



# Consortium organization

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CERN  
10 December 2018



*The European Advanced Superconductivity Innovation and Training (EASITrain) project receives funding from the European Union's Horizon 2020 research and innovation programme under grant No 764879. The information herein only reflects the views of its authors and the European Commission is not responsible for any use that may be made of the information.*



# Project Office at CERN

- Amalia **Ballarino** (TE/MSC, PI, head of CERN's superconductivity R&D programme)
- Michael **Benedikt** (ATS/DO, Head of the Future Circular Collider study)
- Panagiotis **Charitos** (ATS/DO, communication officer, scientific information manager)
- Cecile **Granier** (HR, MSCA office)
- Johannes **Gutleber** (ATS/DO, head of project office)
- Julie **Hadre** (ATS/DO, project officer of H2020 projects and FCC study)
- Coralie **Hunsicker** (ATS/DO, project officer EASITrain)

# BENEFICIARIES

- Bruker HTS GmbH (Germany)
- CEA - \*IRFU \*INAC/SBT (France)
- CERN (International Organisation)
- CNR – SPIN (Italy)
- ASG / COLUMBUS SUPERCONDUCTORS SRL (Italy)
- HZB (Germany)
- I-CUBE RESEARCH (France)
- INFN LNF (Italy)
- Technical University Dresden (Germany)
- Technical University Wien (Austria)
- University Siegen (Germany)
- University Stuttgart (Germany)
- University of Business and Economy Wien (Austria)



# BRUKER HTS GmbH

- Non-academic
- Produces Nuclear Magnetic Resonance (NMR) spectroscopy devices based on superconducting high field magnets
- Superconducting wires for applications



## ESR 2

- Johannes Gnilsen
- Supervised by Alexander Usoskin
- Hanau, Germany



# CEA - \*IRFU \*INAC/SBT- COMMISSARIAT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES

- Academic
- CEA-DRF develops solutions for cryogenics and superconducting magnets in its INAC (Institute for NANosciences and Cryogenics) and IRFU (Institute of Research into the Fundamental laws of the Universe) institutes
- CEA has develops technologies along the entire value chain of superconducting magnets including the cooling infrastructures



## ESR 3

- Andrea Vitrano
- Supervised by Bertrand Baudouy
- Grenoble, France



## ESR 4

- Jakub Tkaczuk
- Supervised by François Millet
- Grenoble, France



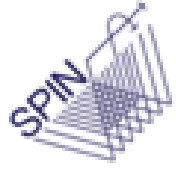
# CERN - EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

- International Organisation (project coordinator)
- provides a unique range of particle accelerator facilities that enable research at the forefront of human knowledge.
- Covers the entire value chain of all superconducting and cryogenic technologies
- Interface thin film/substrate at cryogenic temperatures



## ESR 1

- Dorothea Fonnesu
- Supervised by Torsten Köttig
- Switzerland/France



# CNR SPIN - CONSIGLIO NAZIONALE DELLE RICERCHE

- Academic
- Its mission is the study of superconductors and other innovative materials for electronic devices and for energy applications
- Thallium thin films and  $\text{MgB}_2$  wires



## ESR 6

- Aisha Saba
- Supervised by Emilio Bellingeri
- Genoa, Italy

## ASG (formerly Columbus Superconductors SRL)

- Non-academic
- The company focuses on the R&D and application development of superconducting wires and magnets, based on  $\text{MgB}_2$  technology
- Improvement of wire production process



### ESR 7

- Mattia Donato
- Supervised by Matteo Tropeano
- Genoa, Italy



- Academic
- The institute studies the structure and dynamics of materials and investigates solar cell technology. Several large scale facilities are available, including a 10 MW nuclear research reactor at the Lise Meitner campus in Wannsee and the third-generation BESSY synchrotron in Adlershof.
- Superconducting thin film production and characterization.



## ESR 8

- Dmitry Tikhonov
- Supervised by Oliver Kugeler
- Berlin, Germany

# I-CUBE RESEARCH

- Non Academic
- I-Cube is a company providing R&D services for advanced metal processing solutions using pulsed power that are produced and marketed by sister company BMax. Major application domains are automotive, aeronautics and packaging industries
- Electro hydraulic forming for metals



## ESR 9

- Jean-François Croteau
- Supervised by Elisa Cantergiani
- Toulouse, France

- Academic
- Istituto Nazionale di Fisica Nucleare (INFN) is the major Italian research organization dedicated to the study of the fundamental constituents of matter, conducting theoretical and experimental research in the fields of sub-nuclear nuclear and astroparticle physics.
- Superconducting thin film coating



## ESR 10

- Vanessa Garcia Diaz
- Supervised by Cristian Pira
- Legnaro, Italy

- Academic
- TU Dresden is a multi-discipline university, also offering humanities and social sciences as well as medicine. TUD is the key developer of a novel refrigeration concept based on neon-helium light gas mixture (Nelium)
- Nelium refrigeration cycle and test stand



## ESR 11

- Sofiya Savelyeva
- Supervised by Christoph Haberstroh
- Dresden, Germany

- Academic
- TU Wien is the largest technology-oriented university in Austria. The Institute of Atomic and Subatomic physics (ATI) specializes in teaching and research on atomic, nuclear, neutron, solid state and low temperature physics as well as radiation effects, nuclear chemistry and quantum optics. It operates a research reactor. The USTEM institute carries out advanced material microstructure analysis .
- Superconducting wire and thin film characterisation and microstructure analysis of all superconducting materials in view of identifying the performance limitations and proposing potential break-through approaches to improve the performance.



## ESR 12

- Alice Moros
- Supervised by Johannes Bernardi



## ESR13

- Mattia Ortino
- Supervised by Michael Eisterer

- Academic
- The university consists of four faculties, which run a broad spectrum of degree programs. The university institute on surface technology under Prof. Xin Jiang is internationally considered a technology leader.
- Radiofrequency properties of superconducting thin films



## ESR 14

- Stewart Leith
- Supervised by Michael Vogel
- Siegen, Germany



# USTUTT - UNIVERSITÄT STUTT GART

- Academic
- It is one of the top nine leading technical universities in Germany (TU9) with highly ranked programs in civil, mechanical, industrial and electrical engineering. The university has a history in co-developing Nelium refrigeration together with TU Dresden.
- Turbo compressor development for light gases

## ESR 15

- Maxime Podeur
- Supervised by Damian Vogt
- Stuttgart, Germany



- Academic
- It is a world-leading institution with respect to research in the field of open and user innovation management. The institute participating in the project has pioneered the “Technology Competency Leveraging” method.
- Assessing technologies along all R&D value chains with respect to identifying credible market opportunities.



## ESR 5

- Linn Kretzschmar
- Supervised by Peter Keinz
- Vienna, Austria



# PARTNER ORGANISATIONS

- Air Liquide
- ASG Superconductors
- Babcock Noell GmbH/Bilfinger SE
- CemeCon
- MAN Diesel & Turbo
- Terra Mater Productions GmbH / Terra Mater Factual Studios
- Criotec Impianti
- IEEE CSC
- Reseach Instruments
- SigmaPhi
- Università degli Studi di Genova
- Université de Genève

**NOTE:** In addition to this formal list of project partners, there are numerous additional organizations participating in the research, since this project is part of a world-wide R&D project that is coordinated by CERN. It federates today more than 130 institutions and 25 companies.

- Non-academic
- Sassenage, France
- Air Liquide S.A. is a French multinational company which supplies industrial gases and services to various industries including medical, chemical and electronic manufacturers.
- It has a long standing business relation with CERN in the world's largest cryogenic installation.

## ASG superconductors

- Non-academic
- Genova, Italy
- ASG is a world leader in superconducting magnetic systems design, construction and testing for high energy physics and thermonuclear fusion applications and through its subsidiaries Paramed and Columbus Superconductors in the field of biomedical applications (diagnosis and therapy) and the energy sector (SMES, FCL, wind turbines and energy transport).
- Columbus merged recently with ASG

- Non-academic
- Mannheim, Germany
- The Würzburg based Babcock Noell GmbH is a company of the Bilfinger SE. Operating worldwide in the product areas of nuclear service, nuclear technology, magnet technology and environment technology, BNG delivers experience into practice with great success.

- Non-academic
- Würselen, Germany
- CemeCon is the world's largest coating centre for cutting tools and the market leader in the area of CVD diamond coatings.

## MAN Diesel & Turbo

- Non-academic
- Zürich, Switzerland
- MAN is a manufacturer of large scale turbomachinery under the holding of MAN Diesel & Turbo SE. The product range covers conventional axial and centrifugal compressors, Isotherm compressors with integrated re-cooling, the magnetically-levitated MOPICO® and HOFIM™ compressors as well as the TURBAIR® vacuum blowers.

- Non-academic
- Wien, Austria
- The company is a subsidiary company of Red Bull and specialises in factual production and distribution for cinema, TV and multimedia platforms.  
A one day media training took place at TMFS premises during in September 2018.

## Criotec Impianti

- Non-academic
- Chivasso, Italy
- The specific skills in the cryogenic and vacuum sector of the founder and his team of technicians are immediately recognized and appreciated by the market. Within a few years, Criotec is committed to acquiring important customers among large gas-producing companies. In 1996, Criotec faced Europe by demonstrating technological excellence in cryogenic systems. It begins to arouse the interest of the Institutes and Research Centers.



# IEEE CSC

- Non-academic
- United States and worldwide
- The IEEE was formed in 1963 from the amalgamation of the American Institute of Electrical Engineers and the Institute of Radio Engineers. Today, it is the world's largest association of technical professionals with more than 400,000 members in chapters around the world. Its objectives are the educational and technical advancement of electrical and electronic engineering, telecommunications, computer engineering and allied disciplines. Inside the IEEE the technical Council on superconductivity (CSC) promotes programs and activities that cover the science and technology of superconductors and their applications.

- Non-academic
- Bergisch Gladbach, Germany
- Research Instruments is an excellent example of how fundamental physics research effectively leads to the creation of industrial products and services. The internationally renowned industrial manufacturer of niobium and copper-based accelerating structures has produced systems for large-scale projects such as the European XFEL and now offers turn-key particle sources, electron and ion linear accelerators for a variety of industrial and medical areas. RI is a majority owned subsidiary of Bruker Energy & Supercon Technologies Inc., a subsidiary of Bruker Corporation and was established in 2009. RI is a medium sized company with management holding a significant equity stake of the company and staffed with a highly motivated team.

## SigmaPhi

- Non-academic
- Vannes, France
- SigmaPhi Magnets is a company founded in 1981, specialized in the design and building of magnetic systems for particle accelerators, it has built up considerable expertise in the design and production of normal and superconducting magnets for research, industry and healthcare. Among its clients are leading physics research facilities and hadron accelerator cancer treatment facilities.

# Università degli Studi di Genova

- Non-academic
- Genova, Italy
- The University of Genoa is a teaching and research institution, founded in 1933, operating according to the principles of the Constitution of the Italian Republic and of Magna Charta subscribed by European Universities in 1988. UGENOA has a synergic collaboration with the “Italian Institute of Technology”, promoting excellence in research in Italy by attracting the brightest researchers in a variety of scientific disciplines.



- Academic
- Geneva, Switzerland
- The university holds and actively pursues teaching, research, and community service as its primary objectives.
- The group of applied superconductivity focuses on the development of both low- and high-T<sub>c</sub> superconductors for applications in various fields, from the high field magnets for NMR/MRI systems and particle accelerators to the emerging applications in the electric power infrastructure.