

Up to the middle of this century the world's population is expected to grow to about 10 billion. Over the same time, reserves of fossil fuels will be dwindling. Current rates of consumption will cause climate change and shortages of energy, leading to dramatic deteriorations of our living conditions and of the world's economies. The beginning of these developments is already visible.

Can the global energy supply and climate change crises be averted by a transition from fossil fuels to clean and inexhaustible sources of energy? **This would require that by 2050 about 50,000 TWh of power would be generated annually from sustainable sources.**

**Do such resources exist?
Can technology be produced in time?**

Fortunately, there is a variety of resources: wind, solar, hydro, geothermal, wave, tidal, and biomass, and a variety of technologies. The by far largest but up to now least tapped source is solar power from deserts: **at less than 1% of the world's deserts, any possible electricity demand by 10 billion people could be met by solar generation.** The 2008 Energy Forum will focus on the **DESERTEC Concept developed by The Club of Rome:** to put deserts and technology into service for global energy, water and climate security. Amongst the currently available technologies, the most useful one appears to be **Concentrating Solar Thermal Power (CSP) technology,** combined with high temperature heat storage for night operation and dispatchable capacity, and with **HVDC long distance transmission for world-wide distribution.**

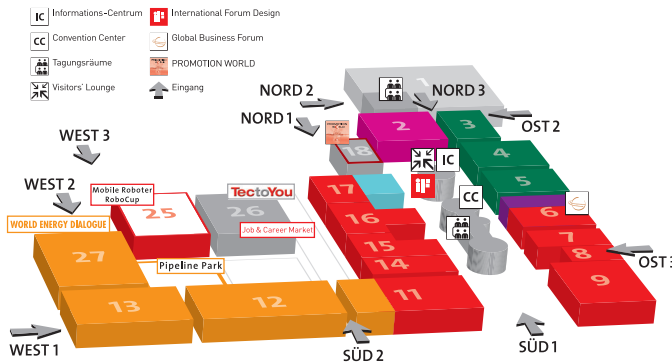
The required large-scale transition from fossil fuels to a mix of renewable sources of energy constitutes an unprecedented business opportunity for industry: consumption of fuels would be replaced by manufacture of equipment. The 2008 Energy Forum takes into focus the CSP technology.

**Is industry interested in these new opportunities?
Is industry capable of making such offer?**

To meet 50% of the expected global power demand – about 25,000 TWh/year – by clean power from deserts would mean creating solar collectors with a generating capacity of about 10,000 GW. If that were to be achieved by 2050, a worldwide installation rate of about 1 GW per day would be required. What does this mean for the development of technologies, for the logistics of deployment, and for the processes of production and investment? **Can industry worldwide produce and install collectors at the rate of 1 GW/day?** For the region of Europe, the Middle East and North Africa, collectors with a generating capacity of about 1,500 GW would be needed, corresponding to an installation rate of about 1 GW per week. Experts from various sectors are invited to assess whether this is feasible and to recommend appropriate public policies.

The 2008 Energy Forum "10,000 Solar GigaWatts" will alert people from industry and others attending the Hanover Fair about an important emerging industrial sector: clean power from deserts for the world. It will give a survey of the status of the necessary technologies and pose the question: How can industry create the manufacturing capacity that will be needed for global energy and climate security?

The envisaged topics are listed on reverse side.



- **INDUSTRIAL AUTOMATION INTERKAMA+**
Internationale Leitmesse der Prozessautomation (Hallen 6–9, 11)
- FACTORY AUTOMATION**
Internationale Leitmesse der Fertigungsautomation (Hallen 8, 9, 11, 14–17)
- INDUSTRIAL BUILDING AUTOMATION**
Internationale Fachmesse für vernetzte Systeme der Gebäude- und Produktionsautomatisierung (Hallen 8, 9, 11)
- **DIGITAL FACTORY**
Internationale Leitmesse für integrierte Prozesse und IT-Lösungen (Halle 17)
- **SUBCONTRACTING**
Internationale Leitmesse der Zulieferung von Werkstoffen, Komponenten und Systemen für den Fahrzeug-, Maschinen- und Anlagenbau (Hallen 3–5)
- **ENERGY**
Internationale Leitmesse der erneuerbaren und konventionellen Energieerzeugung, Energieversorgung, -übertragung und -verteilung (Hallen 11–13, 27)
- **POWER PLANT TECHNOLOGY**
Internationale Leitmesse für Kraftwerksplanung, -bau, -betrieb und -instandhaltung (Halle 27)
- **PIPELINE TECHNOLOGY**
Internationale Leitmesse der Technologien und Systeme für die Pipelineindustrie (Halle 27, Pipeline Park)
- **MICROTECHNOLOGY**
Internationale Leitmesse der angewandten Mikrosystem-techniken und Nanotechnologien (Halle 6)
- **RESEARCH & TECHNOLOGY**
Innovationsmarkt Forschung und Entwicklung (Halle 2)

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ENERGY FORUM 10,000 SOLAR GIGAWATTS

23.–24. APRIL 2008



Halle 27 – Stand A 34

Titelbild: Deutsches Zentrum für Luft- und Raumfahrt e.V. Institut für Technische Thermodynamik



State of the Art in Concentrating Solar Thermal Power (CSP) Technologies

Morning State of the Art CSP Technologies

- 10:00 – 10:15 Chairman's Opening Remarks**
Dr. Gerhard Knies, DESERTEC Project Director, German Association CLUB OF ROME; Coordinator, Trans-Mediterranean Renewable Energy Cooperation (TREC)
- 10:15 – 10:50 Line Concentrators for Power Generation: Parabolic Trough and Linear Fresnel**
Prof. Dr.-Ing. Robert Pitz-Paal, Head of Solar Research Unit, German Aerospace Center (DLR)
- 10:50 – 11:10 Line-Concentrators for Industrial Process Heat**
Dr. Andreas Häberle, CEO, PSE AG
- 11:10 – 11:35 Point Concentrating Technologies: Solar Tower**
Prof. Dr.-Ing. Bernhard Hoffschmidt, Director, Jülich Solar Institute at the Aachen University of Applied Sciences
- 11:35 – 11:55 Solar Thermal Energy Storage Technologies**
Doerte Laing, Research Area Manager Thermal Energy Storage, German Aerospace Center (DLR)
- 11:55 – 12:30 Interactive Discussion Session with Speakers**
- 12:30 – 13:15 Lunch break**

Afternoon CSP and long-distance Transmission Projects

- 13:15 – 13:30 Chairman's Opening Remarks**
Dr. Gerhard Knies
- 13:30 – 14:00 CSP Projects Worldwide**
Dr. Michael Geyer, Director Int. Business Development, Abengoa Solar S.A.
- 14:00 – 14:20 CSP Development in Europe up to 2030**
Dr.-Ing. Luis Crespo, General Secretary, ProTermoSolar; Vice President, European Solar Thermal Electricity Association (ESTELA)
- 14:20 – 14:50 Combined Heat, Power, Desalination and District Cooling with CSP**
Jürgen Kern, Managing Director, kernenergien | the solar power company
- 14:50 – 15:20 High-Voltage Direct Current (HVDC) Power Transmission**
Gunnar Asplund, R&D Manager HVDC, ABB Power Technologies
- 15:20 – 15:25 Plans for 1000 MW in the Mediterranean Region up to 2016**
Dr. Michel Lefort, Solar Euromed SAS
- 15:22 – 16:00 Interactive Discussion Session with Speakers**
- 16:00 – 17:00 Networking Café**

DESERTEC: 10,000 Solar GigaWatts from Deserts

Morning 10,000 Solar GigaWatts by 2050 – 1 Solar GW per Day:

- Stabilization of global climate requires almost complete decarbonisation of the power sector.
Can CSP industry master such expansion rates?
Requirements for materials, production facilities, deployment logistics and human resources.
What are the main bottlenecks and are there insurmountable obstacles?
- 10:00 – 10:20 Chairman's Opening Remarks. Facts and Results of the Wednesday Sessions**
Dr. Gerhard Knies, DESERTEC Project Director, German Association CLUB OF ROME; Coordinator, Trans-Mediterranean Renewable Energy Cooperation (TREC)
- 10:20 – 10:35 Large-Scale Deployment of Parabolic Trough Collectors**
Prof. Dr. Fritz-Dieter Doenitz, Senior Advisor Solar Millennium AG
- 10:35 – 10:50 Large-Scale Deployment of Fresnel Collectors, as seen from Ausra, Inc**
Dr. David Mills, Chairman and Chief Research Officer
- 10:50 – 11:05 Large-Scale Deployment of Fresnel Collectors, as seen from NOVATEC-BioSol AG**
Martin Selig, CEO
- 11:05 – 11:20 Large-Scale Deployment of Solar Towers, as seen from BrightSource Energy, Inc**
Yoel Gilon, Senior Vice President, LUZ II Ltd.
- 11:20 – 11:35 Large-Scale Deployment of Solar Towers, as seen from Abengoa Solar S.A.**
Dr. Michael Geyer, Director Int. Business Development
- 11:35 – 11:50 CSP Plant Construction, as seen from MAN Solar Millenium GmbH**
Dr. Wolfgang Knothe, Member of the Executive Board, MAN Ferrostaal AG
- 11:50 – 12:15 Interactive Discussion Session with Speakers Can CSP offer the promise of a technical solution of the energy and climate problems?**
- 12:15 – 13:00 Press conference**

Afternoon 10,000 Solar GigaWatts by 2050 – Financing and Policies:

- If a solution is technically feasible, what is required to achieve it in due time?
Can and will investors take care of it?
Are there obstacles for rapid large-scale investments?
Is political support required?
From "as slow as CDM and Kyoto process" to "as fast as needed according to IPCC".
- 13:00 – 13:15 Chairman's Opening Remarks**
Dr. Gerhard Knies
- 13:15 – 13:45 Financial Resources and Investment Security**
Dr. Nikolai Ulrich, Head of Renewables Europe, HSH Nordbank AG
- 13:45 – 14:05 Role of Private Investment Funds**
Samer Zureikat, Founder, MENA Cleantech GmbH
- 14:05 – 14:15 Plans of the United Arab Emirates for CSP: The MASDAR Initiative of Abu Dhabi**
NN, Abu Dhabi Future Energy Company
- 14:15 – 14:25 Large-Scale Deployment of Fresnel Collectors, as seen from Solar Power Group**
(supplement to the morning session)
Jacques de Lalaing, CEO, Solar Power Group GmbH
- 14:25 – 14:40 Policy of the European Union**
Rebecca Harms, Member of European Parliament, Green Party
- 14:40 – 14:55 Can a Union for the Mediterranean (UfM) Accelerate the Transition to Solar Energy**
Antoine-Tristan Mocilnikar, Le Responsable Environnement & Développement durable Mission Union pour la Méditerranée, Présidence de la République Française
- 14:55 – 15:10 German-Italian Cooperation for the Development of Renewable Energies in the Mediterranean**
Prof. Dr. Vincenzo Dovi, Science Attaché, Italian Embassy Berlin
- 15:10 – 16:10 Interactive Discussion Session with Speakers. Strategy panels:**
(a) Politics: DESERTEC - a EuroMed co-operation for energy and climate security
(b) Investments: Security for investments in common energy and climate security
(c) Industry: Strategy and milestones for rapid realization of the "clean power from deserts" option - our expectations of the UfM
- 16:10 – 17:00 Networking Café**