Joint Chapter Meeting
of the
IEEE PES German Chapter
and
IEEE IAS/PELS/IES German Chapter
Berlin, 12th – 14th May 2004
DAY 1:

Siemens Power Transmission and Distribution

Schaltwerk Berlin
SIEMENS PTD at a Glance

- Power Transmission Projects
- Systems, Products and Components for 52 up to 800 kV
- Turnkey Substations for AC/DC Power Switching and Transmission
- Services from Consulting and Engineering up to Training and After Sales Service
Turnkey Substations

- Conventional Air-Insulated Switching Stations (AIS)
- Gas-Insulated Switching Stations (GIS) also available as mobile switchgear
- Hybride Switching Stations
- Installations for Reactive Power Compensation
- Installations for HVDC transmission:
  - long distance transmission
  - back-to-back ties

**Products**
- Circuit-breakers 72,5 up to 800 kV
- Disconnectors and Earthing Switches
- Arresters and Limiter
DC Solutions

HVDC

Back-to-Back Station
- AC → \(\Box\) → AC
- 50 Hz
- up to 800 MW

HVDC$^\text{PLUS}$

Long Submarine Transmission
- AC → \(\Box\) → \(\Box\) → AC
- DC cable
- up to 800 MW
- bis 250 MW

Light Triggered Thyristor

IGBT

Long Distance Transmission
- AC → \(\Box\) → \(\Box\) → AC
- DC line
- up to 3000 MW
- bis 250 MW
DAY 1 Agenda Highlights

- Opening and Welcome Message
- Company Tour
- Technical Lecture
  - Dr.-Ing. Andreas Luxa, Siemens PTD, High Voltage Division:
    Benefits of Power Electronics for High Voltage Transmission Systems
    (Advanced Power Transmission Solutions with HVDC and FACTS – an overview)
  - Prof. Dr.-Ing. Dietmar Retzmann, Siemens PTD, High Voltage Division:
    Use of High-Power Thyristor Technology for Short-Circuit Current Limitation in
    High Voltage Systems (Short circuit Current Limiter)
  - Dipl.-Ing. Manfried Kruska, Siemens PTD, Medium Voltage Division:
    Optimized Energy Exchange in Distribution Supply Systems with DC-Links based
    on Conversion Technologies
- Siemens Reception
DAY 2: ALSTOM

Transport

Energy

The global specialist in energy and transport infrastructure
Activity “Process Industries”

- Complete automation systems and electrical equipments for systems and plants, in the focused segments
  - Metals Industry
  - Pulp- and Paper Industry
- Solutions for revamping and process improvements

- Products, systems and turn-key solutions including
  - Power supply
  - Motors & generators
  - Drive systems & power electronics
  - Automation & industrial IT
  - Associated Services
Activity “General Drives”

**Drives Systems up to 100 MW:**
- Full capabilities to provide drive system solutions for low voltage \(<1000V\) and high voltage \(>1000V\) for different applications
- Manufacturer of products & systems
- Associated services

**Focused Market Segments**
- Oil / Gas / Petrochemical, e.g. high-speed gas compressors
- Systems for Wind Turbines, e.g. 5 MW Generator/Inverter System for „Multibrid“
Activity “General Drives”

Supply of AC drive systems for test benches, typical applications include:
- Engines
- Gearboxes
- Alternators
- Rolling Roades
- Axles
- Deferential gearing and drive trains

Automation solutions for container handling cranes, e.g.:
- Rail mounted quayside cranes
- Rubber tyred gantry cranes
- Rail mounted gantry cranes
- Goliath cranes
- Grab type shipunloader
- Slewing cranes
DAY 2: Location Berlin

Produktionsstandort Berlin-Marienfelde, Deutschland
DAY 2: Agenda Highlights

- Introduction to ALSTOM Berlin

- Technical Lecture
  - 300 MW Variable Speed Drives for Pump Storage Plant Application Goldisthal
  - Application of Multi-Level Medium Voltage Converters for a Traction Test Bench
  - Active Earth fault Compensation and Railway Application of Medium Voltage Converters
  - Comparison of the Behavior of Wind Energy Farms and Conventional Large Power Station during Grid Failure Conditions
  - 5 MW Permanent Magnet Offshore Wind Mill Prototype

- Company Tour

- ALSTOM Reception and Dinner
DAY 3:

Berlin University of Technology
Berlin University of Technology

Organization
- Berlin University of Technology (TU Berlin)
  - Faculty IV: Electrical Engineering and Computer Science
  - Institute of Energy and Automation Technology
    - Power Electronics Research Group
      Prof. Steffen Bernet (Prof. em. Manfred Michel)
  - Electric Machines, Drives, and Renewable Energies Group
    Prof. Rolf Hanitsch (Prof. em. Manfred Stiebler)

1770-1821 Founding of the predecessors of the TU Berlin

2003 Modern University with 30,700 Students and 388 Professors
Research Areas / Areas of Expertise

⇒ **Power Semiconductors**
Characterization of power devices

⇒ **Converters**
Multi-level converters, modulation, simulation, and modeling for industry, traction, and automotive applications

⇒ **Control and Drives**
Development, fast prototyping, and optimization of new modulation and control schemes for drives
Electric Machines and Renewable Energies

Prof. Dr.-Ing. habil. Rolf Hanitsch

Research Areas
⇒ Energy Efficient Industrial Drives
Motor & generators with NdFeB magnets, brushless dc-, high speed asynchronous-, and switched reluctance motors

⇒ Motor control
Fuzzy logic control of drives, DSP control of inverters in wind energy conversions systems
⇒ Energy storage
Electrochemical storage
⇒ Wind Energy and Photovoltaic Systems
Modeling and investigation of power quality, inverter control, safety and protection

Electric Machines, Drives, and Renewable Energies Group
DAY 3 Agenda Highlights

- Introduction to TU Berlin
- Technical Lecture
  - Prof. Dr.-Ing. S. Bernet: Characteristics and Applications of 10kV IGCTs
  - Prof. Dr.-Ing. M. Stiebler: Direct Driven PM Synchronous Generators for Wind Energy Systems
  - Dipl.-Ing. T. Brückner: Loss Balancing of a Three Level Active NPC Voltage Source Converter
  - Dipl.-Ing. D. Krug: Comparison of State-of-the-Art Voltage Source Converters for MV Drives
  - Dr.-Ing. S. Schulz: Power Quality of Wind Parks
- Laboratory Tour
  - 15kV, 5kA Semiconductor Test Bench
  - 40kW Drive Test Bench & Multilevel Converters
- Closing Message
- Reception and Dinner
See you next year in Berlin ...