

International Summit on Superconductivity foresees major opportunities in solving electric power problems

Technologies also contribute to industrial advances in medical, environmental, transportation and information technology areas

For three days beginning September 21, 2003 high level representatives of the superconductivity industry worldwide mainly representing Europe, the United States, Japan and Korea convened at Forschungszentrum Karlsruhe, Germany at the 12th International Superconductivity Industry Summit to discuss developments in their field. The meeting was held little more than one month after the recent massive blackout in the eastern United States left millions without power and raised international concern on the vulnerability of power grids within the highly connected developed world, so completely dependent upon electricity. This has been further proven by the massive blackouts which happened in Denmark, Sweden and Italy during this September. A challenge before the delegates was to assess the steps necessary to hasten the day when superconductivity can contribute more fully to the more secure delivery of this modern necessity, just as it improves the quality of life in other areas today.

Delegates discussed how recent advances in superconductivity have enabled a wide range of compact, efficient and low-environmental-impact power technologies to boost power grid capacity and reliability that could, with modest support for development and demonstration projects, meet immediate societal needs within this decade. Examples discussed at the conference included controllable underground cables, motors, generators and synchronous condensers, transformers, SMES and fault current limiting devices. These technologies are expected to become critical as electrification and energy growth come into conflict with space limitations and other environmental concerns. In addition, established and emerging applications of superconductivity are already numerous, and impact a broad range of industries. From advanced information technology to medical science, from power application to environmental protection, from basic science to transportation, superconductivity enables an assortment of uniquely capable devices. Delegates heard reports on progress in the construction of the Large Hadron Collider at CERN for High Energy Physics, on the continued health of the MRI market, on the rapidly growing deployment of superconducting cellular phone filters, and on steady progress in qualifying magnetically levitated trains. Large motors for ship propulsion are another promising application in the transportation sector. Magnetocardiography and proton therapy with superconducting cyclotrons are further contributions of superconductivity to medical science. ISIS-12 presentations highlighted the many interdependencies between activities in different disciplines and on-going international co-operations. As in the life sciences and in information technology advances are critically dependent upon investments in enabling technology such as materials science and cryogenics.

The sheer diversity of opportunities may be reason enough for strong public and private support for this cross cutting technology. But power applications remain the primary focus of researchers and funding sources alike, and further sustainable public funding is urgently required to complete the development of cost effective devices able to impact grid

reliability. Delegates were heartened to learn that policy makers in the US have been recognizing this, and that increased spending on power applications of superconductivity in the US was anticipated in the coming fiscal year.

NEXT MEETING

ISIS-13 will be hosted by CCAS and is tentatively scheduled for October 2004, in Jacksonville, Florida, USA. The member organizations of ISIS continue to encourage the pursuit of collaborative activities amongst themselves where possible to bring the joint goal of full commercialization of superconductivity ever closer.