

Bruker Energy & Supercon Technologies (BEST)



BRUKER HTS GmbH
Yearly report on PLD300 activities

BHTS August 2019



Yearly report on PLD300 activities

YTD2019 activities on the application coater PLD300:

PLD300 equipment activities:

- Improvement of the Laser supply gas tubing – **done**.
- Equipment safety assessment and preparation of the documentation to be able to attest CE conformity – in progress.

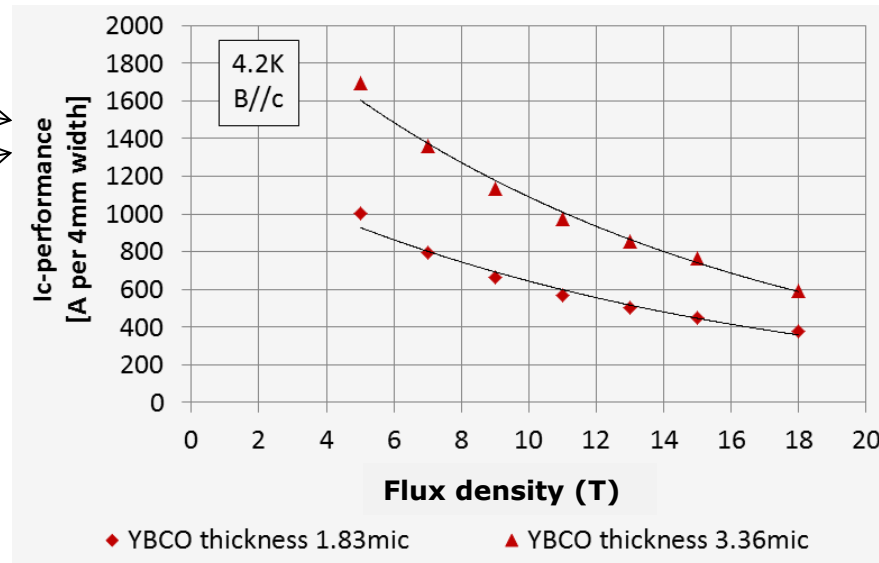
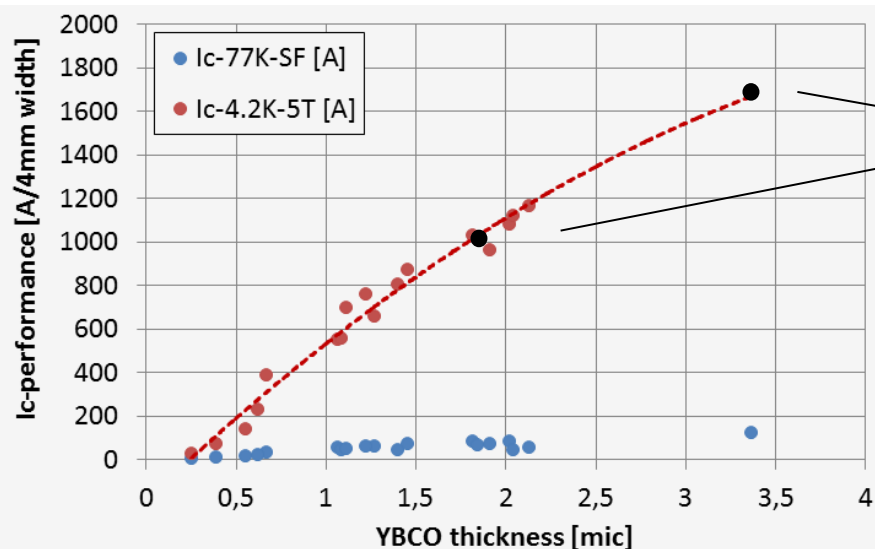
PLD300 process development:

- YBCO coatings on HASTELLOID substrates - **done**.
- YBCO coating thickness variation studies - **done**.
- Large area HTS coating studies – in progress.
- DD-YBCO coatings on substrates with different buffer structure – in progress.

Yearly report on PLD300 activities

Highlights YTD2019 activities on the application coater PLD300:

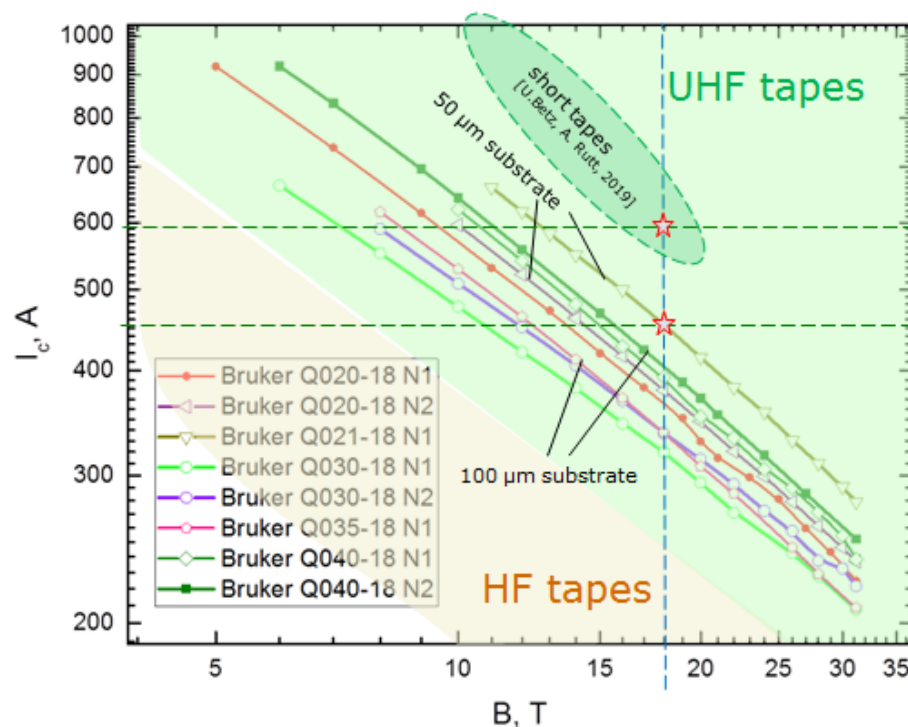
- YBCO coating thickness variation studies.
 - YBCO coating of 4mm wide polished 100mic thick stainless steel and YSZ-textured substrate tapes at different thicknesses.
 - For the thick YBCO films Jeng as high as $1000\text{A}/\text{mm}^2$ can be achieved at 4.2K, 18T B//c (tape width/thickness 4mm/0.150mm).



Yearly report on PLD300 activities

Highlights YTD2019 activities on the application coater PLD300:

- YBCO coating thickness variation studies.
- I_c in-field result of thick YBCO film in comparison to other HTS tapes (all 4mm wide samples, measured at 4.2K up to 31T B//c).



Yearly report on PLD300 activities

Highlights YTD2019 activities on the application coater PLD300:

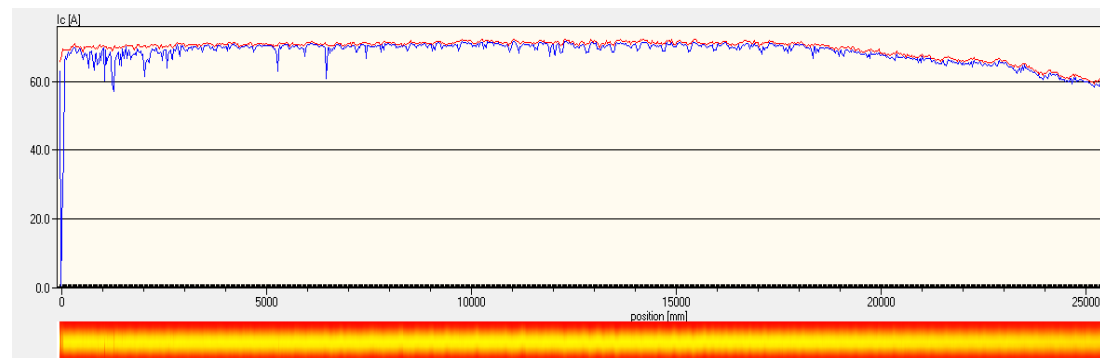
- YBCO coatings on HASTELLOY substrates.
 - Surface of 100mic thick and 4mm wide HASTELLOY substrates have been prepared by external vendor.
 - The YSZ and YBCO coatings have been performed at BHTS. The feasibility of this advanced process has been demonstrated on short lengths with PLD300.
 - This process is now being transferred to the production coater PLD600.

PLD300 Example:

25m HTS tape

I_c -77K-SF = 66A - 69A

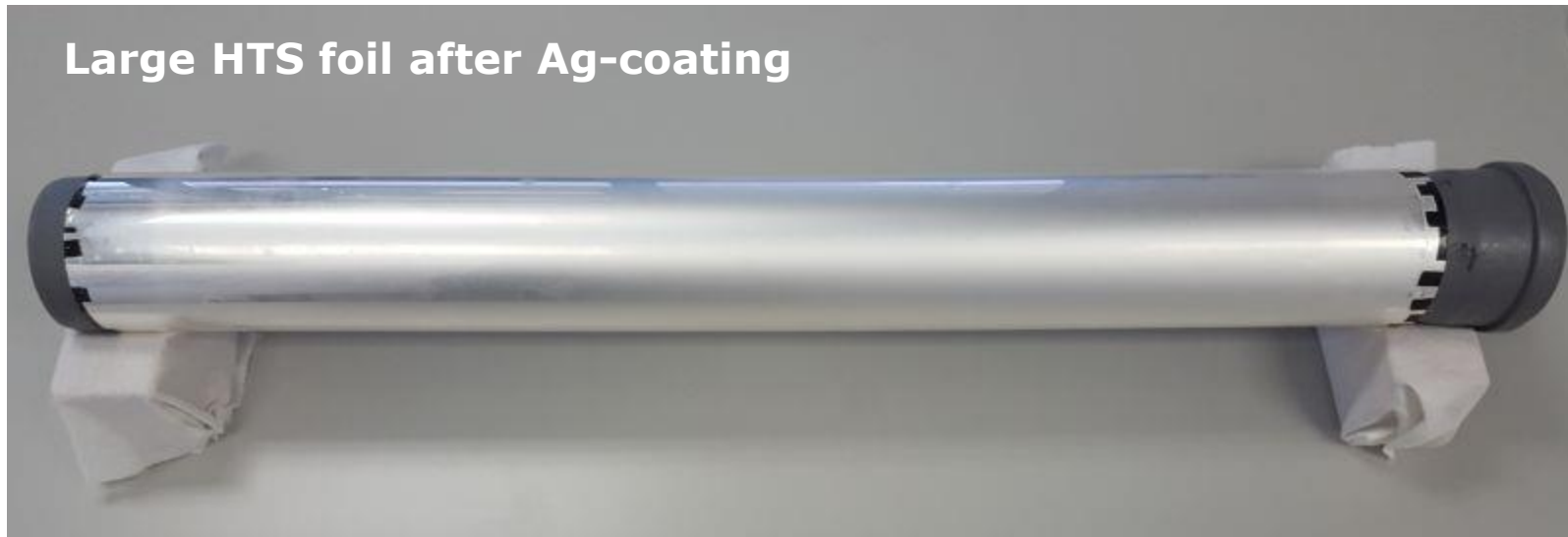
I_c -4.2K-5T = 790A - 844A

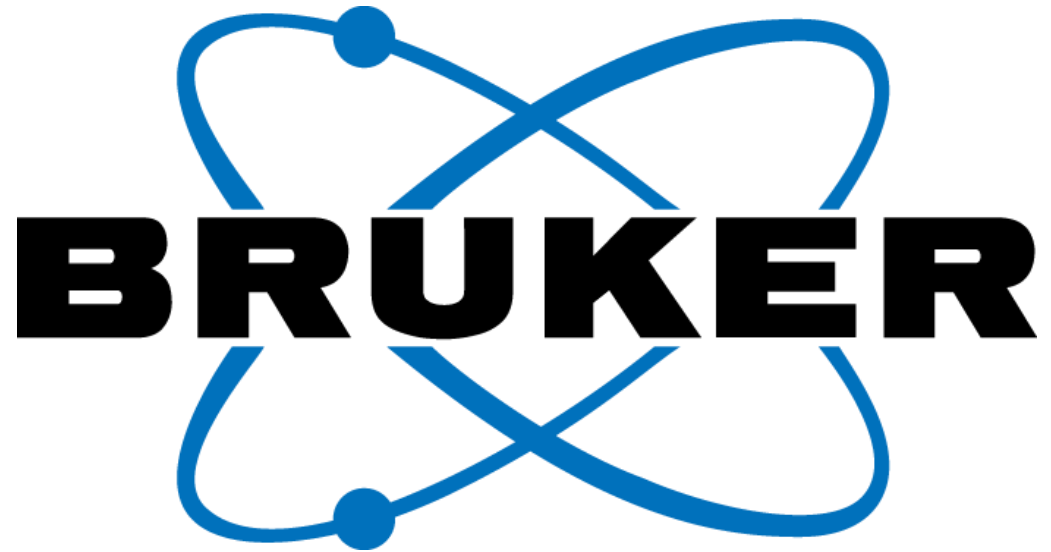


Yearly report on PLD300 activities

Highlights YTD2019 activities on the application coater PLD300:

- Large area HTS coating studies.
 - YBCO coating of polished 100mic thick stainless steel and YSZ-textured substrate foils with a maximum size of 300mm x 900mm.
 - Feasibility has been demonstrated. Characterization of large foil in progress.





Innovation with Integrity