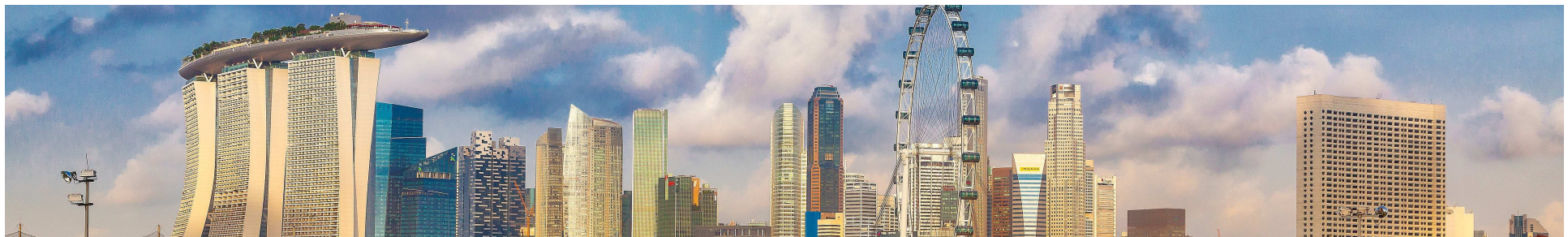


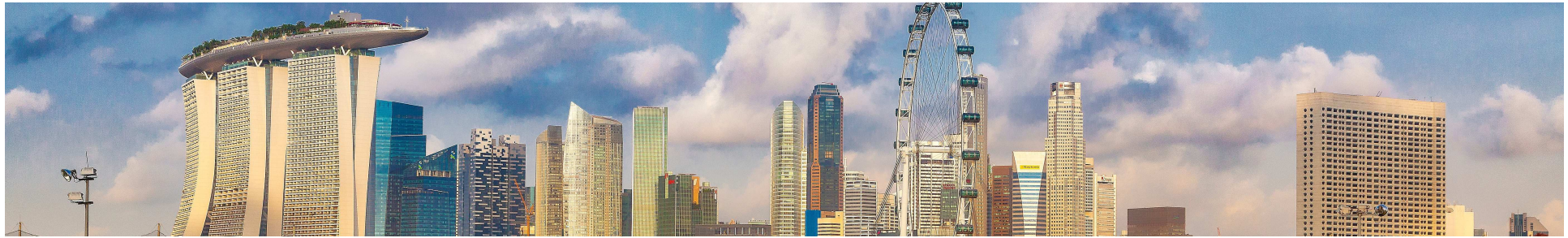


# Project Finance in the Energy Efficiency Sector

Thematic **Investment** – EE brokerage workshops

EU Brokerage Event on Energy Efficiency in Horizon 2020  
Paris, 21st June 2018





# AMTW Project Law

- Law firm specialized in projects
  - Construction of energy efficient buildings, BIM and energy performance of buildings, renewable energy, defense, aviation (including measures to reduce carbon emissions), project finance
- Experience in EU-funded projects
  - Constitution of files in order to obtain EU financing
  - Drafting of Consortium agreement between the parties that wanted to obtain EU financing



# Our Project Expertise

- We provide advice on how to finance energy projects:
  - With equity financing
  - With syndicated loans (loans granted by a consortium of banks)
  - With financing from the EU and/or the regions

*and*

- We draft the necessary documents to obtain financing from the different sources
- We arrange the financing including equity participation

# Consortium

## Known Partners / Competence Offer

Name of project lawyers	Type	Country	Role in the project
Attorneys from various countries	Legal	France, Spain, Germany, China, Russia	Advice and negotiation of the finance documentation To obtain financing from the EU Access to equity partners
Consultants	Business Strategy		

## Partner search

Profile	Type	Country	Role in the project
Construction/Energy Companies		Worldwide	Clients/partners





# Contact Details

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E-mail	<a href="mailto:amwolfsohn@amtwlaw.com">amwolfsohn@amtwlaw.com</a>

# Supraconducting Wire for Energy Efficiency

NEWS | 24 May 2018 | Brussels | Energy

# Study on the quality of electricity market data, supply disruptions and their impact on the European electricity markets

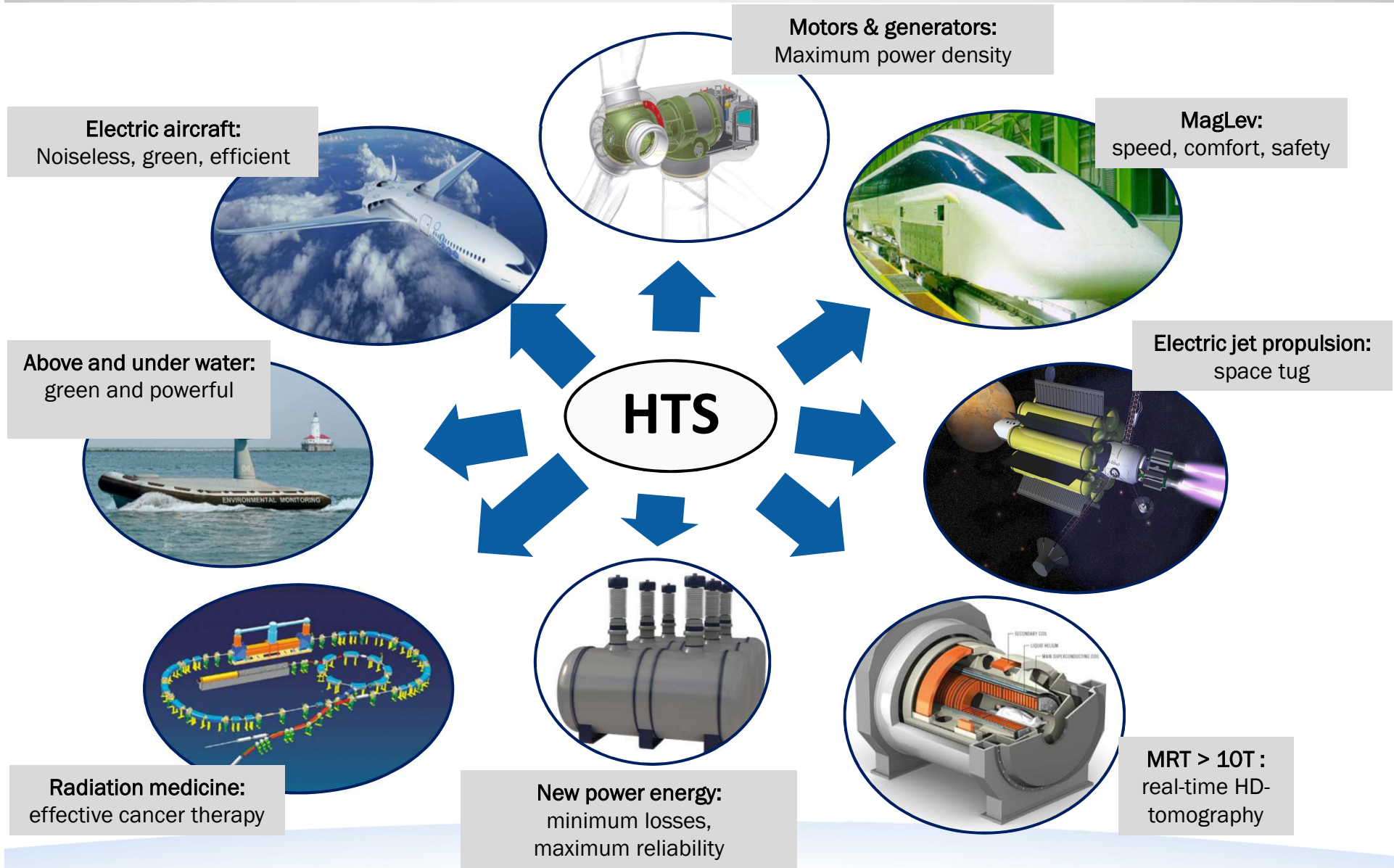


The study, covering all of the 28 EU Member states, is focussed on the quality of electricity market data, supply disruptions and their impact on the European electricity markets and the everyday life of citizens and business in the EU. Concern for security of supply is quite widespread across Member states. Therefore the study aimed at providing knowledge about the extent of disruptions across the EU Member states and the overall loss to society from such disruptions.

The main findings can be summarised in the following points:

- In 2016 an estimated amount of 13 TWh electricity was not produced due to generation outages
- It is estimated that in the EU in total approximately 600-850 GWh of electricity is not supplied to consumers in each year
- In the EU as a whole, disruptions were estimated to result in a loss to consumers of approximately 10 to 25 billion EUR annually in the

# Breakthrough HTS solutions





# Interest of the supraconductivity in Europe



- Home
- Project**
- Consortium
- News & Events
- Contact

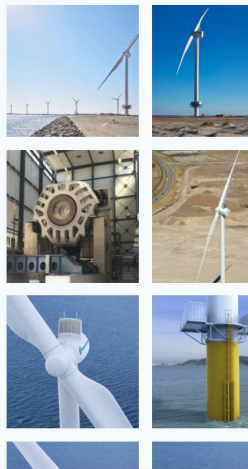
Home > Project

## Project

The EU-funded EcoSwing project aims at demonstrating world's first superconducting low-cost and lightweight wind turbine drivetrain—demonstrated on a large-scale wind turbine.

During the 4 year project the EcoSwing ambitions are high, the consortium aims at nothing less than the following objectives:

- Design, develop and manufacture a full scale multi-megawatt direct-drive superconducting (HTS) wind generator including a dedicated power converter suitable for current mass mainstream markets.
- Install this superconducting drive train on an existing modern wind turbine in Denmark.
- Operate the superconducting drive train for at least one year, giving the community confidence in superconducting wind generators.
- Prove that the new HTS drive train is cost competitive to state-of-the-art direct-drive permanent magnet generators of world class suppliers.
- Prove that the new HTS drive train can be cost competitive to state-of-the-art geared drive trains in series production.
- Develop and manufacture a cost-efficient cryogenics package that can be maintained atop a wind turbine by regular service people.
- Develop and manufacture a low-cost and maintenance-friendly HTS coil package based on second generation (2G) wire. This will contribute to maturing and stabilizing the European Superconductor industry.



CORDIS

Community Research and Development Information Service

European Commission > CORDIS > Projects and Results > Final Report Summary - ECCOFLOW (Development and field test of an efficient YBCO Coated Conductor based Fault Current Limiter for Operation in Electricity Networks)

Search

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- RESEARCH\*EU MAGAZINES

## ECCOFLOW Report Summary

Project ID: [241285](#)

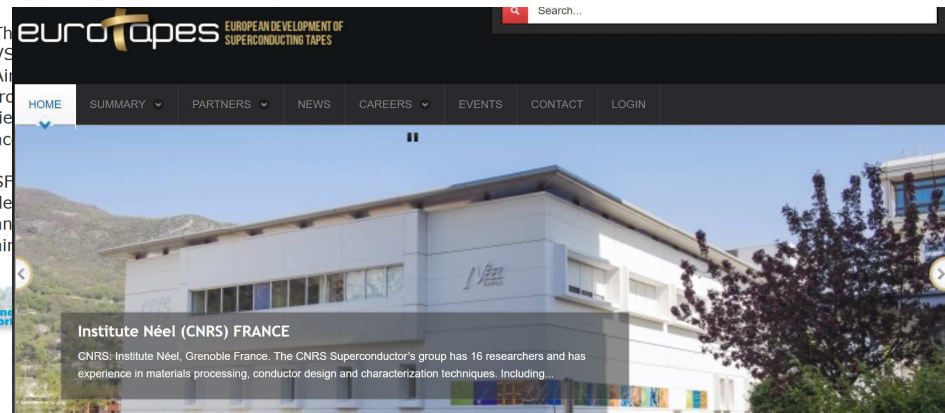
Funded under: [FP7-ENERGY](#)

Country: France

## Final Report Summary - ECCOFLOW (Development and field test of an efficient YBCO Coated Conductor based Fault Current Limiter for Operation in Electricity Networks)

Executive Summary:

The objective of the FP7-funded project "Development and Field Test of an Efficient YBCO Coated Conductor based Fault Current Limiter for Operation in Electricity Networks" (ECCOFLOW) is to develop a superconducting fault current limiter (SFCL) based on coated conductor YBCO tape (cc-tape) and test it in the medium voltage (MV) power grid (distribution level).



### Institute Néel (CNRS) FRANCE

CNRS: Institute Néel, Grenoble France. The CNRS Superconductor's group has 16 researchers and has experience in materials processing, conductor design and characterization techniques. Including...

### EUROTAPES: superconductors to improve energy efficiency in Europe



Research on superconducting materials could allow the distribution of electricity throughout Europe with minimal losses. In the future, electric highways could be built using lower voltages than current DC-based ones. The challenge now is to reduce the production costs of these materials.

Eurotapes, one of the most important projects in Europe about superconductivity, today presented its findings in Barcelona, after 4 years of research. The project has obtained excellent results to develop industrial applications, such as the manufacture of superconducting tape. These applications are useful for multiple areas of science such as the manufacture of magnets for elevated magnetic fields, wind generators or electrical systems for aeronautics.

This project has received funding from the European Union's Seventh Programme for research, technological development and demonstration under grant agreement No 280432.



**HIGH TEMPERATURE SUPERCONDUCTIVITY NEWS  
PRODUCED BY  
THE INTERNATIONAL ENERGY AGENCY'S (IEA)  
TECHNOLOGY COLLABORATIVE PROGRAM (TCP) ON HTS<sup>1</sup>**

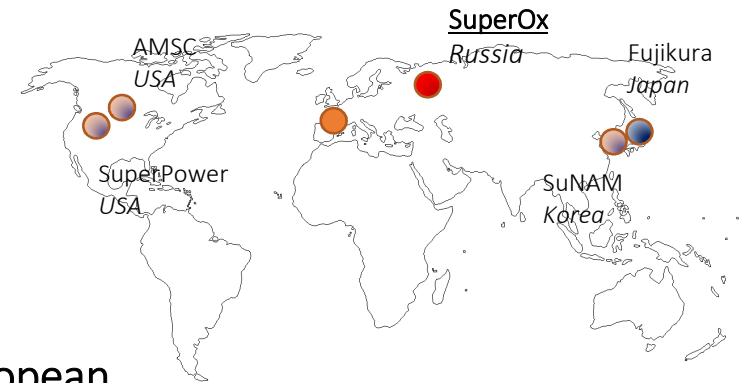
**FEBRUARY 2017**



# About SuperOx



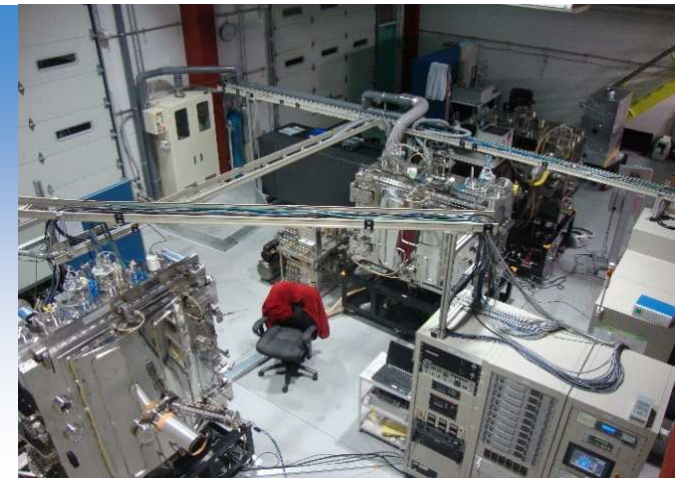
- ❑ 100% private company with the long-term strategy
- ❑ The only commercial 2G HTS wire producer in Europe
- ❑ >100 orders fulfilled
- ❑ 80 employees
- ❑ Operations in Russia (2006) and France (2017)
- ❑ SuperOx Europe created and designed for French and European Projects – Integration French player in cryo & academics



Moscow

## Sales geography:

Germany	Slovakia
France	Italy
UK	Spain
Switzerland	Brazil
Romania	Portugal
USA	Taiwan
Japan	Korea
New Zealand	Russia



Tokyo

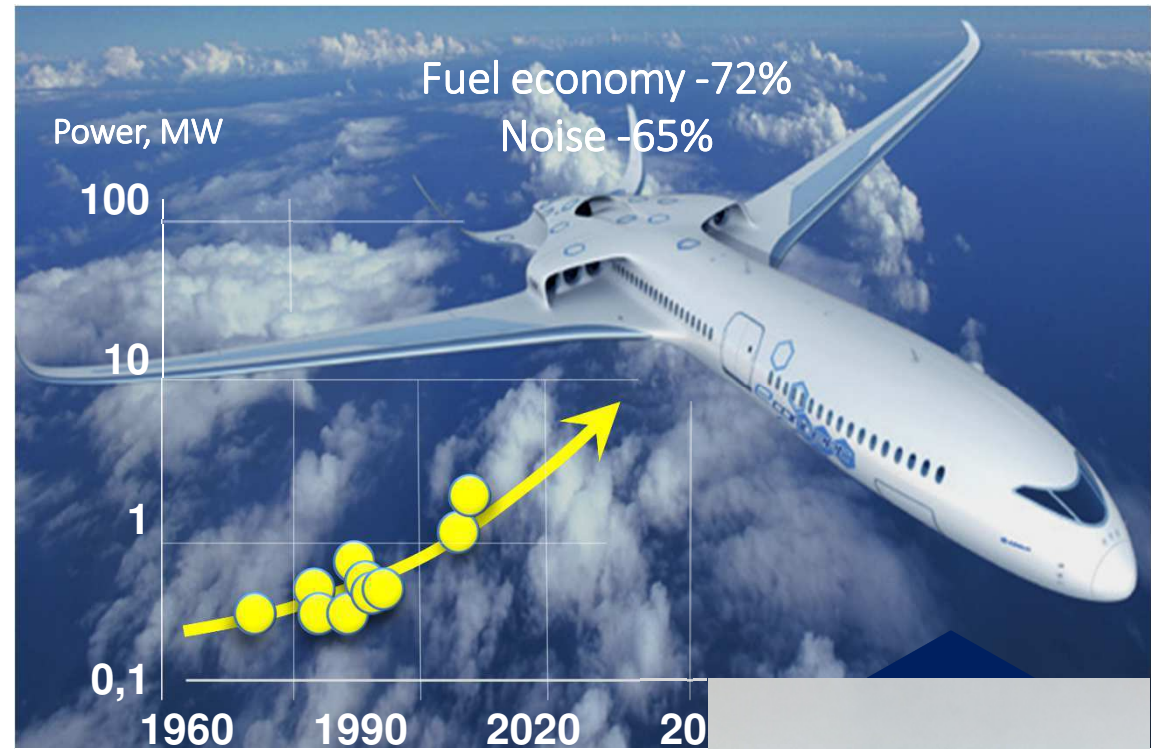
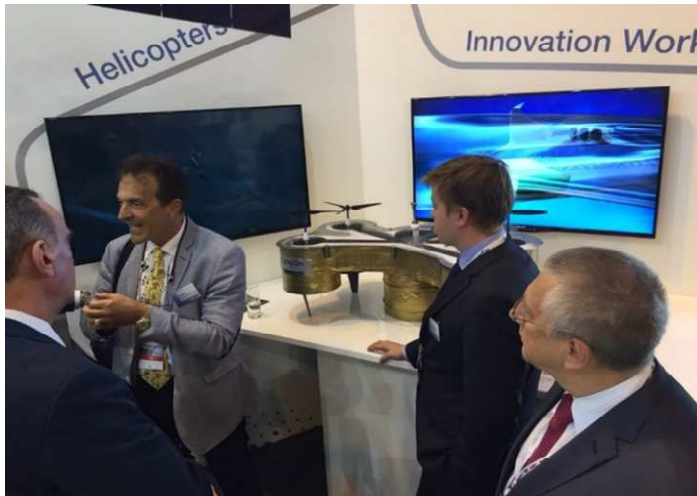


# HTS cable system for Airbus



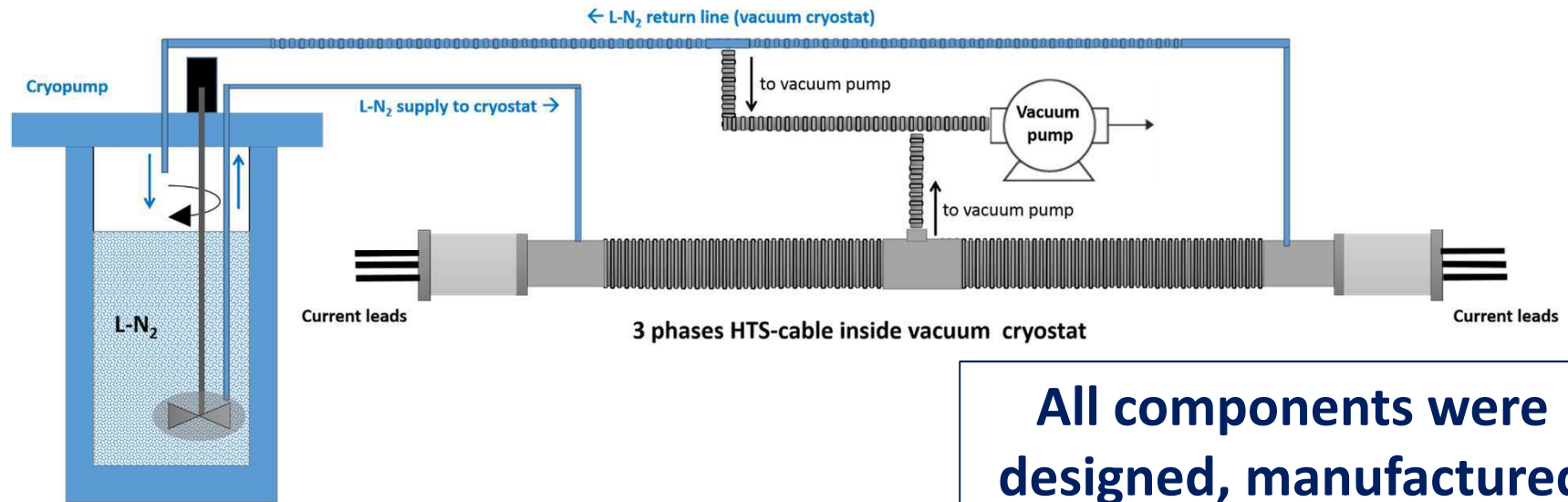
Airbus Group & SuperOx project  
HTS AC cable for **aircraft** system

MAKS2015: SuperOx co-exhibiting on Airbus booth



**2015:** Airbus Corporate Technical Officer Jean Botti and SuperOx' Chairman of the Board Andrey Vavilov signed the organizations' extended partnership agreement <http://www.airbusgroup.com/int/en/corporate-social-responsibility/latest-news/superconductivity-for-electric-planes.html>





## Key components:

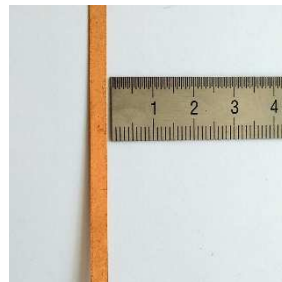
- HTS phases
- Current leads
- Vacuum cryostat
- Cryopump

All components were designed, manufactured and tested by SuperOx in 2018

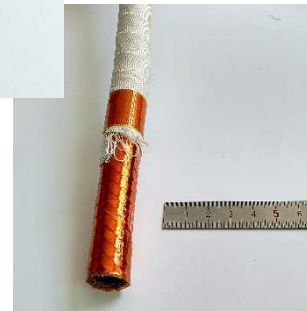




**TRL 9** HTS tape



**TRL 7** Cabling technology



**TRL 6**

**Cryostat**



**TRL 5**

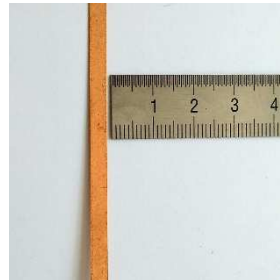
**Current leads**







**TRL 9** HTS tape



**TRL 7**

SFCL Europe  
Customized

**TRL 6**

**TRL 5**

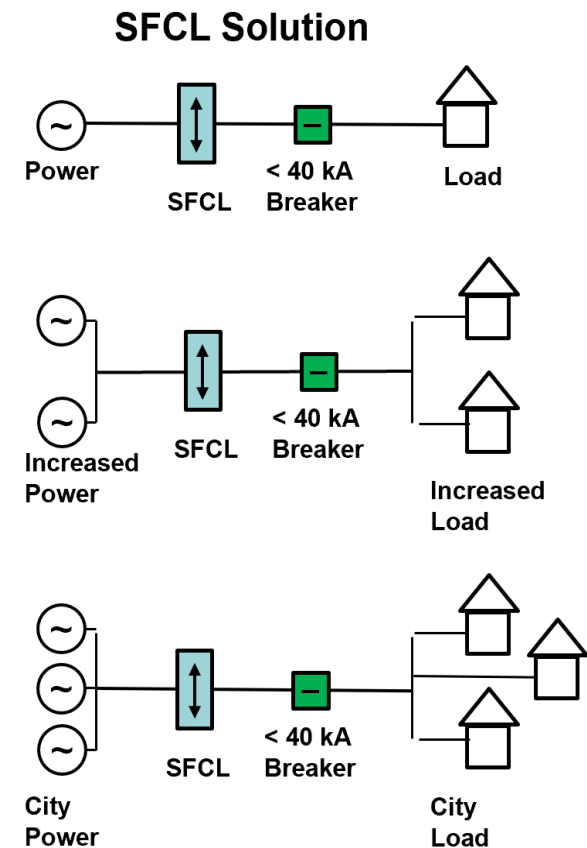


Integration to  
The grid with  
Supra Cable



- No losses in energy transmission
  - Better efficiency
  - Need less production facility
  - Need less substations
- Opportunity to keep current devices
  - No need upgrade substations scheme
  - Longer life substation devices
  - Less substations in current grids

Opportunity to change rules  
On (authorizes) losses as technology  
Is close to availability



Thank you for your attention!

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[www.superox.eu](http://www.superox.eu)  
[info@superox.eu](mailto:info@superox.eu)