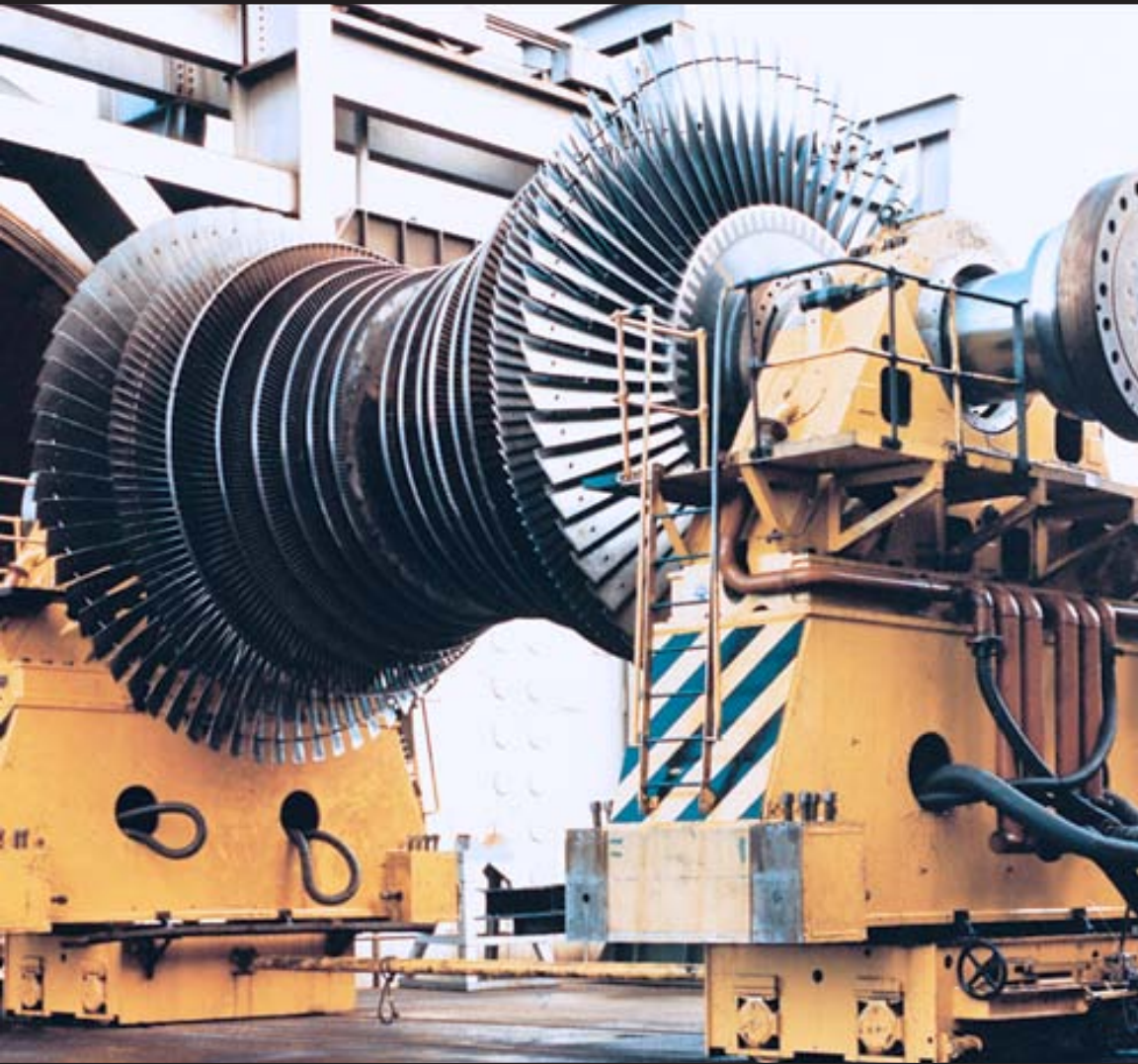


# SEVENTH INTERNATIONAL CONFERENCE ON ADVANCES IN MATERIALS TECHNOLOGY FOR FOSSIL POWER PLANTS

**Call for Papers and Participation**  
*Abstracts Due December 20, 2012*

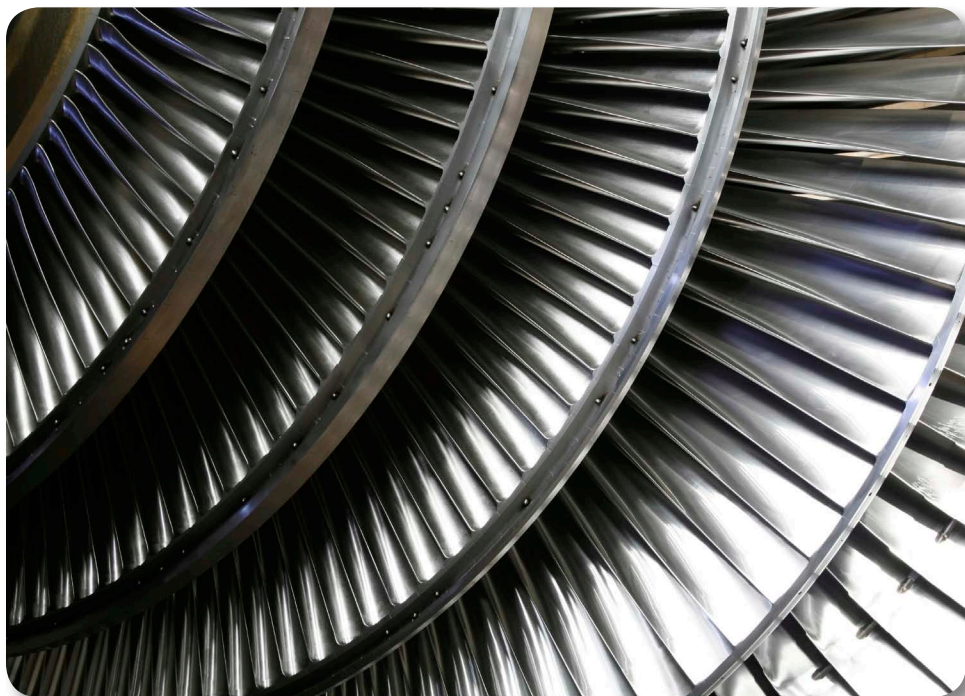


Both invited and contributed technical papers will be presented at the Seventh International Conference on Advances in Materials Technology for Fossil Power Plants. **Abstracts, which should be no longer than one page in length including all authors and affiliations and contact information for the lead author, must be submitted to Ksenija Sobajic (ksobajic@epri.com) by December 20, 2012, to guarantee consideration.** Authors will be notified of acceptance by February 28, 2013. Final papers, which must be prepared in accordance with guidelines provided upon abstract acceptance, are due no later than June 15, 2013. The conference proceedings will be issued on a CD at the conference, and bound hard-copy proceedings are planned after the conference and will be similar to previous proceedings that have been published as hardbound copies by ASM International.

## Background

A number of factors continue to generate worldwide interest in materials for advanced, high-efficiency fossil power plants and related equipment. The abundance of coal and the need to maintain a viable coal option, to reduce fuel costs, and to reduce emissions and waste from power plants have led to the continued development and deployment of ultrasupercritical (USC) and advanced ultrasupercritical (A-USC) steam boilers and turbines. Lower cost natural gas, due to recent developments of alternate reserves, has also resulted in an increase building and usage of combustion turbine combined cycle plants. Finally, environmental considerations have resulted in emissions control equipment with greater removal efficiencies.

For current coal-fired boilers, heat-recovery steam generators (HRSGs), and piping systems, the use of creep-strength enhanced ferritic (CSEF) steels (Gr. 23/24/91/92) has posed a number of challenges in fabrication and life management, and EPRI has led an international effort to address many of the issues. Recent issues with environmental interaction include stress corrosion cracking in waterwall steels, steam-side exfoliation, continued management of fireside corrosion with coal switching and use of biomass firing, and corrosion in wet flue gas desulfurization (FGD) systems. Long-term operation and load following have raised concern over creep-fatigue interactions in thick section components, and an EPRI-led group of experts was formed to improve understanding and standardize testing and analysis of these materials. Other EPRI activities in a new model for corrosion-fatigue damage in



blades and high-temperature erosion highlight the vast material needs for current and future plants.

For advanced coal plants, the net thermal efficiency of fossil plants has improved from 33% high heating value (HHV) in the case of the aging fleet of “subcritical plants” to nearly 42% HHV for USC plants operating with steam temperatures up to  $\sim 600^{\circ}\text{C}$  ( $1112^{\circ}\text{F}$ ). To boost efficiencies above 45% HHV, research and development projects are being carried out in Europe, the United States, Japan, China, and India on A-USC power plants that can operate at steam conditions of  $700^{\circ}\text{C}$  ( $1300^{\circ}\text{F}$ ) and above. Material testing programs, component testing programs, and demonstration projects are now in various states of readiness, making A-USC technology a near-term reality. New manufacturing technologies, such as powder metallurgy and hot-isostatic pressing, are also being explored.

Gas turbine inlet temperatures continue to increase, and with decreased gas cost, units are running longer. Critical to the life of hot-section components (blades) are new coatings, coating systems, and alloys. Additionally, the increase in renewable energy has led to more stop-start demand on these systems. Strategies for managing the fatigue life of rotors that include advanced steels and superalloys are needed.

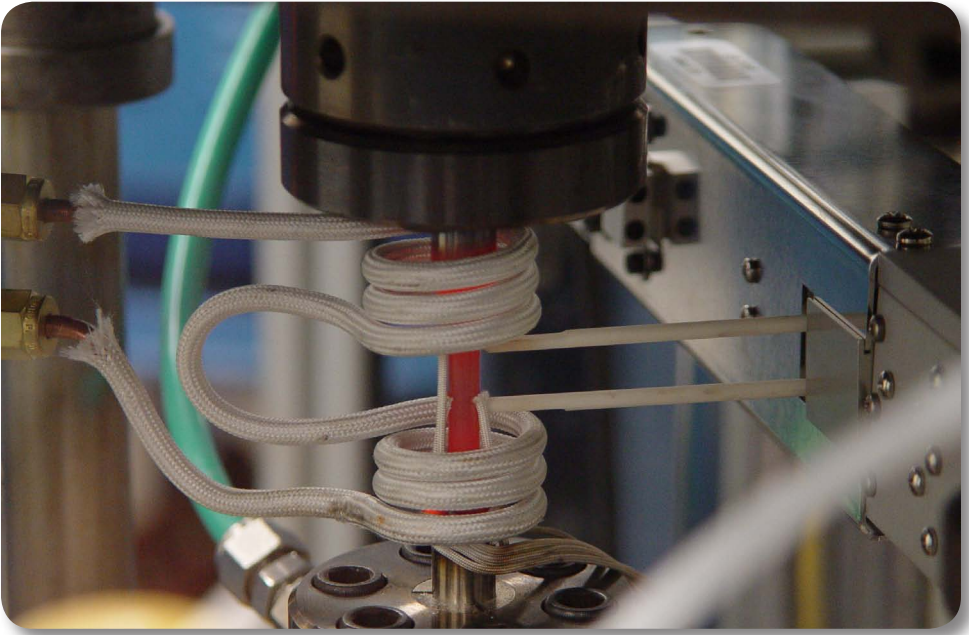


*Photo courtesy of Wyman-Gordon, 2011.*



*Photo courtesy of R. Hanus, Voestalpine, 2004.*

Materials are the key enabling technology that drives the development of high-efficiency power plants. To effectively achieve desired life, manage high-temperature degradation, and select proper materials for demanding corrosive and abrasive conditions, improved fundamental and practical understanding is needed. EPRI has supported and sponsored expert workshops, projects, and large group projects to address key industry needs in many of these areas. This conference will bring many of these individuals, organizations, and EPRI collaborators together to review the most recent advancements and help shape future research.



## 2013 Conference

The proposed three-and-one-half-day conference is the seventh in a series of conferences on the subject of materials for advanced plants held every three years by EPRI. Previous conferences were held in London, England; San Sebastian, Spain; Swansea, Wales; Hilton Head Island, SC; Marco Island, FL; and Santa Fe, NM. This conference is intended to continue the promotion of information exchange between scientists and engineers on an international scale. Invited keynote speeches by prominent scientists, as well as submitted papers, will be presented. The conference is sponsored by EPRI.

Conference participants are likely to include domestic and international utilities, equipment manufacturers, alloy materials vendors, forge shops, casting houses, universities, national laboratories, and consulting/research organizations. Papers are sought on boiler, steam and gas turbine, and balance-of-plant materials issues including:

- Plant economics and advanced designs
- Recent field experience
- New materials development concepts
- Materials processing of advanced alloys
- High-temperature materials used in boilers and turbines (ferritic steels, austenitic steels and alloys, and nickel-based superalloys)
- Boiler tubes, headers, steam pipes, waterwalls, turbine rotors, blades, bolts, casings, valves, and high-temperature components
- Microstructural evolution and creep
- Corrosion and erosion damage
- Coatings and claddings
- Flue gas desulfurization system corrosion and new alloys
- Welding, fabrication, and weld performance
- Creep, fatigue, creep-fatigue, toughness, and high-temperature design rules
- Oxyfuel combustion and carbon sequestration
- Syngas and hydrogen turbines including IGCC plants

The official language for this conference will be English. All papers will be written and presented in English. Bound conference proceedings will be available after the conference.

International travelers may require entry visas or written invitations to the United States. Please check with the U.S. Embassy or Consulate in your country for assistance in making the necessary arrangements.

This conference is supported by the following EPRI program areas:

- Fossil Materials and Repair (Program 87)
- Boiler Life and Availability Improvement (Program 63)
- HRSG Dependability (Program 88)
- Future Coal Generation Options (Program 66)
- Strategic Advanced Materials Program (Technology Innovation)

### EPRI Technical Contacts

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*Photo courtesy of N. Blaes, Saarschmiede, Saarstahl gruppe, 2007.*

## Accommodation

All attendees are responsible for making their own hotel accommodations.

### Hilton Waikoloa Village

425 Waikoloa Beach Drive

Waikoloa, HI 96739

[www.hiltonwaikoloavillage.com](http://www.hiltonwaikoloavillage.com)

**Reservations:** 1.800.Hiltons

**Rate:** \$199.00 + tax

Ask for the EPRI rate of \$199.00 USD when making your reservation.

Reservations must be made by **Friday, September 27, 2013**.

Nestled among swaying palms and overlooking the glistening blue Waiulua Bay lies the award-winning Hilton Waikoloa Village on Hawaii, the Big Island. This 62-acre oceanfront resort blends contemporary facilities with the graceful Hawaiian culture and is a destination within itself. Three towers occupy a protected oasis woven around tropical gardens where 1240 rooms abound with the subtle elegance of Hawaiian splendor. The property boasts two championship golf courses; a seaside putting course; eight world-class tennis courts; the luxurious Kohala Spa; Dolphin Quest's interactive dolphin program; nine international cuisine restaurants from casual to gourmet; shops; the \$7 million Museum Walkway lined with authentic treasures; three pools with waterslides; a 4-acre salt water lagoon; and a Club Keiki children's program.





### Mark Your Calendar

- Abstract due date (submit one-page abstracts to ksobajic@epri.com) ..... December 20, 2012
- Abstract acceptance ..... February 28, 2013
- Author bio, copyright, and paper due ..... June 15, 2013
- Hotel reservation deadline ..... September 27, 2013

### Registration and Fees

(Fees includes reception, all breaks, lunches and conference proceedings)

- Funder Attendance Fee ..... \$650
- Speaker Attendance Fee ..... \$700
- Non-Funding EPRI Member Attendance Fee ..... \$750
- All Others Attendance Fee ..... \$800
- Late Registration Fee ..... \$150

(added to prices above after September 27, 2013)

Registration will be open early 2013.

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