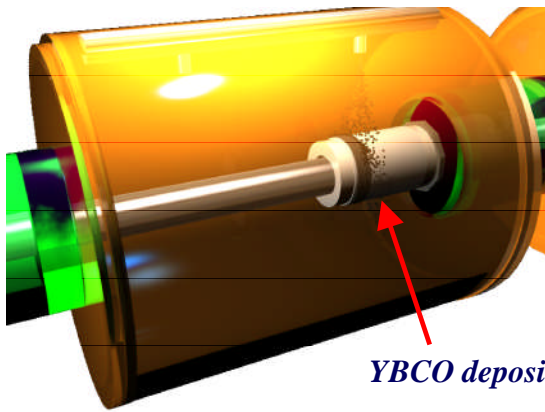


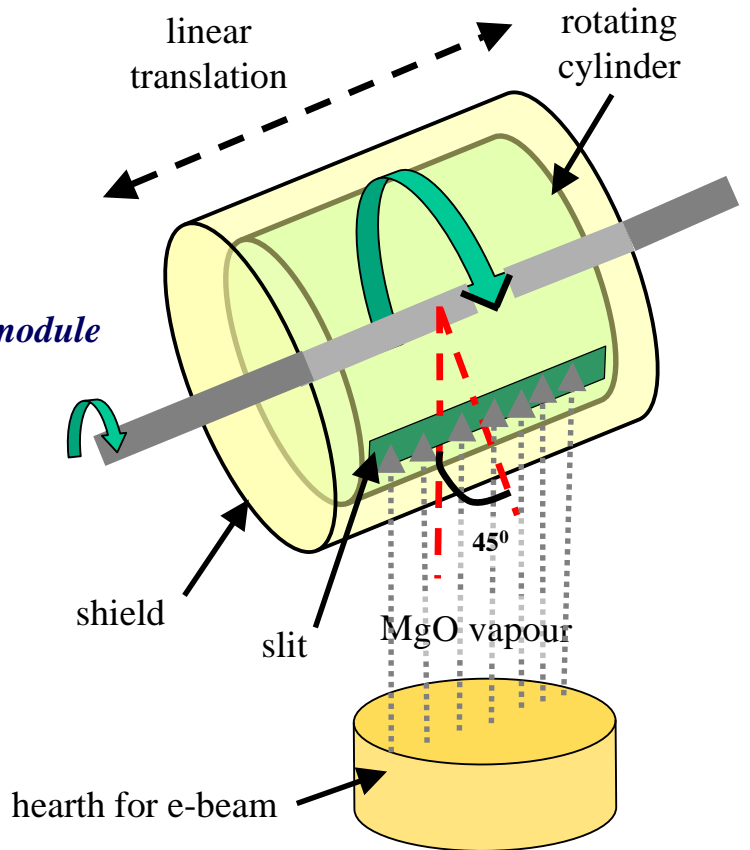
**Coated
Conductor
Cylinders**

Multichamber Multilayer Multimodule

At 3-C's, we are continuing to develop our innovative advanced manufacturing approach for next-generation HTS electrical machines.



YBCO deposition



Schematic for textured coating of rotating cylinder using e-beam evaporation of MgO.

Our vision : cylindrical modules with different coil patterns for different functions, combined together to make high-power electrical machines.

“Modular” approach to the integrated manufacture of superconducting electrical machines – based on volume-produced, multilayer coated conductor cylinders.

The Multilayer Coated Conductor Cylinder:

- eliminates the requirements for long lengths of coated conductor, and handling problems
- eliminates any physical winding processes, using 3-D lithographic techniques to define coils instead
- allows much higher engineering current density - there's no “repeating” substrate taking up space!
- reduces ac-losses and thermal time-constants, because there's much less material!



Coaxial symmetry and cylinder rotation during fabrication greatly simplifies processing, ensuring uniformity of film deposition, and allowing automated testing layer-by-layer. Using highly innovative defect mapping methodologies and algorithms, defects can be avoided, repaired, or just “overgrown”.

Our goal : Highly manufacturable electrical machines (eg motors, generators, transformers, FCLs, SMES modules etc), compact, lightweight and with very high power density. They will be “plug and play”, based on replaceable modules, with integrated refrigeration and interconnection technology.

Come and see our poster on Thursday – “Progress in coated conductor cylinders”, Session 4MJ12!!