

**Industrial Contribution to the Conference  
ITER for Swiss Industry  
Berne, 28. September 2009**

**THOMSON  
Broadcast & Multimedia AG  
in Turgi (Aargau), Peter Thomann**

## A Success Story

**Cooperation with the „Max Planck Institut für  
Plasmaphysik“ (IPP) in Greifswald, Germany**

# Agenda

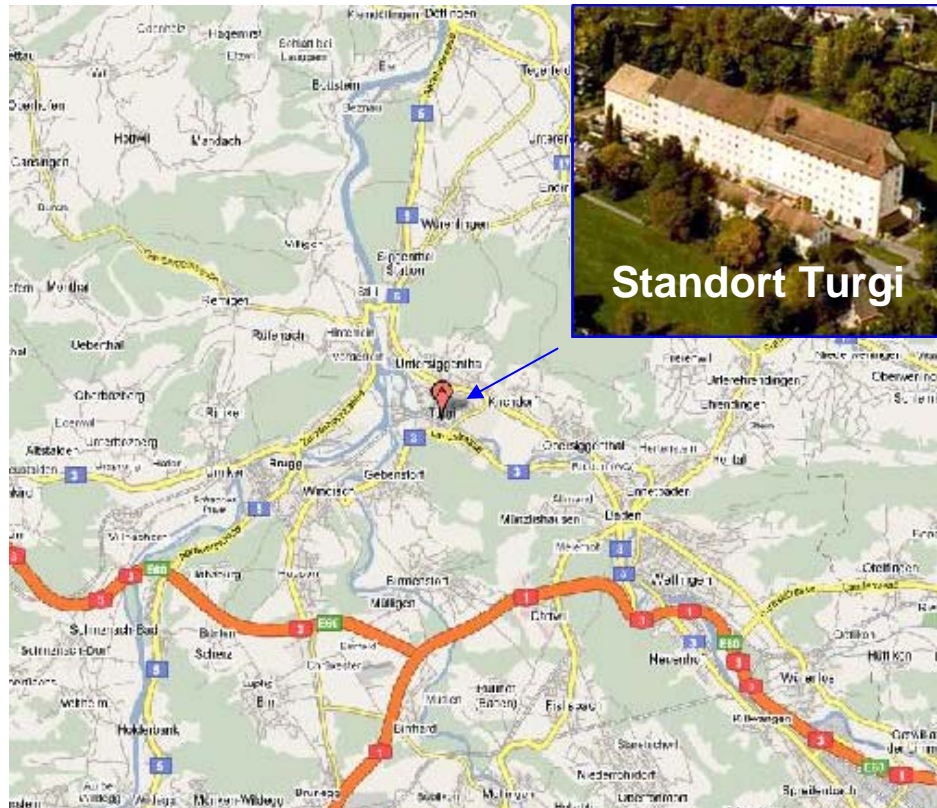
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- Introduction of our company
- Our Contribution to the Wendelstein 7X Stellarator at the Institut für Plasmaphysik (IPP)
- Winning the international call for tender
- Project handling, result achieved
- Summary

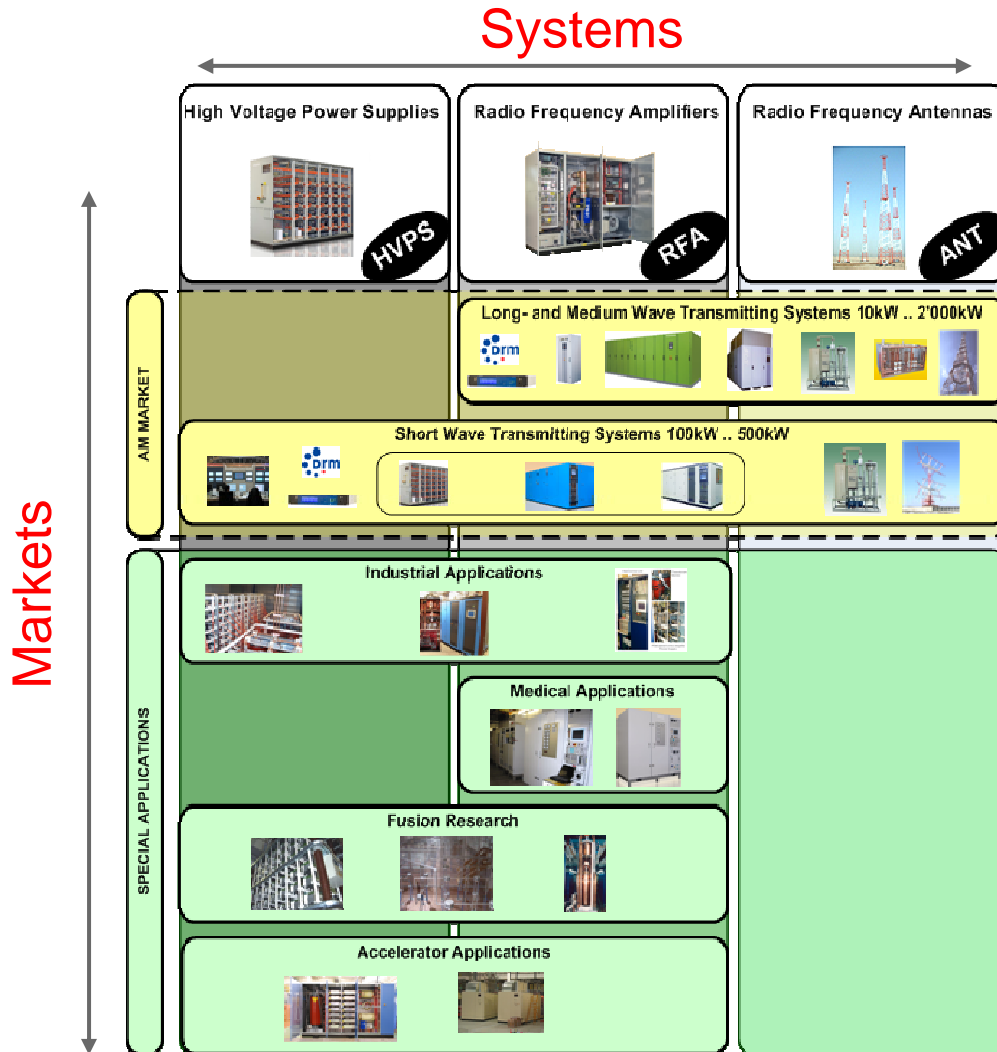
# Broadcast Activities

We are world-wide leading in design, development & manufacturing of transmitters & Systems for High Power AM Radio Broadcasting

- ❖ In-House design & development since more than 70 years
- ❖ Building & Testing of complete systems for High Power Broadcast Stations



# Radio Transmission: Core Competencies



Three core competencies enable Thomson to serve two independent markets

System supplier for AM market covering all aspects of Radio Broadcasting

Customized solutions for all kind of HVPS / RF Amplifier special applications

## Fusion Project: Wendelstein 7X (W7X) Stellarator

### Scope of Thomson Supply

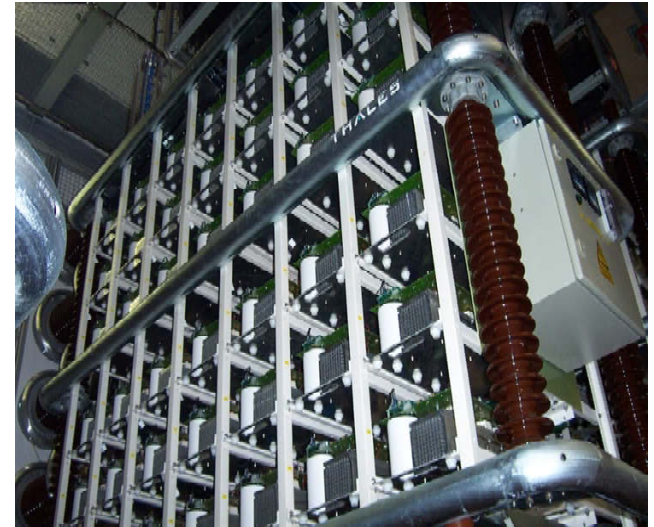
3 units High Voltage DC Supply Modules  
130kV/130A, each divided into two 65kV semi  
modules in series connection.

1 separate unit semi-module 65kV/130A

Each Module/Semimodule is designed in Pulse Step  
Modulation Technique (PSM). The Output Voltage  
can be varied, continuously controlled and  
modulated.

The Modules/Semimodules are part of the plasma  
heating & current drive system and supply the power  
for Gyrotrons and Neutral Beam Injection Systems  
(NBI).

The scope included also installation and  
commissioning of the equipment on site in  
Greifswald.





# Our Contribution to the IPP Greifswald

(2)

The contract was executed in a consortium with Siemens Erlangen.

The Siemens contribution comprised the auxiliary systems such as High Voltage DC Switches, large Faraday Cages, a Comprehensive Control & Monitoring System, Cables, Trays, Cooling etc.



## Project Duration

Contract signed in 1999

Site Acceptance in 2006



- Requirements of the Customer IPP Greifswald
  - International Call For Tender procedure (1999)
  - Extremely demanding technical requirements concerning voltage rise time, overshoot, ripple and short-circuit energy
  
- Our Strengths
  - Long year Experience with High Voltage Tube supplies in PSM technique: performance; reliability; system redundancy
  - PSM Technique as originally invented by us is an excellent way of protecting the load in case of short circuit or arcing.
  - System and Turn-key experience since decades, also in scientific applications.
  - Consortium partner Siemens with long years experience in the supplementary field of technology



- Estimation of Risks
  - New and unique demanding High Voltage Requirements
  - The special design for these requirements was partly new for us, we created kind of a prototype system
  
- What were the main reasons why we won this comprehensive tender?
  - Mutual confidence, customer's confidence in us and in consortium partner
  - Competitive Price
  - Leading & State of the Art Technology
  - Geographical Proximity to client and consortium partner
  - Common home language of client, consortium partner and us

# Project Handling, results achieved

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## Special Challenges in Project Handling:

- Initial R&D Work had to be done by us and by consortium partner. It was reviewed and approved by customer
- Coordination of the civil work that was done by customer
- Commissioning work on site of the subsequent systems while the previous ones were in operation
- Handing the systems over to the user physicists (module by module)
- Meet the challenging Time Schedule despite the comprehensive R&D work that had to be performed prior to procurement & manufacturing.

# Result

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- Client is completely satisfied, operational use since 2006
- We now have an advanced and reliable Product available in view of further fusion projects such as ITER.
- Excellent Reputation achieved in the field of Fusion Research as a competent supplier of High Voltage DC Power Supplies.

# Summary

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- Thomson Broadcast & Multimedia is traditionally a pioneer for high power radio broadcast transmitters and is strongly engaged in this market.
- Thomson Broadcast & Multimedia diversified its portfolio by adapting its technology to the tailor made needs of scientific, medical and industrial applications.
- The Contract with IPP enabled us to further develop our technology for extremely demanding requirements and helped us to build up an excellent reputation in the field of High Voltage DC Power Supplies.
- The Contract with IPP was a commercial success for us (within predicted costs).

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# Thank You