High efficiency, low emissions coal-fired plant
23-25 May 2016, Tokyo
10:00 - 10:35  Welcome and Regional overview  
Welcome  
Dr Andrew Minchener OBE - IEA Clean Coal Centre  
Clean coal technology for future power generation  
Prof. Keiji Makino - JCOAL

10:35 - 12:00  State-of-the-art USC plant  
[chair: Dr Andrew Minchener]  
Energy systems in transition - advancement of steam generator technology is key  
Dr Frank Kluger - GE Boiler  
Development of high efficiency and flexible steam turbine generator sets in a drastically changing energy mix  
Dr Rainer Quinkertz - Siemens  
USC CFBs for efficient, flexible, and clean power generation  
Dr Edgardo Zabetta - Amec Foster Wheeler  
Thermal plants and energy storage: contribution to flexibility and carbon reduction  
Dr Arthur Heberle - Mitsubishi Hitachi Power Systems Europe

12:00 - 13:20  Lunch

13:20 - 15:00  Advanced power cycles  
[chair: Dr Frank Kluger]  
The direction of Japanese R&D for HELE coal-fired plant  
Takahiko Miyao - NEDO  
Performance of an integrated gasification direct-fired supercritical CO₂ power cycle  
Nathan Weiland - National Energy Technology Laboratory  
Coal-fired boiler design adapted to CO₂ Brayton cycle - review and analysis  
Dr Yan Le Moullec - EDF China  
Novel sCO₂ Allam Cycle for high-efficiency, low-cost and emission free power generation  
Dr Xijia Lu - 8 Rivers Capital  
DICE - A step change opportunity for coal?  
Dr Louis James Wibberley - CSIRO

15:00 - 15:20  Coffee break

15:20 - 16:50  Developments in IGCC  
[chair: Prof. Keiji Makino]  
Experience from the IGCC plant  
Kyouhei Nakamura - Osaki CoolGen Corporation  
Progress of the GreenGen project  
Dr Xu Shisen - China Huaneng Group  
Advanced composite tube materials for IGCC applications  
Timo Peltola - Sandvik  
Performance baseline for oxy-coal MHD power plant with carbon capture  
Nathan Weiland - National Energy Technology Laboratory

19:00 - 21:30  Workshop dinner at the New Otani restaurant, TEPIA

Posters in the foyer

- Investigations of the ash deposit for biomass co-firing combustion in a pilot scale system  
Dr Seuk Cheun Choi  
- Studies on Biomass Co-Firing Targeted to Demonstration in a Commercial Pulverized Coal Power Plant  
Won Yang  
- Power station efficiency as one of profitability key factors in joint operation of mine and lignite or coal fired power station electricity generation project  
Download this paper  
Michal Dudek  
- Removal of fine particulate matters using PTFE/Glass composite filter  
Dr Myong-Hwa Lee
Tuesday | 24 May 2016

09:30 - 10:55 Regional overview II and AUSC plant I [chair: Dr Andrew Minchener]

The current situation and prospect of clean development coal-fired power plants in China
Zhi Xuan Wang - China Electricity Council
Development path prospect of China’s advanced, high efficiency coal-fired power plants
Dr Wenkai Li - Electric Power Planning and Engineering Institute, China
US AUSC component test facility with 760°C superheater and steam turbine
Robert Purgert - Energy Industries of Ohio
Update to A-USC steam generator design and cost
Paul Weitzel - Babcock and Wilcox

10:55 - 11:10 Coffee break

11:10 - 12:35 AUSC plant II [chair: Toby Lockwood]

Material property requirements for design of high-temperature components for hyper-supercritical plant
Peter Barnard - Doosan Babcock
Sanicro 25 – a newly developed high strength heat resistant austenitic stainless steel for advanced high efficient coal fired power plants
Dr Prof. Guocai Chai - Sandvik
Fabrication and welding of INCONEL alloy 740H for high temperature, high pressure applications
Steve McCoy - Special Metals
Panel session - The future of AUSC coal plant
Expert panel

12:35 - 13:50 Lunch

13:50 - 15:30 Advanced sensors and pollutant controls [chair: Prof. Nenad Sarunac]

Online intelligent flow control for coal and biomass conveying
Dr Neetin Lad - Greenbank
Monitoring of hot corrosion and ash deposition through electrochemical impedance spectroscopy for coal-fired boilers 20 minutes
Dr Hiroshi Naganuma - Tohoku Electric Power Engineering and Construction
Using the application of thermo-optical measuring method to increase the efficiency and minimize emissions of coal-fired plants
Dr Andreas Diegeler - Fraunhofer ISC
Impact of halides and operating parameters on Hg removal efficiency of wet FGD
Ida Masoomi - IFK Stuttgart

15:10 - 15:30 Coffee break

15:30 - 17:10 Coal upgrading [chair: Dr Alberto Pettinau]

Adopting a HELE upgrading pathway in the context of current Czech energy policy
Vladimir Budinsky - Severoceske doly
Effect of coal beneficiation on efficiency of advanced PCC power plants
Prof. Nenad Sarunac - University of North Carolina
Coal Upgrading with Kumera steam dryer
Carl-Gustav Berg - Kumera
Reducing emissions of toxic trace elements by coal beneficiation and novel sorbents
Dr Rajender Gupta - University of Alberta
Potential of coal-water slurry as a fuel to utilize the low ranked (high-impurity) coal
Dr Suleman Tahir - University of Gujrat

Wednesday | 25 May 2016

08:30 - 15:30 Visit to Isogo Power Plant

J-POWER’s Isogo Thermal Power Station consists of two 600 MW USC pulverised coal units constructed in 2002 and 2009, designed for high efficiency and low emissions. Using the pioneering ReACT (regenerative activated coke technology) multipollutant control system, Unit 2 achieves record low pollutant levels for a coal plant, with considerable reduction in water consumption and production of sulphuric acid by-product.

Unit 2 parameters:
- Steam parameters: 600°C/620°C/25 MPa
- Gross thermal efficiency (LHV): >45%
- SOx emissions: <10 ppm
- NOx emissions: <13 ppm
- Particulates: <0.005 g/m³N

The bus to Isogo will depart from TEPIA at 8:30 a.m. on Wednesday 25 May, returning by 15:30 p.m.
Greenbank Group
Boiler Efficiency Products

- Improve particle fineness and milling throughput using CoalValve and GravMaster gravimetric feeders
- Monitor particle fineness and milling Performance using MillMaster® particle size analyser
- Improve air to fuel ratio and PF distribution on multi-outlet mills using CoalFlo® PF balancing dampers
- Measure PF distribution and velocity using PfMaster PFMS PF flow monitoring system
- Improve air to fuel ratio and PF distribution at pipe splitters using VARB® PF diffusers
- Manage and detect boiler tube leaks directly using GA200® series boiler steam leak detection system
- Monitor combustion efficiency directly using G-CAM® carbon-in-ash monitor
- Lined Pipework & Conveying Systems

TURN UP BOILER HEAT, REDUCE TUBE COSTS

Good news. Now you can turn up the heat and increase efficiency of your ultra-supercritical coal-fired power plant – without resorting to costly high-nickel tubing. How? The answer is our top-end Sanicro™ 25 grade, an economical solution designed to withstand metal temperatures of 620°C on up to 700°C enabling economically viable HELE technology today.

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