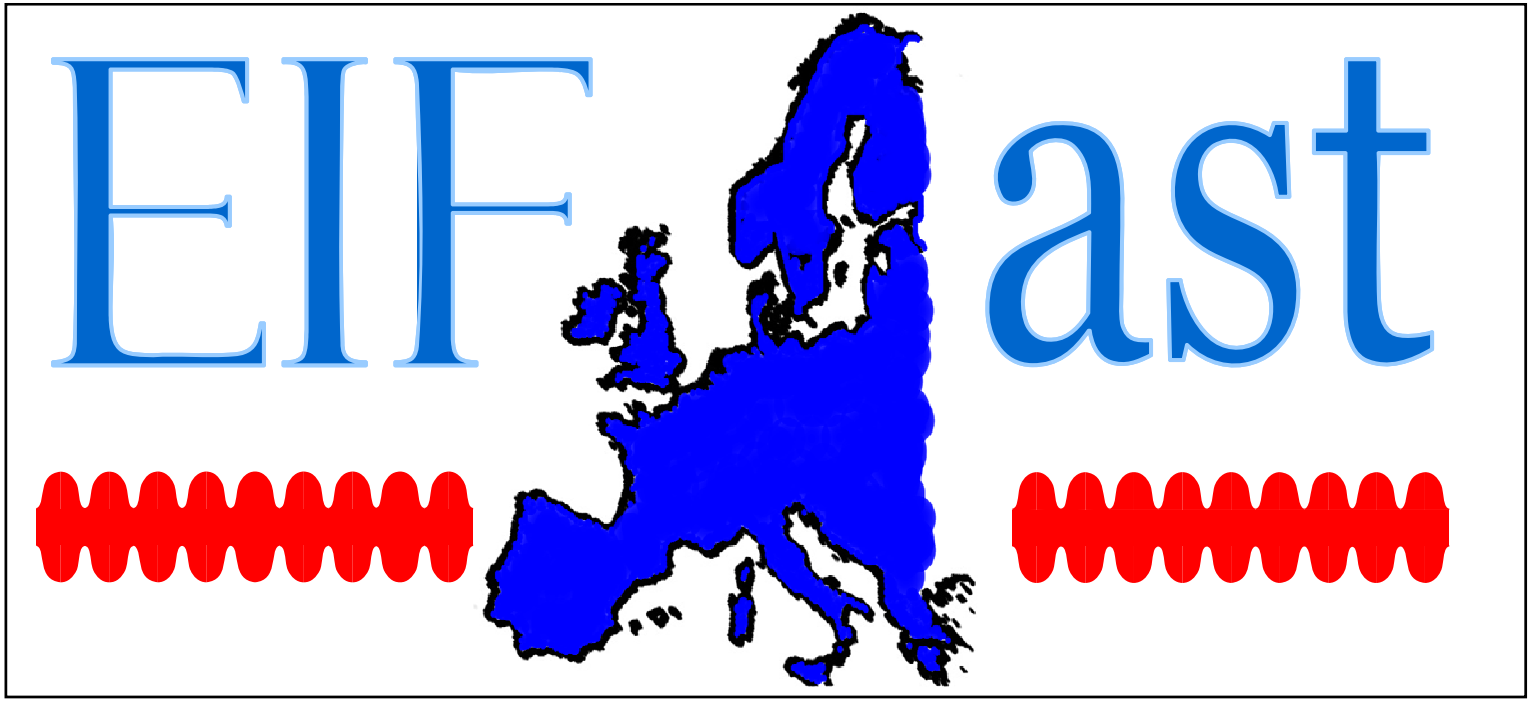
European Industry Forum
for
Accelerators with Superconducting RF Technology



Michael Peiniger
ACCEL and EIFast Coordination Board Member
June 02, 2007

Status of Superconducting RF Technology

above 1000 SCRF cavities have been built and were installed in storage rings and linacs for nuclear and high energy physics, spallation neutron and synchrotron light sources, so far.

• Examples	KEK/TRISTAN (Japan)	~ 30 cavities	late 1980'th
	CEBAF (USA)	~ 360 cavities	early 1990'th
	CERN/LEP2	~ 280 cavities	mid 1990'th
	DESY/TTF	~ 50 cavities	early 2000's
	ORNL/SNS (USA)	~ 110 cavities	2005/2006

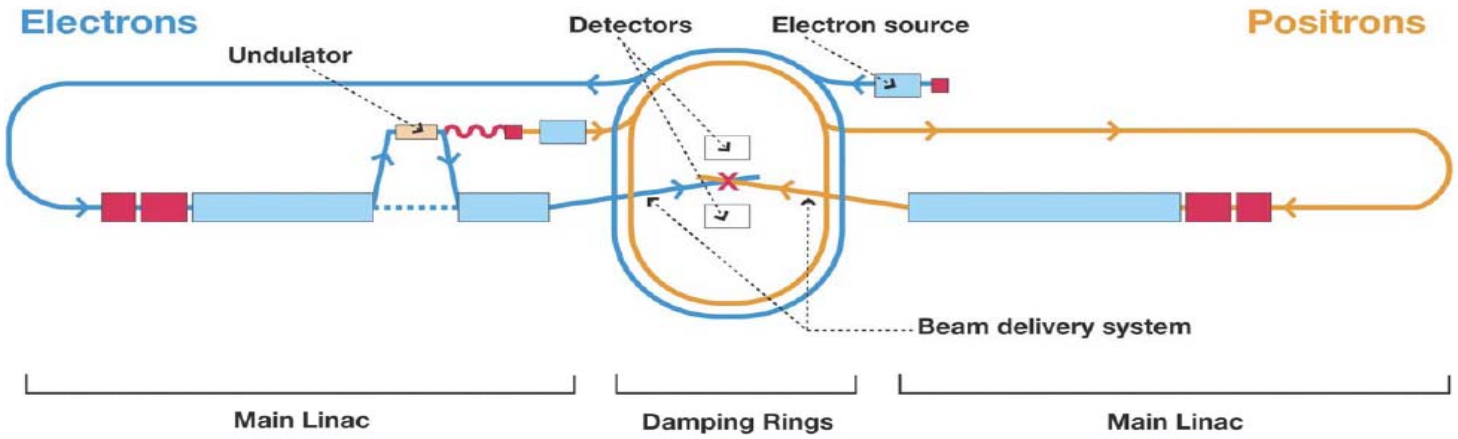
- No basic obstacles were found in operation of this „cold technology".
- Superior performance and stable operation (at cryogenic temperatures).

==> SCRF technology has become mature.

- Growing international scientific and political support (MoU for European XFEL and Global Design Effort for the ILC).

A Vision of the Future

RDR to ILC



Barry Barish

LCWS DESY

30-May-07

Global Design Effort

Prepare to Propose ILC Construction

- **ILC Engineering Design**
  - **We have a solid design concept in the reference design, but it is immature and needs engineering designs, value engineering, supporting R&D and industrialization.**
- **GDE will be reorganized around a Project Management Office to reach this goal (Ross talk)**
  - **Marc Ross, N. Walker and A Yamamoto**
  - **Central management will have authority to set priorities and direct the work**
  - **Resources for the engineering design and associated R&D appears feasible**
  - **Investments toward Industrialization and siting**
  - **Anticipate LHC results by about 2010. We must be ready!**

Nice, but what about Orbach?

"Completing the R&D and engineering design, negotiating an international structure, selecting a site, obtaining firm financial commitments, and building a machine could take us well into the mid-2020s, if not later,"

- **Our technically driven time-scale is**
  - **Construction proposal in 2010**
  - **Construction start in 2012**
  - **Construction complete in 2019**
- **What do we need to do to achieve our schedule?**

Key CM questions for EDR phase (3)

Example WG Questions: *Kephart*

- How do we manage industrialization ?
  - **Do we ask industry to guarantee "performance" or just build to "print and process"**
  - **If vertical test and CM test is done at labs, how to we handle the "hand offs" with industry**
  - **How do we encourage industry to improve CM AND at the same time manage intellectual property rights?**
  - **How does region A interact with industry in region B ?**
  - **What is the shipping criterion for a CM**
    - Eg Ship in parts, assemble at site ? Or ship full CM…
    - Horizontal installation vs tipping on end (ILC shaft size)
- We must address many of these questions as we make the EDR plan !
  - **(Process of how to answer these questions will be discussed in ML parallel session)**

Future Perspectives of SCRF Accelerators

- Europe is preparing the construction of a XFEL using a ~25 GeV drive beam with ~ 1000 cavities. Construction is to start in 2007.
  Overall cost: 0.9 B€.
- The international particle physics community has decided to build the International Linear Collider (ILC) based on the TESLA technology. The ILC project comprises >~20,000 cavities. Construction could start >~2010.
  Overall cost: several B€.
- In addition there are many more projects of differing size:
  - Heavy ion linacs,
  - Proton linacs for spallation (e.g. SNS, ESS)
  - Free electron laser FEL, energy recovery laser ERL
  - New generation light sources
  - High Energy Physics (Neutrino factories and muon colliders)

Industry plays a key role in realising these projects and is an important partner for science.

EIFast getting alive

EIFast **European Industry Forum for Accelerators with SCRF Technology**

- Dec 2004 — Idea for a European SCRF Forum
- Jan 2005 — Invitations to ~ 120 companies, labs, agencies
- 7./8. April 2005 — Kick-off Meeting
- 27. October 2005 — Foundation Meeting at DESY attended by 61 participants representing 34 companies and institutes, 9 countries [AT, CH, DE, ES, FR, GB, IT, NL, RU]
- **Results**
  - Agreement on statutes
  - Appointment of Coordination Board
  - Election of Dieter Trines as acting Spokesperson
- 40 members (including provisional members) so far

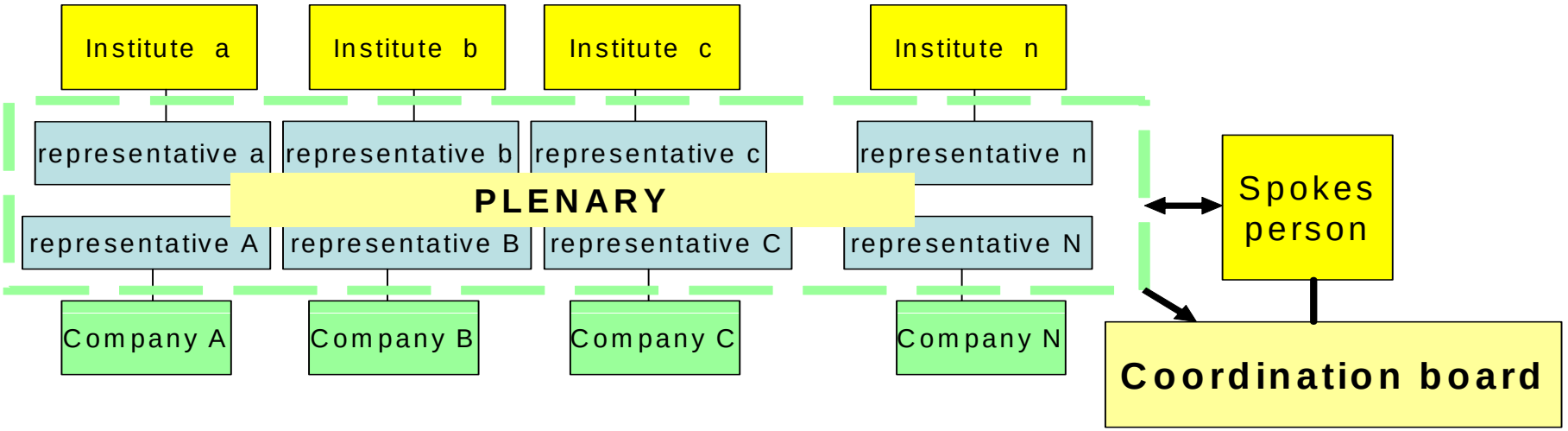
Scope and Objectives

- **EIFast's scope** includes all systems and components needed for a SCRF accelerator, including all supplies and services for the balance of plant.

- The **central objectives** of EIFast are to
  - Maintain and further strengthen the excellent position of European science and industry in SCRF.
  - Promote the realisation of European and global SCRF projects including XFEL and ILC.
  - Bring together institutes being involved in SCRF technology and companies interested in supplying products for SCRF projects.
  - Provide a platform for interactions within Europe and with the potential collaborators in America and Asia

Basic Organisation

- Each member appoints one Representative.
- **Representatives** of members meet in the plenary regularly.



- **Spokesperson** coordinates work of EIFast and represents it to the outside.
- **Coordination Board** with members from „N“ nations (balanced research institute and industry participation) prepares meetings and execution of actions of EIFast

40 Members (as of June 2007)

Members

ACCEL Instruments GmbH
Air Liquide
Babcock Noell
CCLRC Daresbury Laboratory
CERCA (AREVA Group)
Cryoelectra GmbH
Cryotherm GmbH & Co. KG
DeMaCo Holland bv
DESY
Dutch Scientific
E2V Technologies
Elytt Energy
Essex X-Ray & Medical Equipment Ltd
Ettore Zanon S.p.A.
GTD, Sistemas de Información
Henkel Lohnpoliertechnik GmbH
W.C.Heraeus GmbH
INFN
Jesús Maria Aguirre, S.A. (JEMA)
Linde Kryotechnik AG
SKODOCK GmbH
SPA Ferrite Ltd.
Thales Electron Devices
WEKA AG

Provisional Members

ASG Superconductors S.p.A.
CAEN
CRIOTEC IMPIANTI S.r.l.
CTE Sistemi srl
F.u.G. Elektronik GmbH
EUROMEC s.r.l.
Nortemecanica, S.A.
O.C.E.M. S.p.A.
pro-beam AG & Co. KGaA
Renco SpA
Reven.ge srl
RIAL Vacuum S.p.A.
RMP srl
SAES Getters S.p.A.
Thomson Broadcast & Multimedia AG

Coordination Board

From laboratories

Christian Arnault (LAL, FR)
Mike Dykes (ASTEC, UK)
Lluís Miralles (CELLS, ES)
Carlo Pagani (INFN, IT)
Dieter Trines (DESY, DE, Acting Spokesperson)

From companies

Giorgio Corniani (Zanon, IT)
Michael Peiniger (ACCEL, DE)
Eric Giguet (Thales Electron Devices, FR)
Paloma Dorado Aguilar (CDTI, ES)
Pieter van Otterloo (Dutch Scientific, NL)
David Wilcox (E2V, UK)
Kurt Ebbinghaus (BNN, DE)

Secretary

Karsten Wurr (DESY, DE)

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Visit EIFast's website: **www.eifast.eu** (news, minutes, talks, calendar, etc.)

May 9/10, 2006

XFEL workshop with industry and labs at DESY

Plenary presentations

-Overview and status of XFEL (technical and schedule)

-Involvement of national institutions in project

-Local infrastructure near XFEL site

-Human resources, developing know-how and training

-Overview and status of the procurement strategy for XFEL

Working Groups

1. Civil Engineering 2. RF System 3. Cryogenics / Cryostats

4. Magnets and Powersupplies 5.Diagnostics and Controls

6. Vacuum cold / warm 7.Cavities / couplers etc.

As of today European industry is looking to June 05, 2007, when the European XFEL project is expected to formally start

Industrial Session for ILC at PAC 2007

International Industrial Forums for the ILC

Introduction to the ILC International Industrial Forums, Ken Olson, ORNL

Imortance of the Forums to the ILC (15‘), S. Mishra, FNAL

14:30 - 15:30 Session I: Cryomodules and Cavities, Chair A. Favale, AES

6 ten-minute talks by: J. Rathke, AES, E. Bonnema, Meyer Tool, K. Sennyu, MHI, T. Semba, Hitachi, H. Vogel, ACCEL, S. Mishra, FNAL

16:00 – 17:00 Session II: RF Systems, Chair N. Ozaki, LCF Japan

5 ten-minutes talks by: A. Balkcum, CPI, T. Treado, CPI, K. Hayashi, Toshiba, H. Mori, Nichion, D. Wilcox, Cosultant

17:00 – 18:00 Session III: Civilian Construction and Cryogenics, Chair M. Peiniger, ACCEL

5 ten-minutes talks by: B. Shelton, Parsons, T. Katou, Nikken Sekkei, R. Nolte, AP&C, J. Yoshida, Hitachi, P. Dauguet, Air Liquide

Closing Remarks M. Peiniger, ACCEL

Summary and Conlusions

EIFast has been established to maintain and strengthen the excellent European position in SCRF technology both, for the research institutions and industry.

A strong EIFast will surely help to reach best performance, to secure schedule and to minimize costs for the future challenging projects like XFEL and ILC.

EIFast and the European industry expects the start of XFEL „tomorrow“ and is well positioned and is looking forward to support ILC for the engineering design and of course for the construction phase, togehter with the Industrial Fora of the other Regions

Thank you for your attention