POWER-GEN EUROPE '97

The forum for the changing Power Generating Industry in Europe

June 17-19, 1997
Madrid, Spain

Volume IV
Plant Management
Renewable and Fuel Cell Generation Techniques

For additional information and missing papers, please contact the POWER-GEN Management:

PennWell Conferences & Exhibitions
Kaap Hoornbreed 30, 3563 AT Utrecht
PO Box 9402, 3506 GK Utrecht
The Netherlands

Phone: +31 30 2 650 963
Fax: +31 30 2 650 928
E-mail: nel @ pennwell.com
HTTP://www.pennwell-europe.com

UB/TIB Hannover 89
117 222 925
# TABLE OF CONTENT

## Plant Management

### Operation and Maintenance I - Management Aspects

<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iberdrola’s RCM Program</td>
<td>Antonio Sola, Iberdrola; Antonio Fernandez, Iberinco-Uitesa</td>
<td>27</td>
</tr>
<tr>
<td>Provence Soprolif 250 MW e CFB: Performances and One Year Results</td>
<td>P. Delot, V. Roulet, D. Levy, P. Lucat, EDF-CNET</td>
<td>45</td>
</tr>
<tr>
<td>Successful Operation and Maintenance of the World’s Largest Coal Fired Super-Critical Pressure Thermal Plant</td>
<td>Shigeo Ishizaki, Soma Kyodo Power Co Ltd.; Tsuneo Narita, Babcock Hitachi</td>
<td>61</td>
</tr>
<tr>
<td>New Concepts in O&amp;M to Protect Investment in Power Plants</td>
<td>Michael von Saldern, ABB Operation &amp; Maintenance</td>
<td>101</td>
</tr>
</tbody>
</table>

### Personnel Management

<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Simgra Project: a Full Scope Replica Simulator for the Granadilla Spanish Fossil Power Plant</td>
<td>Agustin Juarez, Unelco; Miguel Torres Puya, Tecnatom</td>
<td>119</td>
</tr>
<tr>
<td>Modernization of Personnel Training</td>
<td>Manfred Haferburg, PreussenElektra AG; Hugdieter Rehn, NIS Ingenieurgesellschaft</td>
<td>129</td>
</tr>
<tr>
<td>Definition of “Post Training Profile” Based on SAT Methodology - Application to Iberdrola Power Generation Division</td>
<td>Santiago Gil Sanchez, Iberdrola</td>
<td>147</td>
</tr>
<tr>
<td>Alices - an Advanced Software Workshop for Simulators</td>
<td>J. Houard, A. Noel, Tractebel; O. Lagrange, X. Normand, Corys</td>
<td>165</td>
</tr>
<tr>
<td>Certification of Contractors in Prevention of Occupational Risks</td>
<td>Javier Fernandez, Elias Parga, NorConsult</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Information Management

3DEM: Using 3D Models to Better Understand and Manage Plants
A. Hubrecht, E. Mahy, A. Massonnet, Tractebel Energy Engineering 177

Expert System of Turbine Overhaul
Eduardo Santos Martinez, Antonio Rodriguez Rodriguez, Endesa 197

Honeywell Contribution to Advanced Combustion Control
Vladimir Havlena, Zdenik Beran, Honeywell Technology Center 221

Total Revamping of Control Equipments in a Thermal P.H.: Le Havre I Show Case
Jacques Lespect, Elsag Bailey Hartmann & Braun 235

Replacement of the Plant Process Computer at Vandellos II NPP
Carlos Pulido, Westinghouse Electric Corporation N/A

Operation & Maintenance II -technical aspects-

Corrosion Monitoring on Alternator Cooling Water Circuits - New Electro-chemical Methods
V. Carvalhal, CPPE; C. Rangel, A. Sá, Ineti 253

Robicen: a Pneumatic Climbing Robot for Inspection of Pipes and Tanks
J. Gómez, Iberdrola, et al 269

The Usefulness of the Initial State Characterisation as a Baseline for the Life Consumption Assessment of Thermoelectric Power Plant Critical Components
A. Batista and P. Maia, PROET, EDP Group 283

Stator Rewind of the 600 MW Generator in 38 Days - The Collective Experience of the Utility and Manufacturer
A. Lauret, T. Guyon, GEC Alsthom, France; D. Kuni, Eskom 301

Rehabilitation - Quick and Unconventional Solutions Are Needed
W. Scheidl, Elin Energieversorgung 311

Diagnosis of Electrostatic Precipitator Performance Based on Operation Data and Empirical Models
I. Arauzo and Cristobal Cortes, CIRCE 323

Control Systems

Condition Monitoring and Control Center - Remote Monitoring and Analysis
Jan Veenema, Epon; Meherwan P. Boyce, BEI 343

Prunerov II Instrumentation and Control Modernization
M. Johns, Westinghouse Electric, J. Soucek, Czech Power Company 361
Fluidized Bed Boiler Advanced Controls
Robert Jonas, Honeywell IAC

Adaptive Automatic Regulation of Alternator Voltage with Limited and Full Authority Adaption
C. Brasca, Enel; M. Grimble, E. van de Waal, University of Strathclyde

An Approach of Power Plants Control Using the Actual DCS Facilities
Antonio Gonçalves, CPPE

Innovative Condition Monitoring Methodologies for Improved Plant Economics
Thomas Lund Hansen, Michael Flanagan, Brüel & Kjær

Renewable and Fuel Cell Generation Techniques

Fuel Cells

Present Status of Fuel Cell Activities in Spain -The Spanish-Italian Molcare Program
Jesús García Martín, Iberdrola

The First PAFC Fuel Cell Cogeneration Plant Fuelled by Hydrogen for Use in Urban Areas
O. Weinmann, HEW AG; T. Bozzoni, N. Pessano, CLC Ansaldo

A Case Study of a Fuel Cell Cogeneration System: Technoeconomic Analysis
Jose Luz Silveira, UNESP

Installation for Research of Fuel Cells
A. Dudnik, Y. Korchevoy, A. Maystrenko, S. Onischenko, National Academy of Science/ Ministry of Power

Spanish Activities on Fuel Cells
M. Montes, F. Cerisola, CIEMAT

Hydro rehabilitation and automation

Remote Control Project for Iberdrola Hydro Electric Plants
Felix Arregui, Frederico de la Hoz, José Antonio Castifleyra, Iberdrola, Spain

Retrofit of a Pumped Storage Power Station
J-P Germeau, Electrabel; V. Michel, C. Dehareng, Tractebel

Miranda Repowering Project
A. Abreu Aguiar, Hidrorumo

Special Mortar for Underwater Works
G. Klingstedt, V. Sorri, IVO Technology Centre
Partial Discharges and Air-gap Monitoring Systems for Large Hydrogenerators
P. Gandolfi, R. Mencaroni, Ansaldo Energia; M. Cloutler, VibroSystM; O. Capezio, C. Rojas, Yacireta Power Plant 573

Waste to Energy

Refuse Derived and Recycled Fuels in Co-Combustion
Jussi-Pekka Aittola, Tuomo Kässi, IVO International 593

Urban Waste Incineration and Combined Cycle Combined Heat and Power Plant at Horsens
J. Christophersen, B. Joergensen, Elsamprojekt N/A

Thermal Utilization of Industrial Residues and Sewage sludge for Combined Heat and Power Supply
Waldemar Schulz, VEW Energie 611

Operating Experiences of Vetejar FBC Olive Waste
S. Osorio, A. Blanco, Sevillana de Electricidad 625

A New Toroidal Fluid Bed as a thermal preprocessing Reactor for a Pulverized Coal-Fired Power Plant

Solar Energy

IEA PVPS Implementing Agreement
J. Garcia Martin, A. de Julian Palero, Iberdrola 655

Biomass Fuelled CO2 Cycle with Zero Emissions
E. Iantovski, Ph. Mathieu, Université de Liège 671

Michael Geyer, Deutsche Forschungsanstalt für Luft- und Raumfahrt 685

Project Diss: Development of a New Generation of Solar Thermal Power Stations
E. Zarza, J. Ajona, K. Hennecke, Plataforma Solar de Almeria 699

Autonomous Hybrid Power Supply System for the Greek Islands of Donousa and Kythnos
N. Stravridis, H. Kalagia, P. Pligoropoulos, PPC/DEME 717

Wind and Geothermal Energy

Large Wind Turbines in Europe -Development and First Operating Experience
Peter Christiansen, Elsamprojekt; Poul Thomsen, I/S Vestkraft 737

French Wind Power Generation Program EOLE 2005
A. Laali, M. Benard, EDF 749

The Role of the Utilities on the Wind Energy Development
E. Menendez Perez, Endesa 761
Potential and Perspectives for R.E.S. Exploitation in Autonomous Grids
Betziros George, PPC/DPN 779

Experience on Wind Power Units in Sweden
Ann-Katrin Larsson, Sydkraft Konsult AB 795

Integration of Kalina Cycle with Flash Plants to Geothermal Power Generation
H. Leibowitz, Exergy, Inc., G. Sormani, M. Porfido, Ansaldo Energia N/A

Biomass

Co-firing Coal and Straw in a 150 MWe Power Boiler
P. Overgaard, Midtkraft Energy Company 815

Co-firing of Waste and Biomass in AFBC
M. Äijälä, P. Salokoski, J. Partanen, IVO Group 829

Status of the Biomass IGCC Demonstration Plant, Varnamo, Sweden
K. Ståhl, Sydkraft AB; M. Neergaard, Per-Axel Nilsson, Sydkraft Konsult AB 845

CFB Gasification - Power Generation from Biomass and Waste
C. Greil, J. Loeffler, Lurgi Energie und Umwelt 861

Biogas from Source Separated Household Waste
Niels Nedergaard, Henrik Ortenblad, Heming Municipal Utilities 877

Rapid Low Temperature Gasification of Biomass for Cost Effective Combined Cycle Cogeneration Process
H. Salman, C. Frederiksson, B. Kjellström, Lulea University of Technology N/A

N/A Not available at time of printing