

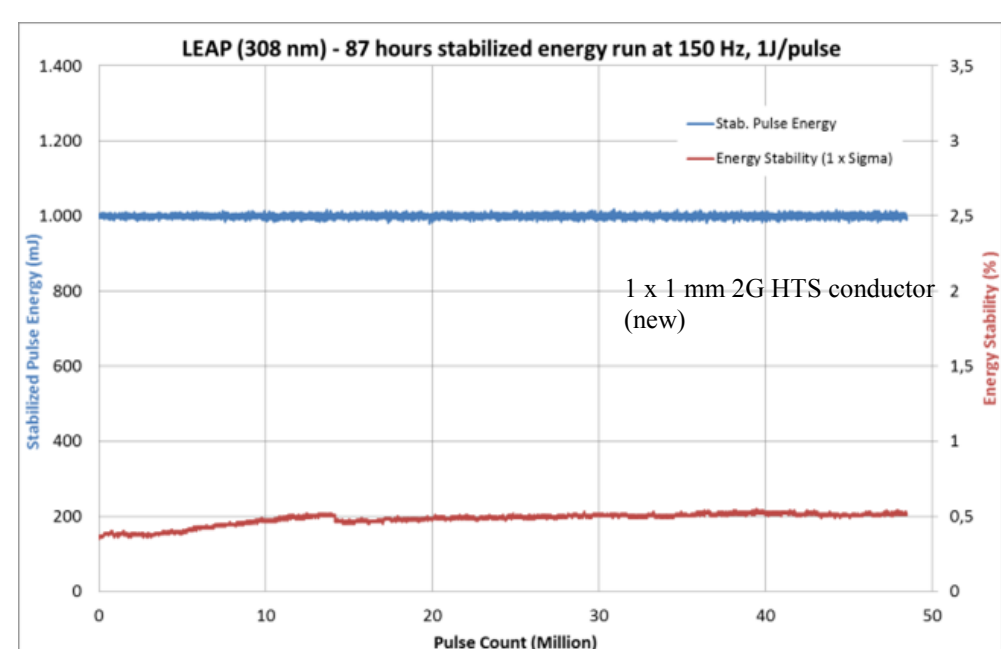
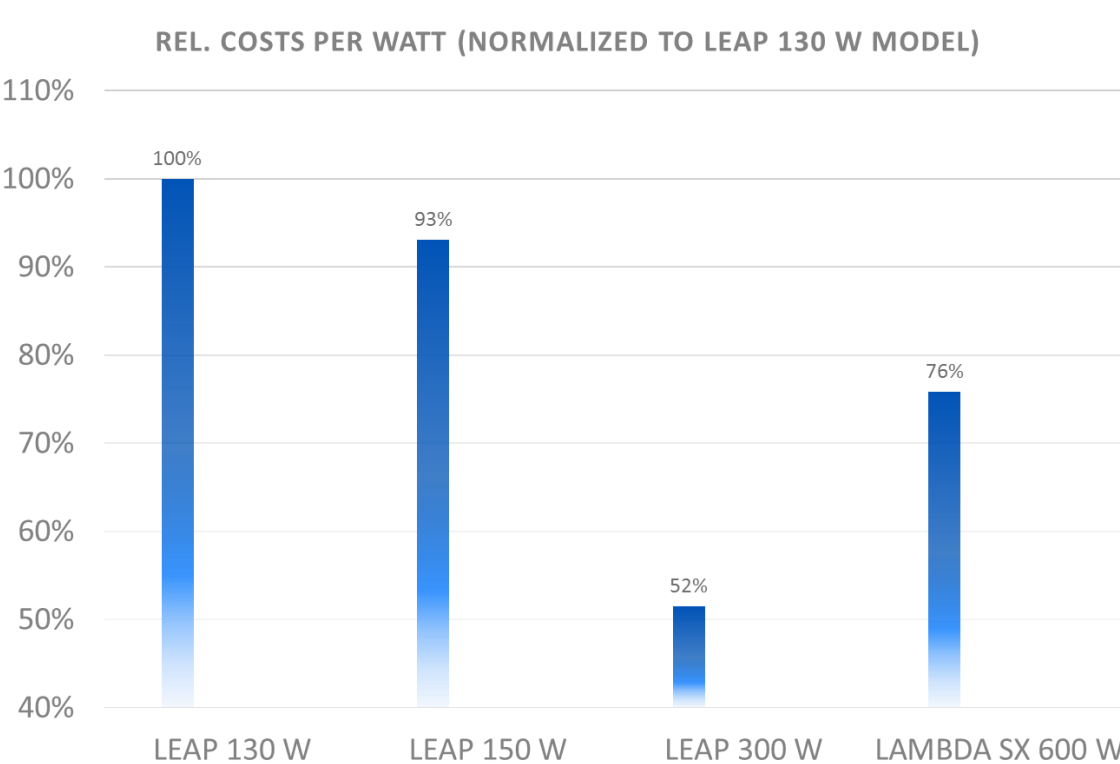
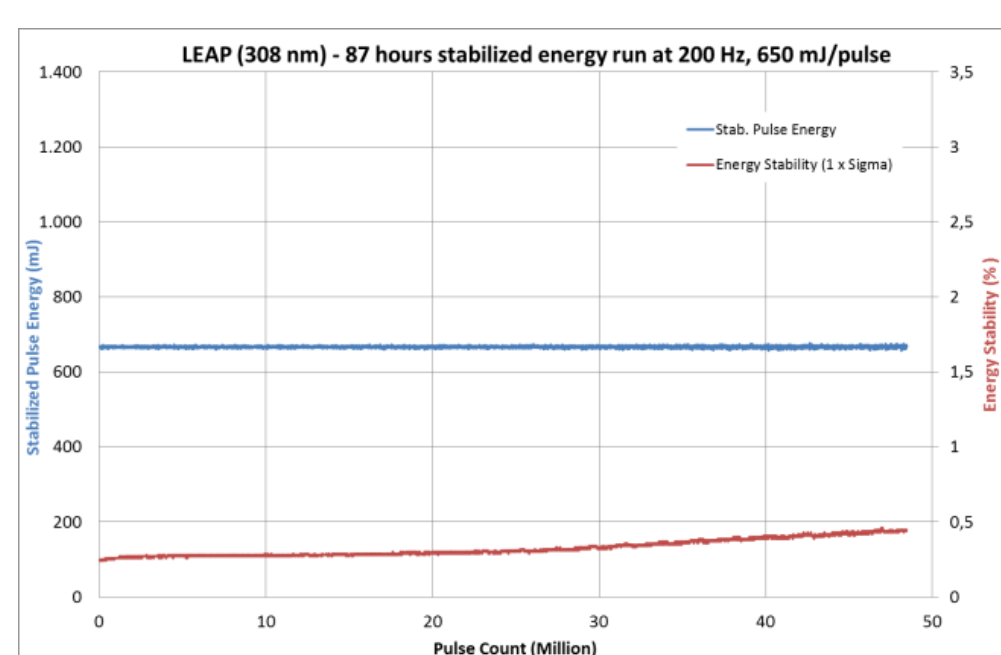
# PLD Manufacturing of Superconducting Tapes

Ralph Delmdahl<sup>1</sup> and Sergey Lee<sup>2</sup>

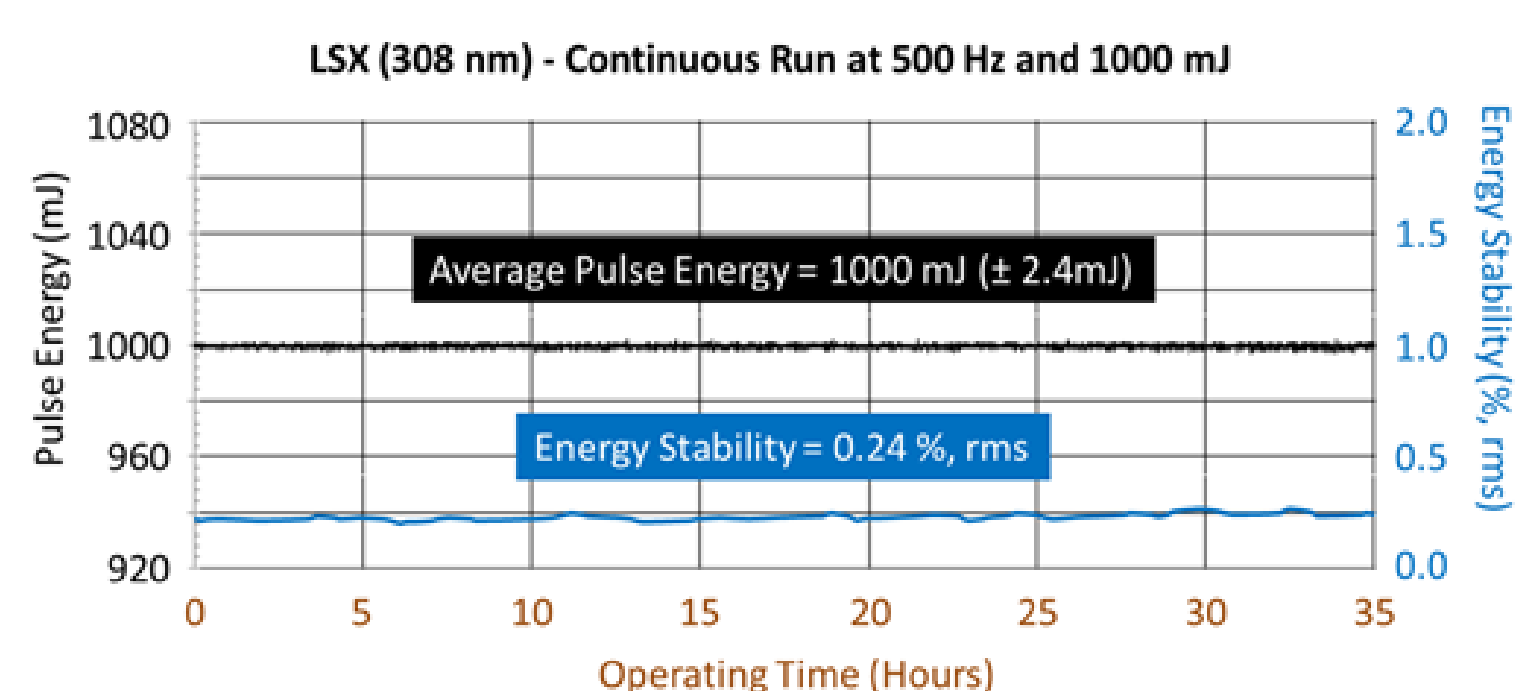
<sup>1</sup>Coherent LaserSystems GmbH & Co. KG, Göttingen, Germany, E-mail: ralph.delmdahl@coherent.com  
<sup>2</sup>SuperOx Japan LLC, Tokyo, Japan, E-mail: sergey@superox.co.jp

## High Power Laser Technology

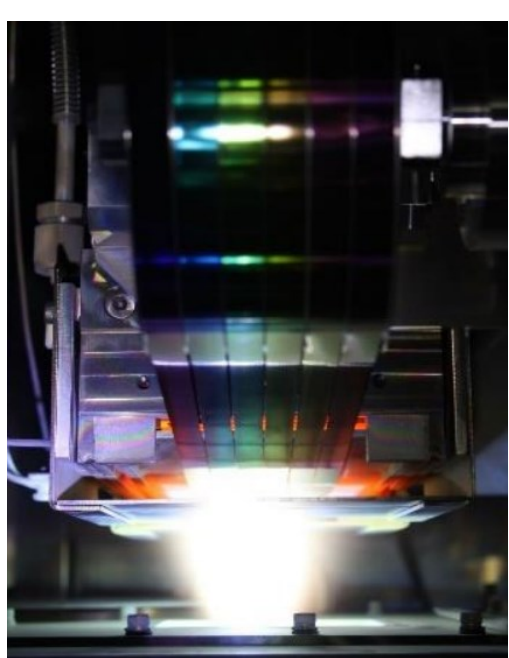
Extended **LEAP** Power Levels at 308 nm  
300W - 150W - 130W - 100 W - 80W



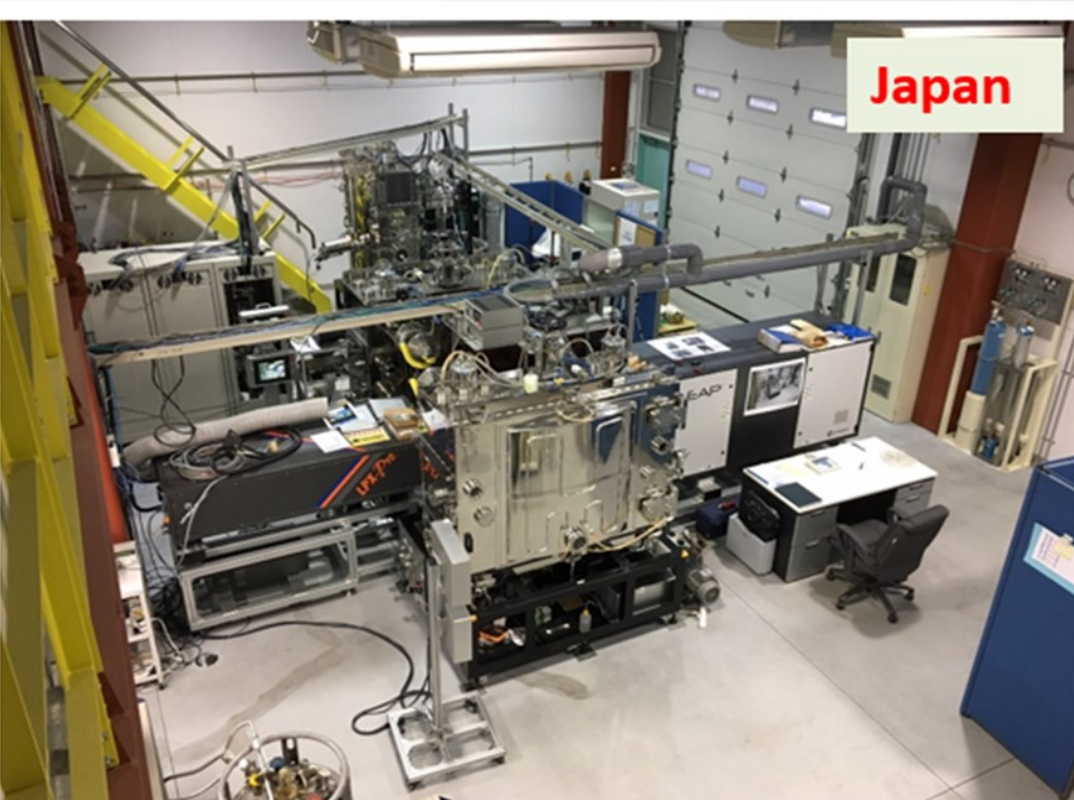
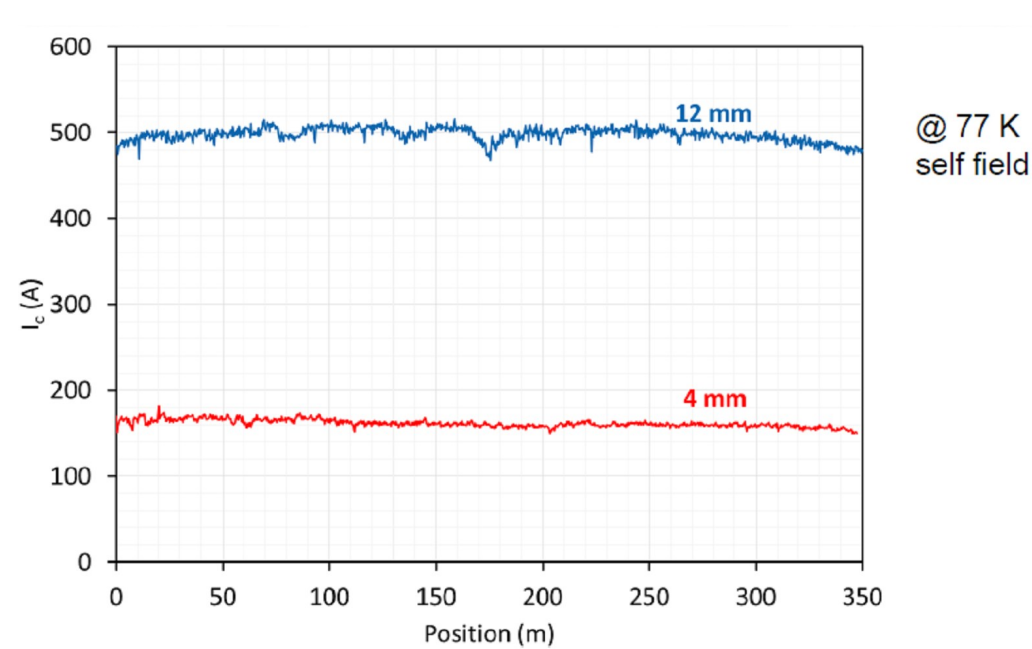
**LAMBDA SX Series**  
Wavelength: 308 nm  
Power: 600 W



## PLD Process Upscaling



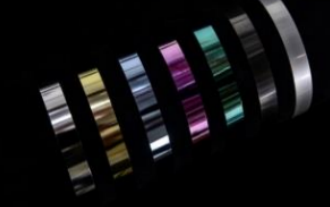



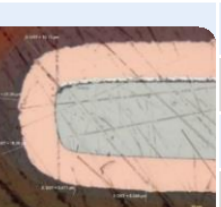
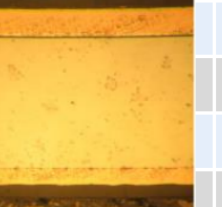
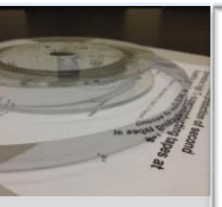

Processing speed of CeO<sub>2</sub> buffers:  
40-50 m/h  
HTS film deposition speed:  
10-30m/h  
Deposition time:  
> 15hours/day  
Production capacity:  
> 50 km



**JAPAN:** 2 lasers – 2 chambers PLD assembling for continuous and synchronized production of CeO<sub>2</sub> buffer and Gd-123 superconductors

**RUSSIA:** 2 chambers + 1 LEAP laser assembly was designed and manufactured by AOV and SuperOx Japan and installed on the production site in Moscow at the end of 2016

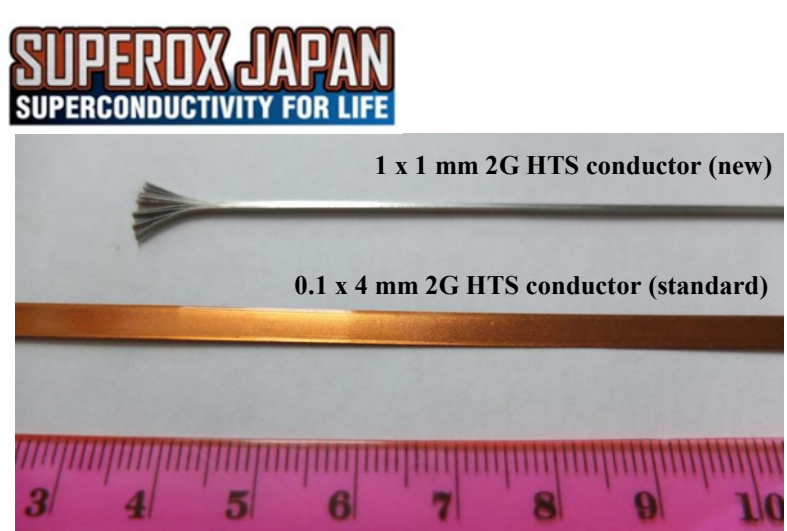
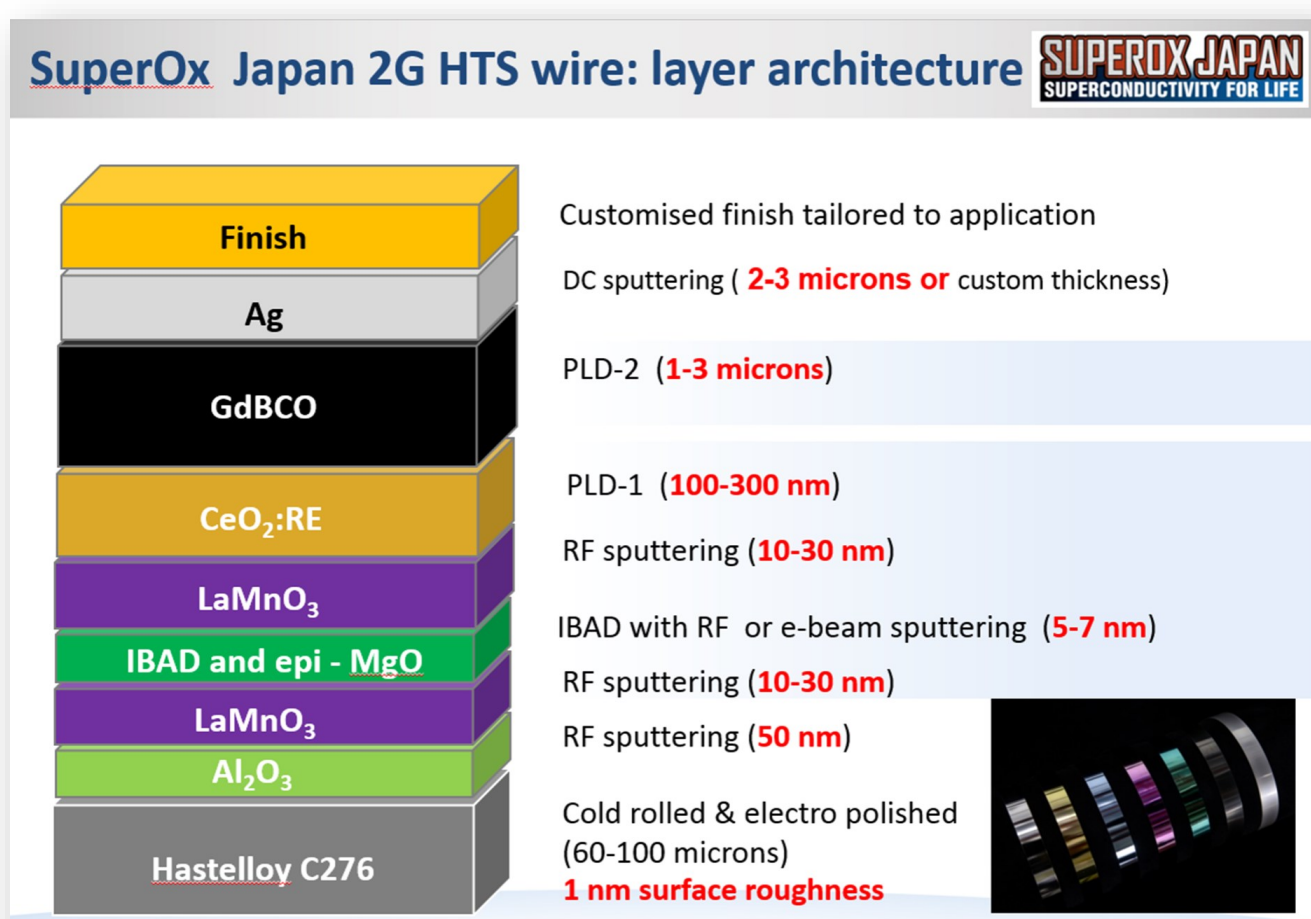
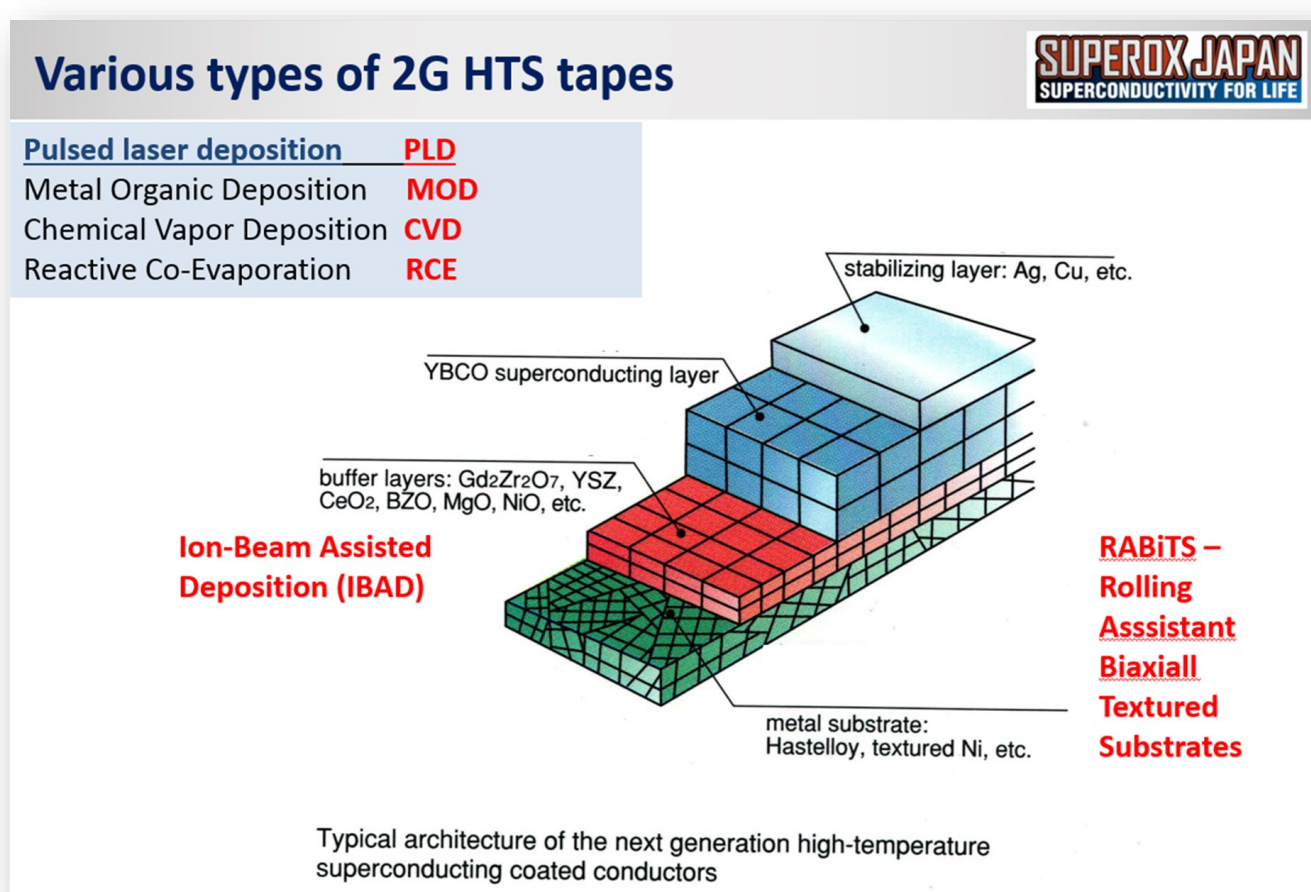
Delivery of standard and highly customized 2G-HTS tapes to worldwide customers and projects.

Parameter of 2G HTS tapes	Common value						
Production Length	50 – 300 meters (max 600 m)						
Tape Thickness	60 – 100 µm						
Tape width	4 mm	6mm	12mm				
Critical Current @ 77K, s.f.	70-150 A	100-200A	250-500 A				
Current Uniformity	±10%	±10%	±10%				
Customisation options							
Buffers	Silver	Copper plating	Lamination	Polyimide coating	Polyimide wrapping	Solder plating and joining	Tape stacks
							

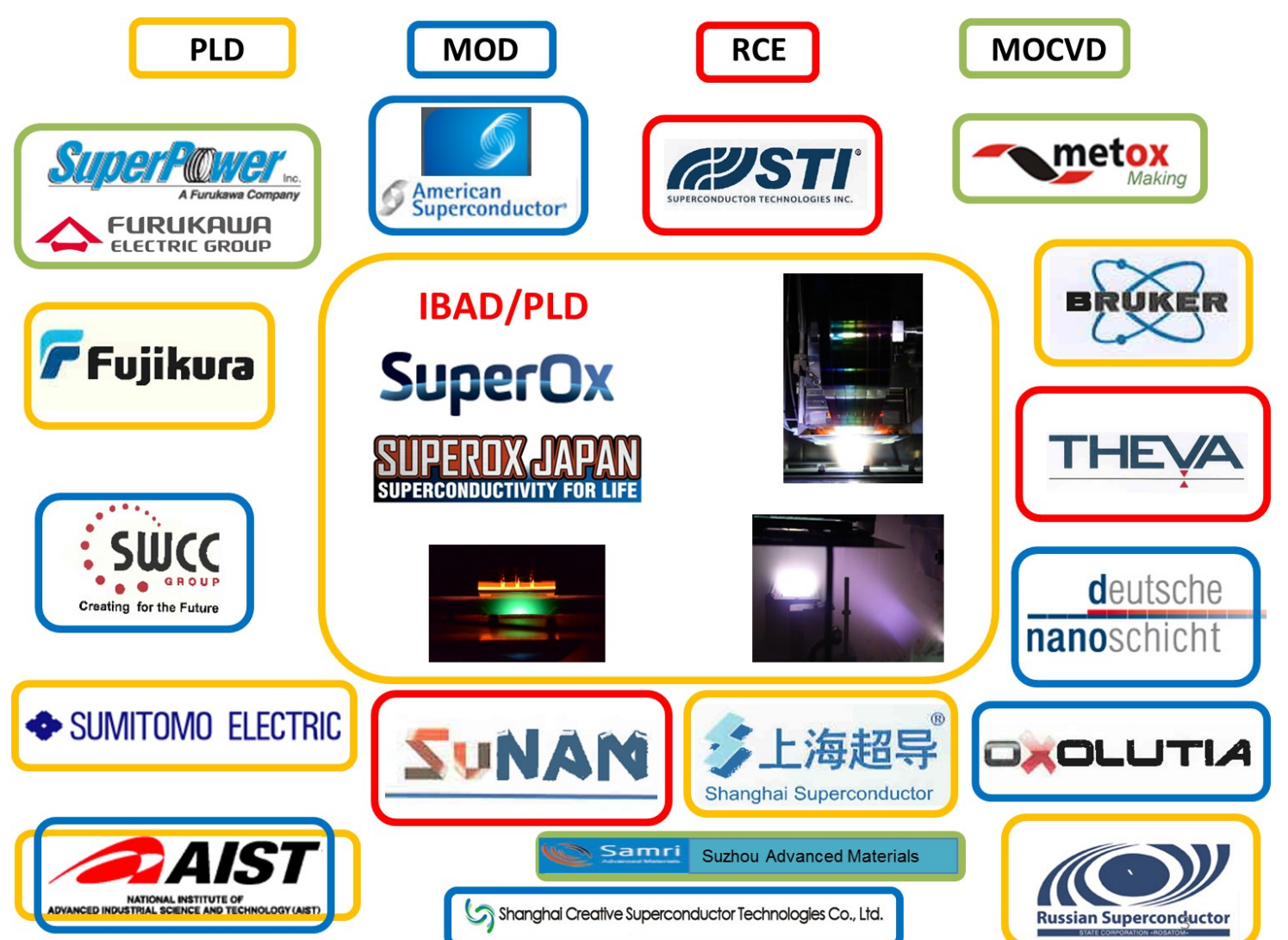
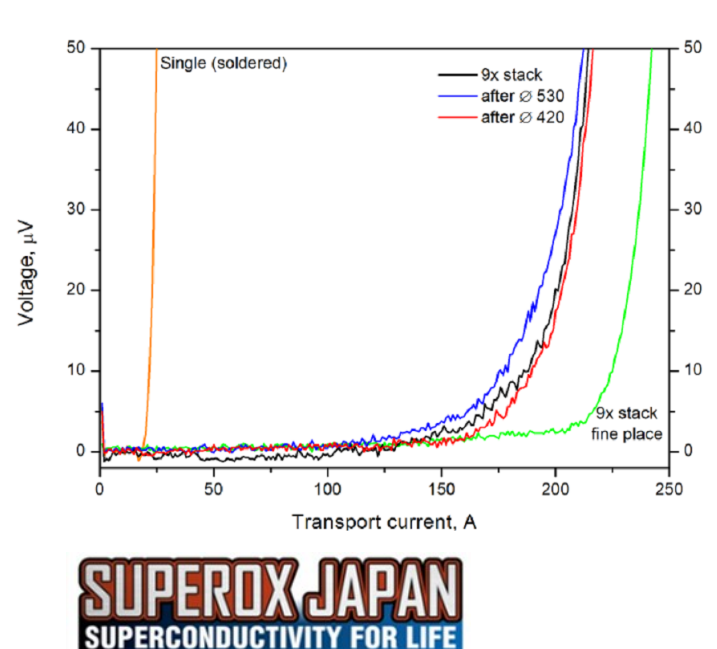
## Superconducting Tapes



Comparison of 2G-HTS conductor tape and copper cable cross section required for carrying the same amount of current.



Tailored tape structure & performance



PLD manufacturing of buffers and HTS layer delivers high conductor quality and has been widely adopted by coated conductor suppliers