

SUPERIOR SUPERCONDUCTORS

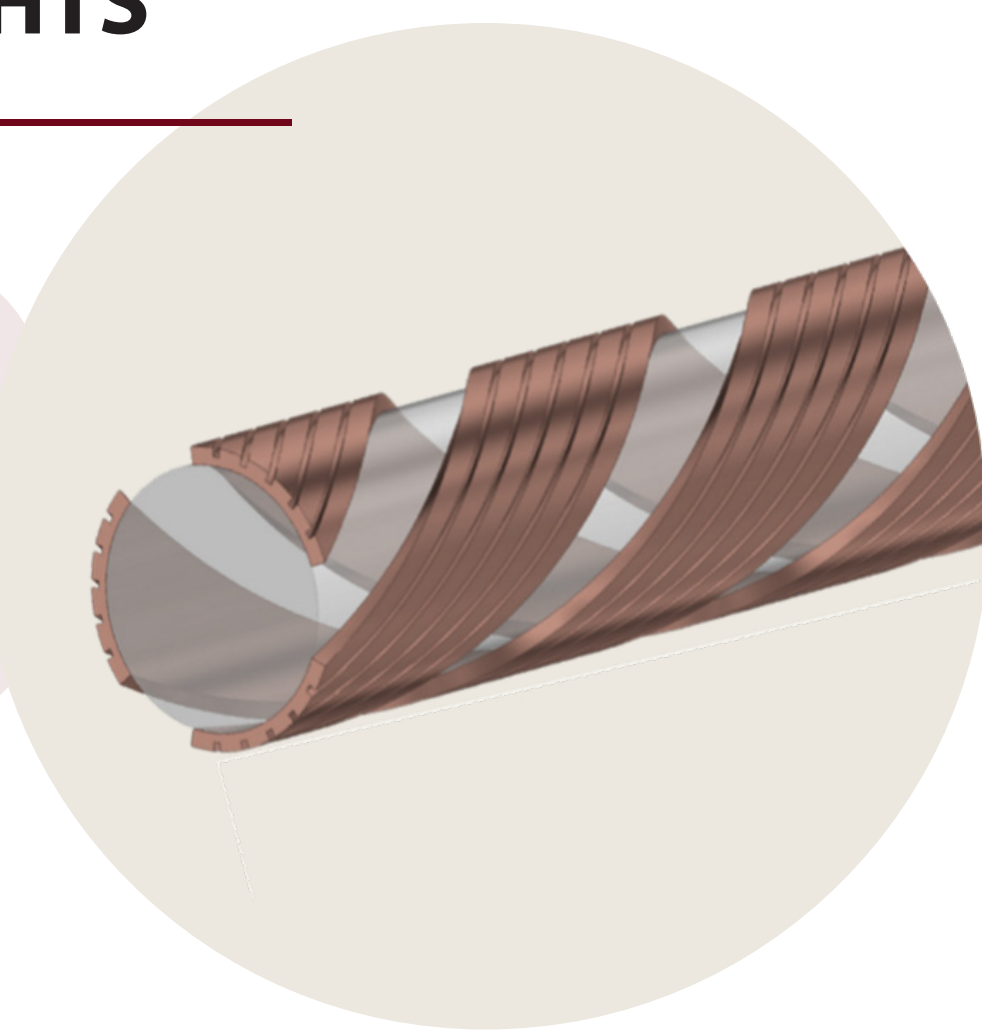
Transforming the way we transport electricity

From technical pains to Big Science market solutions

SUBRA

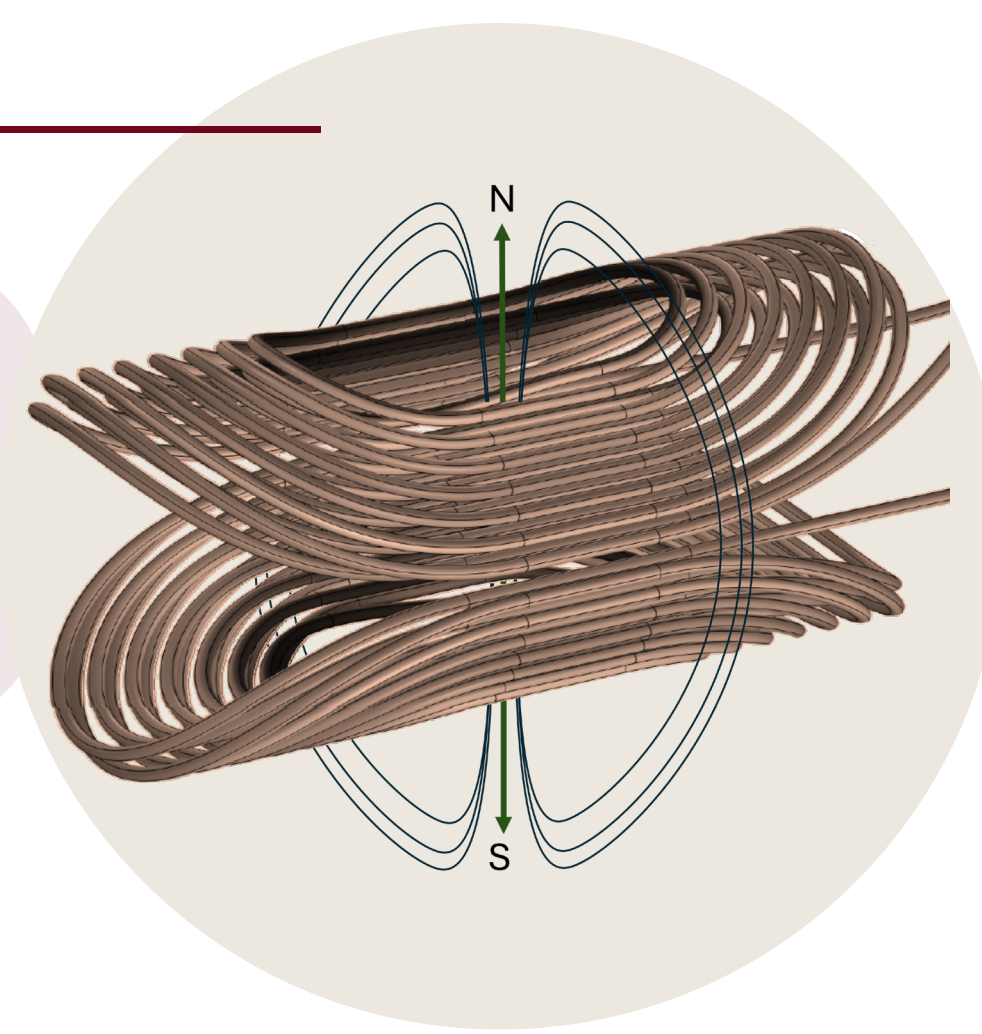
LOW COST FILAMENTISED HTS

- x10 energy loss reduction
- Commercial large-scale
- Robust cable solution



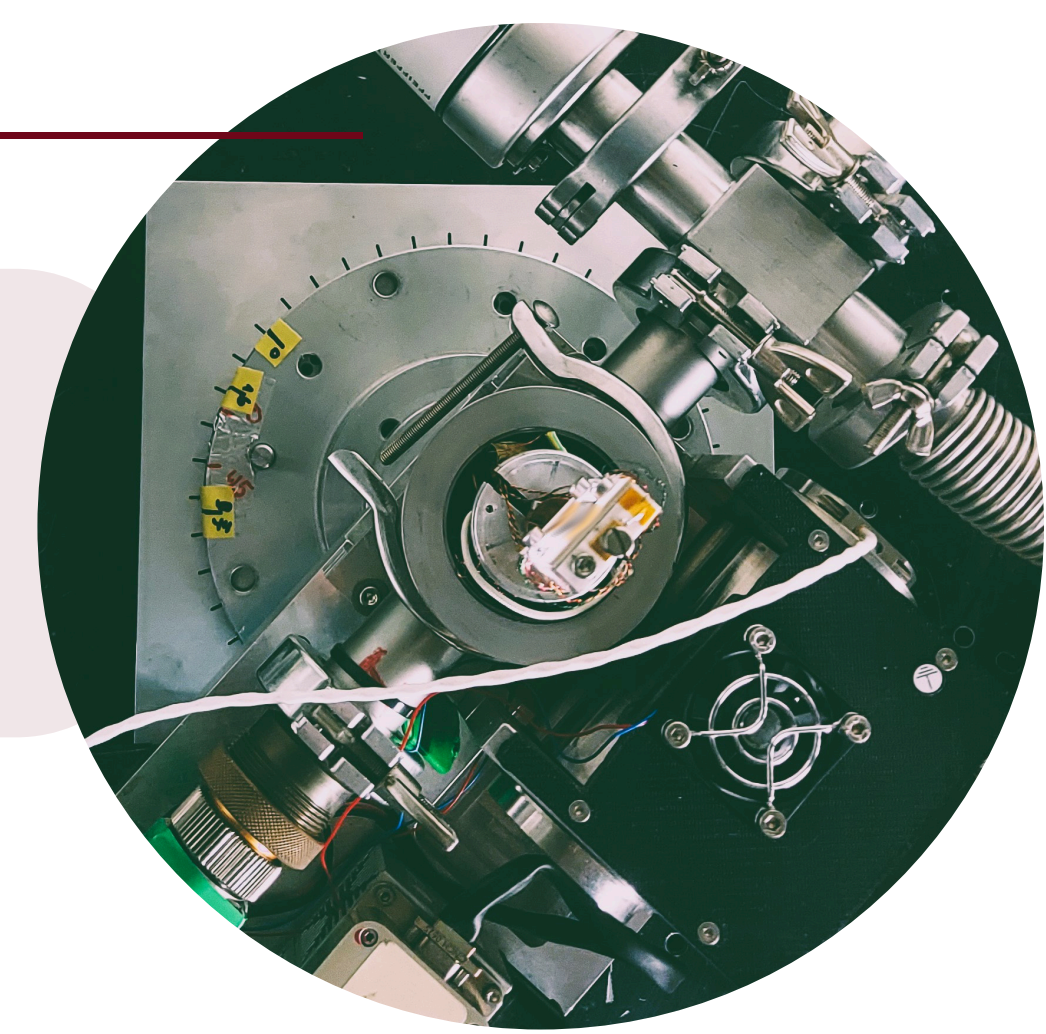
ENERGY EFFECTIVE HTS MAGNETS

- Wide T-span: 2 – 77 K
- High field: +10T
- Fast ramping: +10 T/s

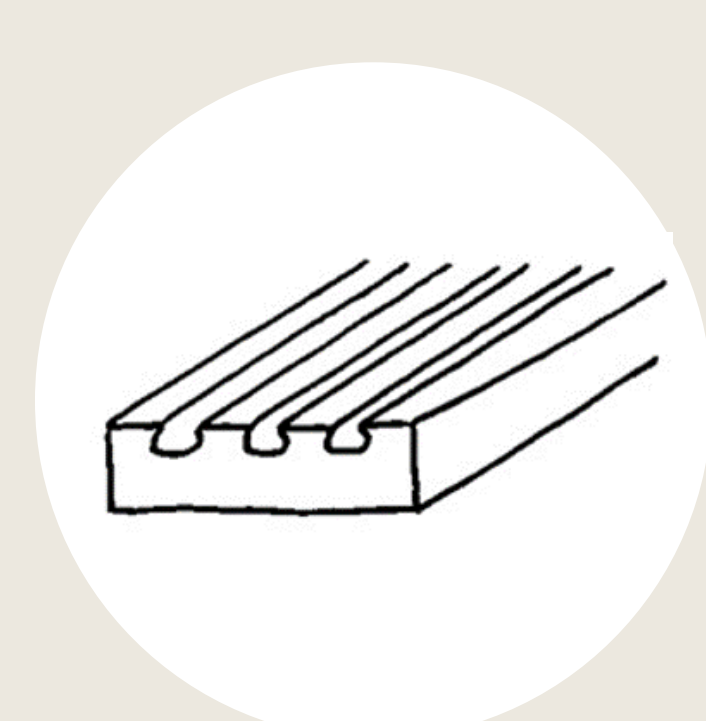


LARGE AREA NEUTRON DETECTORS

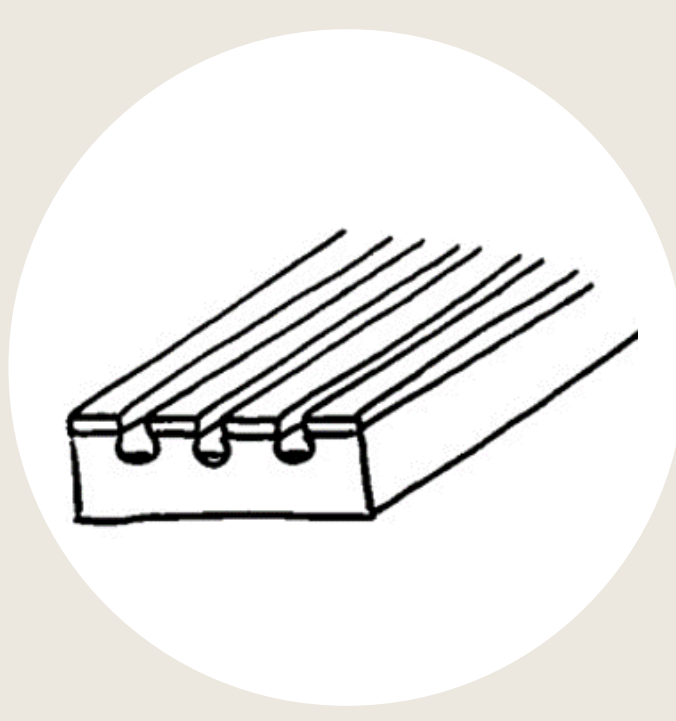
- Large area coverage
- High flux applications
- Compact device



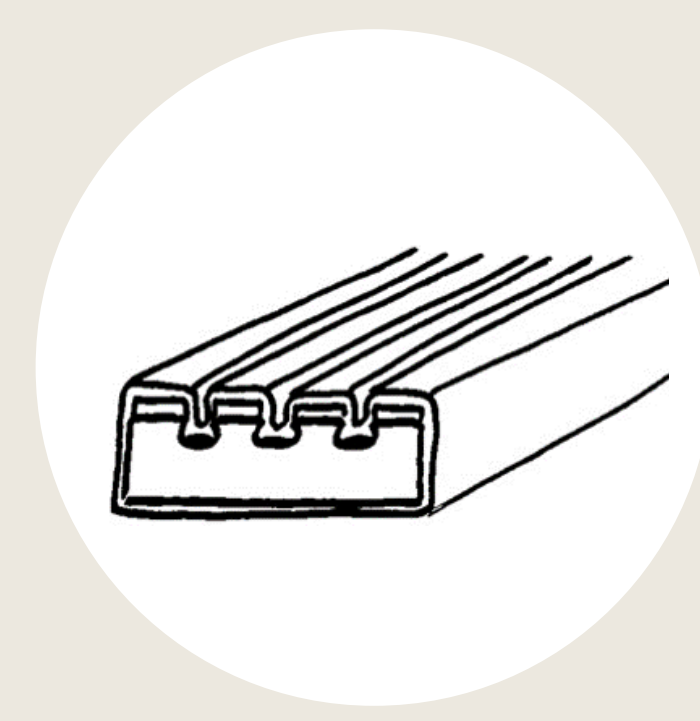
SUBRA's production of filamentised REBCO tapes



3D modification of substrate

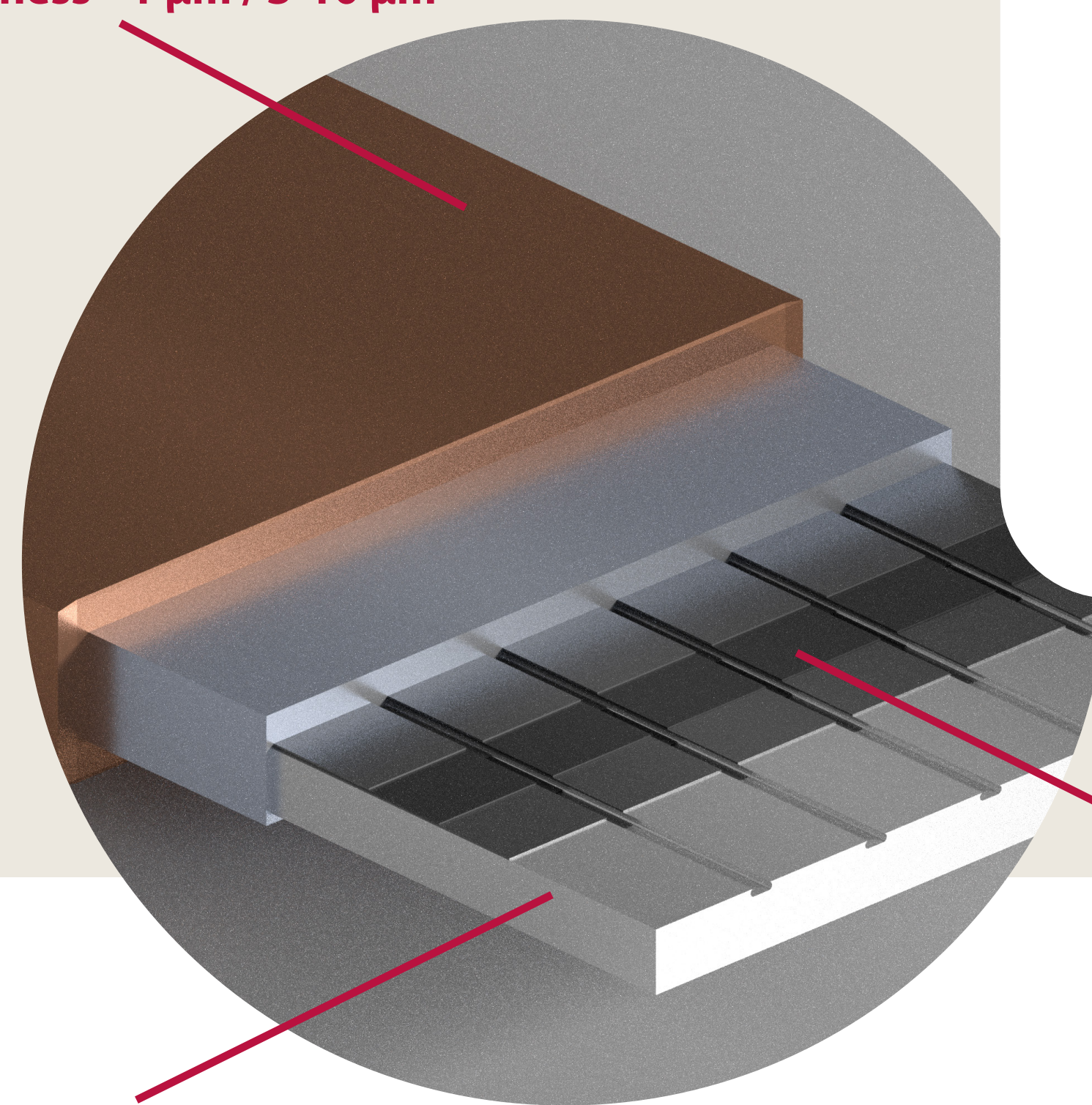


Apply buffer layer and superconductor (GdBa₂Cu₃O₇)



Metallisation for thermal and electrical protection

PVD-Ag and PVD/Galv. Cu
Thickness ~1 µm / 3-10 µm



Substrate Hastelloy C-276
Thickness ~75 µm

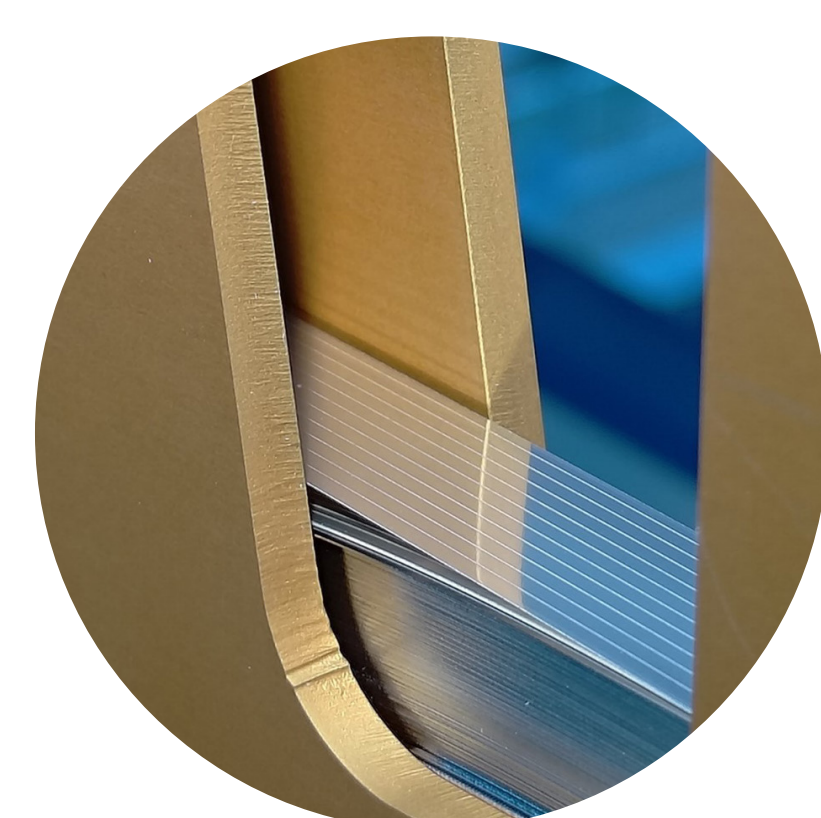
HTS Film, GBCO
Thickness ~3.5 µm
ISD-MgO Layers
Thickness ~3.0 µm

LOW COST & LARGE SCALE

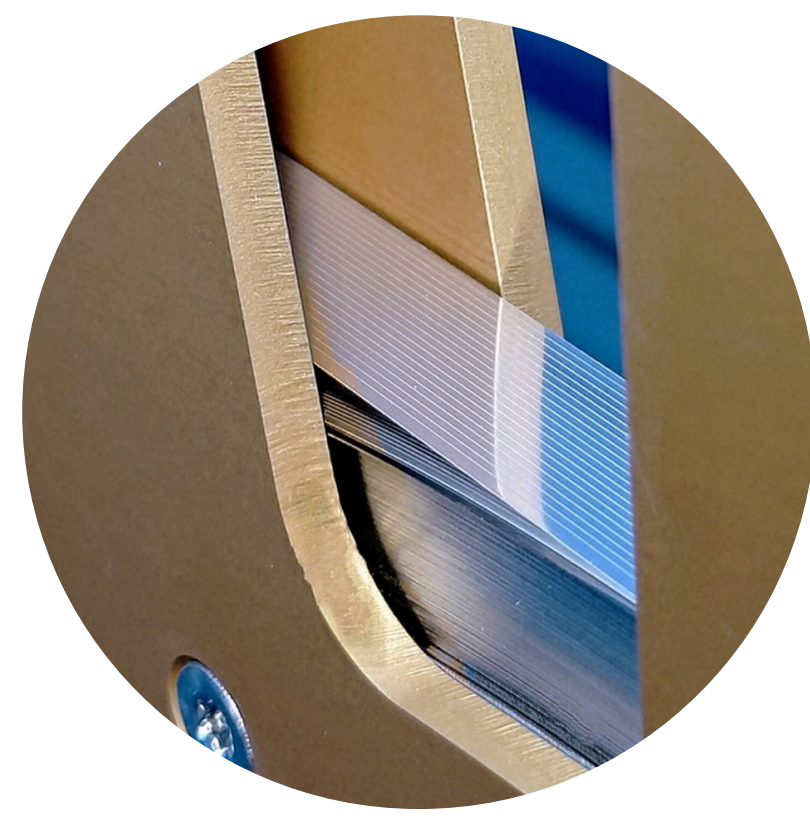
- Substrate filamentisation before HTS stack deposition
- All tape fabrication steps are scalable reel-to-reel processes
- No post treatment required

Filamentised tapes available at 400 m length

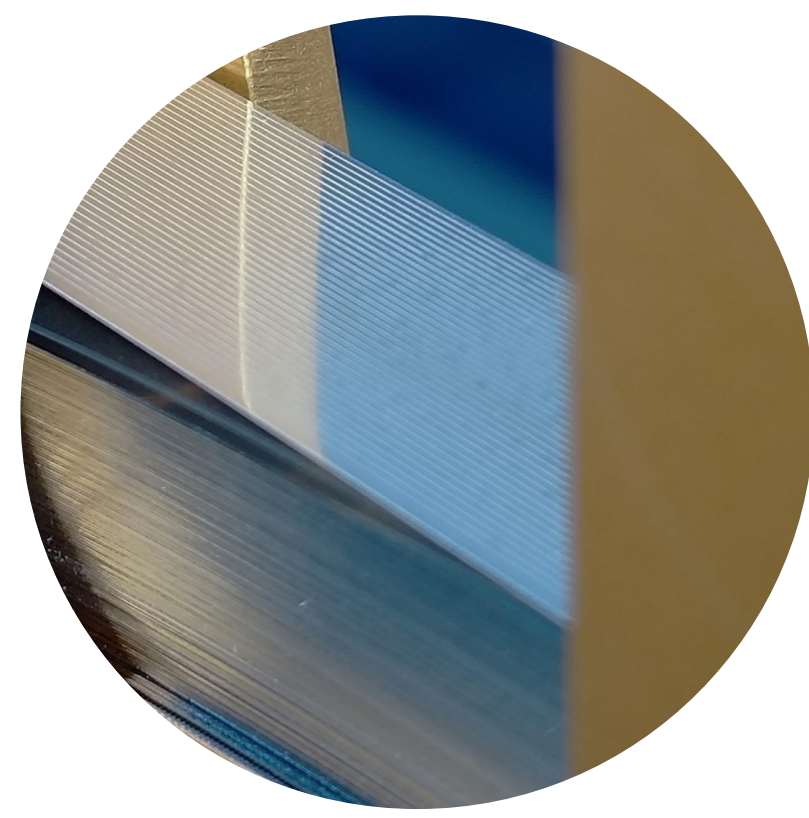
12 mm wide multifilamentary tapes produced commercially using large scale manufacturing.
Choices of filament widths:



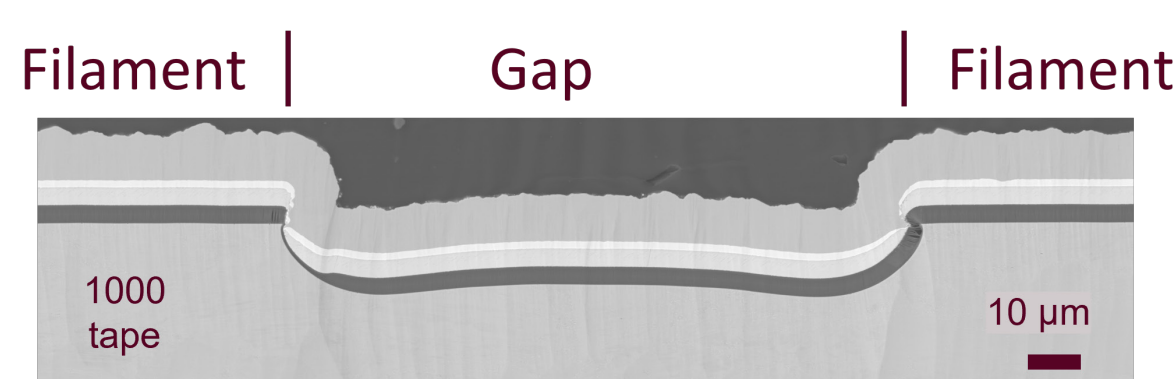
1000 µm filaments
100 µm gaps



500 µm filaments
50 µm gaps



250 µm filaments
50 µm gaps

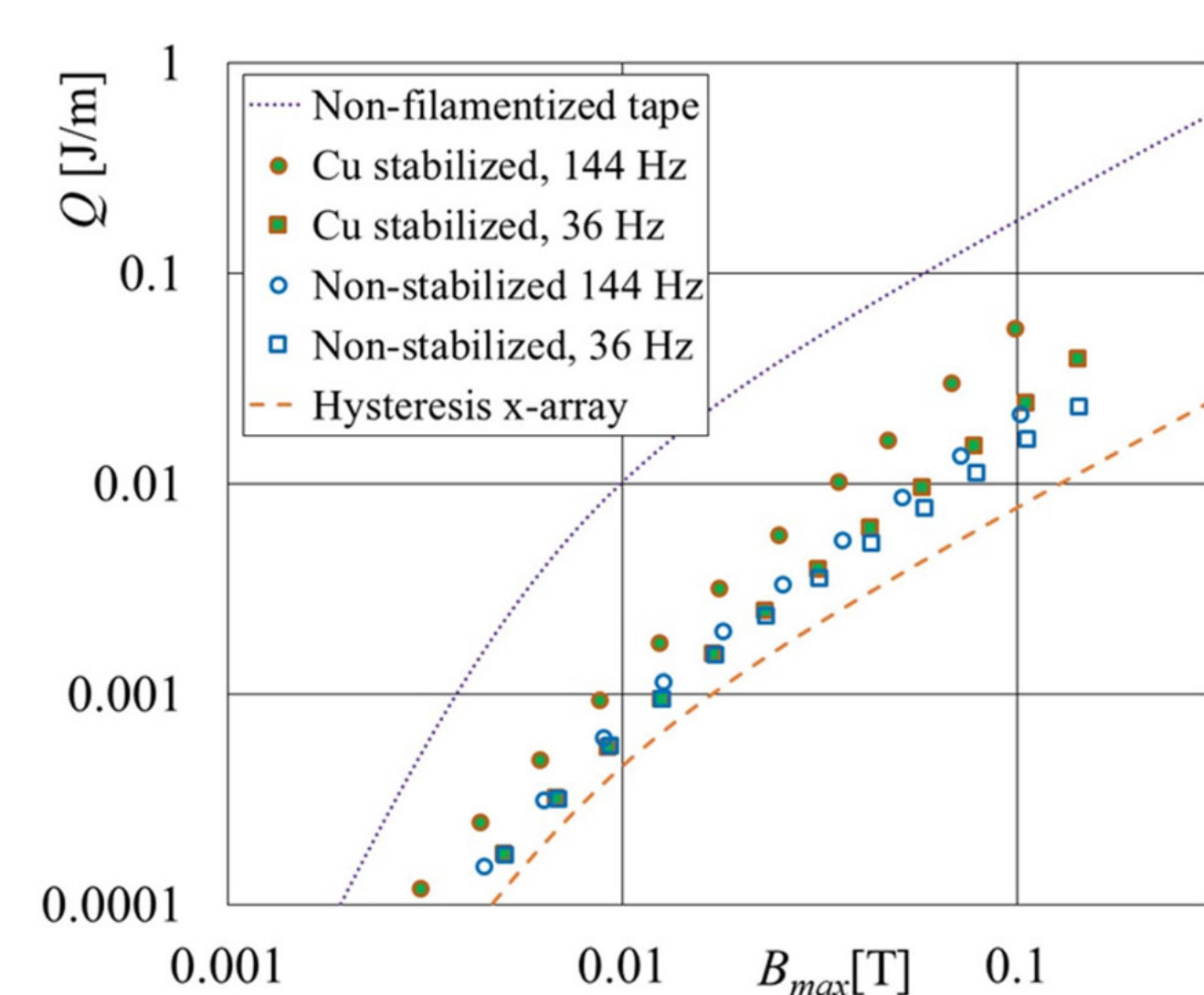


- Regular spacing of the gaps throughout the 400 m length of the tape.
- At each gap there is an undercut, disconnecting the REBCO layer.
- The tape is metallised with Cu for protection. Cu connecting filaments allows protective current sharing.

Why filamentise and wrap tapes?

Conductor on Round Tube cable test

- Cable samples contained 230 mm of 12 mm wide tape with 19 filaments helically laid with the angle of 67° on a Ø10 mm non-conducting tube.
- Test: 36 Hz, 100 mT, equivalent to the field change at the rate of ~14 T/s
- The AC loss from filamentised tape is one order of magnitude lower than for the non-filamentised.



F. Gömöry et al., IEEE Trans. Appl. Superconductivity, vol. 34, pp. 1-5, (2024), doi: 10.1109/TASC.2024.3364133

Customisation and capacity

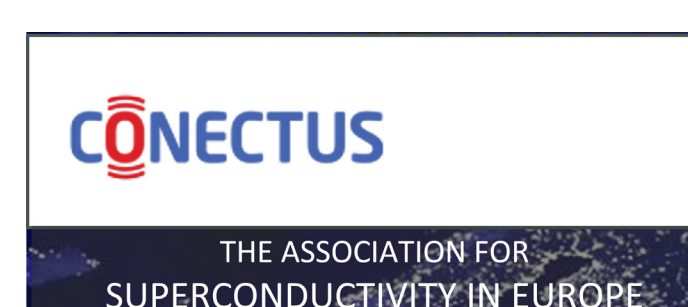
- Tapes can be tailored to custom specifications upon request.
- Pilot capacity: 200 km/year, taking orders from Q4/2024.

Want to know more?

For more information contact us at
info@subra.dk or visit www.subra.dk



SUBRA is a member of



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