12:30

Parsenn

W6 Workshop: Emerging Technologies and Scarce Metals, Part II

Chaired by Wäger, Patrick, Switzerland

12.30 – 14:00

Foyer A1

Lunch Break

14:00 – 14:30

Theatersaal

Invited Plenary Lecture

Chaired by Hilty, Lorenz

Resource Efficiency and the Environment: Doing more with Less
de Leeuw, Bas, Head, Integrated Resource Management, UNEP, France

14:30 – 16:00

Theatersaal

A10 Rump Session

Chaired by Hilty, Lorenz

The RUMP SESSION provides the participants with an opportunity to briefly present their ideas on any aspect of the congress topics in an informal setting. Please inform the reception desk if you want to speak in the rump session. Time slots of 5-10 minutes will be reserved on a first come, first served basis.

14:30 – 16:00

Aspen I

B10 Information Systems for Resource and Waste Management

Chaired by Geisselhardt, Patrik

Metadata Driven Acquisition, Search and Procurement of Secondary Material within an Internet-based Market

Bremer, Jörg, Germany

The Role of Smart Labels for Resource and Waste Management

Binder, Claudia, Switzerland

Efficient Organization of WEEE Material and Information Flows Considering Interfaces in the Extended Supply Chain of the Electronic Industry

Hottenroth, Heidi, Germany

14:30 – 16:00

Pischa

C10 Education for Material Efficiency and Recycling

Chaired by Morselli, Luciano

Material Efficiency in Higher Education - Requirements Regarding Teaching and their Practical Realisation in a New Simulation Game

Keil, René, Germany

Saving \$ Saving Resources with "Zero Waste" as a Goal

Strauss, Nancy, U.S.A.

Eco-Literacy in Solid Waste Recovery at Community

Sadhana, J., India; presented by: Jagannatha, Er V.

14:30 – 16:00

Parsenn

W7 Workshop: Ecological and Social Footprint of Electronics

Chaired by Eugster, Martin, Switzerland

Keynote Lecture: Social Impacts of the Production of Notebook PCs

Manhart, A., Germany

Environmental Impact of a Chinese Desktop PC - a Life Cycle Assessment Study

Hischier, Roland, Switzerland

The electronics industry is one of the fastest growing sectors in today's global economy. Falling prices and additional functionality and computing power lead to high obsolescence rates and increasing demand of electronic products. The complexity of the technology and competition force product manufacturers to procure raw materials and components on the global market. Supply chain management becomes a difficult business process. Identifying and managing environmental and social implications along the entire product life cycle is highly challenging. We will address the questions:

1. What are the key environmental impacts of the product life cycle of electrical and electronic equipments (EEE)?
2. What are the key social impacts of the product life cycle of EEE?
3. What are promising mechanisms / approaches to reduce negative environmental and social impacts of EEE production, consumption and disposal? What should be the responsibilities of the actors along the value chain?



16:00 – 17:00

Theatersaal

Closing Session

Chaired by Edelmann, Xaver

Reports from Workshops

Summary Report SATW Congress

17:00 – 19:00

Foyer A1

Farewell Party

Thursday, September 6

08:30 – 15:00

(Point of Departure:
we meet at the
Congress Center,
Main Entrance)

Post Conference Tour 1

Factory tour

First we will visit the MISAPOR-plant, which produces foam glass from collected glass waste. At Domat-Ems the biofuel furnace of TEGRA will be presented. Using the residues from the adjacent timber facilities of STALLINGER, steam and electricity for the nearby chemical plant of EMS-CHEMIE is generated. After a short lunch, the tour will conclude with a visit to the HOLCIM cement plant. To reduce the consumption of coal and oil, the plant uses alternative fuels such as dried sewage sludge, waste oil, plastics and animal meal.

The tour will end in Landquart. Participants will be able to catch the trains to Zurich departing after 15:00 hrs (3 p.m.). There are departures at 15:04, 15:19 and 15:26. Those returning back to Davos can take the train at 15:47 hrs (3.47 p.m.).

08:30 – 15:30

(Point of Departure:
we meet at the
Congress Center,
Main Entrance)

Post Conference Tour 2

Plant visit

We will visit the Kompogas Blowaste Processing Information Center in Otelfingen. First there will be an introduction to the ecological cycle for treatment of organic waste, afterwards we will visit the fermentation plant and the aqua-culture plant. After a short lunch we will see the Kompogas movie and finally have a look at a gas driven kart.

16:00 Arrival at Zurich airport, and at Zurich railway station

Organization

Congress
Secretariate

Maria Schönenberger, maria.schoenenberger@empa.ch

Therese Meier-Bracher, therese.meier@empa.ch

Monika Mauchle, monika.mauchle@empa.ch

Steering Committee

Chair: Dr. Xaver Edelmann, xaver.edelmann@empa.ch

Scientific Committee

Chair: Dr. Lorenz Hilty, lorenz.hilty@empa.ch

Industrial
Committee

Chair: Dr. arthur ruf, arthur.ruf@satw.ch