

HTSC Cable is cool

Symposium on 27th November 2007

Eindhoven

Introduction by

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Organization of the symposium

- Electrical Engineering Association
“Waldur” of the Technical University
Eindhoven
- Dutch National Committee of CIGRE B1
“Insulated Cables”

Why a symposium on HTSC cable in the NL?

- Discovery of superconductivity about 100 years ago in the NL
- Several pilots on HTSC cable are going on world wide.
- First application in the NL is nearby

Superconductivity

- Discovery of Superconductivity of Mercury at 4K by Heike Kamerlingh Onnes in 1911 in Leiden
- Nobel prize 1913
- Discovery of HTSC at 77K by George Bednorz and Karl Muller in 1986 in Zurich
- Nobel prize in 1987
- Record: Superconductivity at 138 K

Superconductivity

- $R=0$
- Applications in:
 - Cables
 - Short circuit limiting coils
 - Energy storage
 - Magnetic resonance (MRI)

Superconductivity

■ Technical limitations

- Temperature
- Magnetic field
- Current density

T_c

H_c

J_c

Superconductivity

- Economical limitations (cost)
- Strategical limitations (environmental, spread of risks)

Challenge

- To operate present superconductors effectively and efficiently
and
- To find superconductor at ambient temperature (Nobel prize assured)

Symposium program

- Introduction
- Superconductivity from invention to application
- Superconductivity, limitations and opportunities
- Cable design
- Cooling technology
- Cable application in the NL
- Cost/benefit evaluation
- Short circuit current limiting coils
- Panel discussion

Superconductivity

- Have a great day

and.....

Keep it cool!