

# FIRST OVERVIEW OF CRAFT

A Cryo-Cooler Based Teststand for the Investigation  
of Trapped Flux Dynamics in SRF Materials

Alexander Cierpka

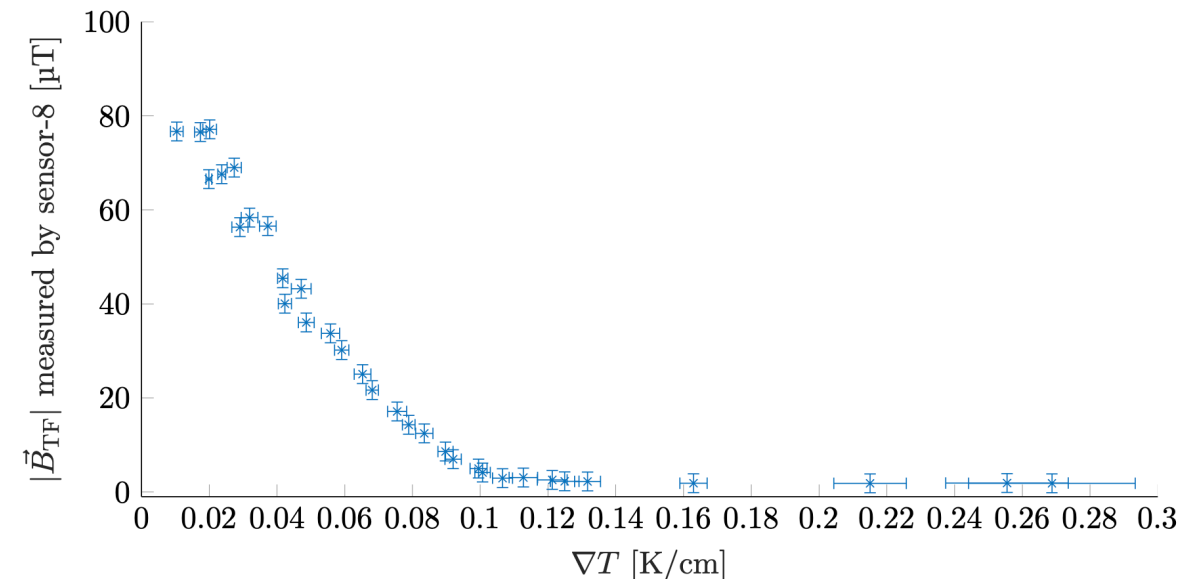
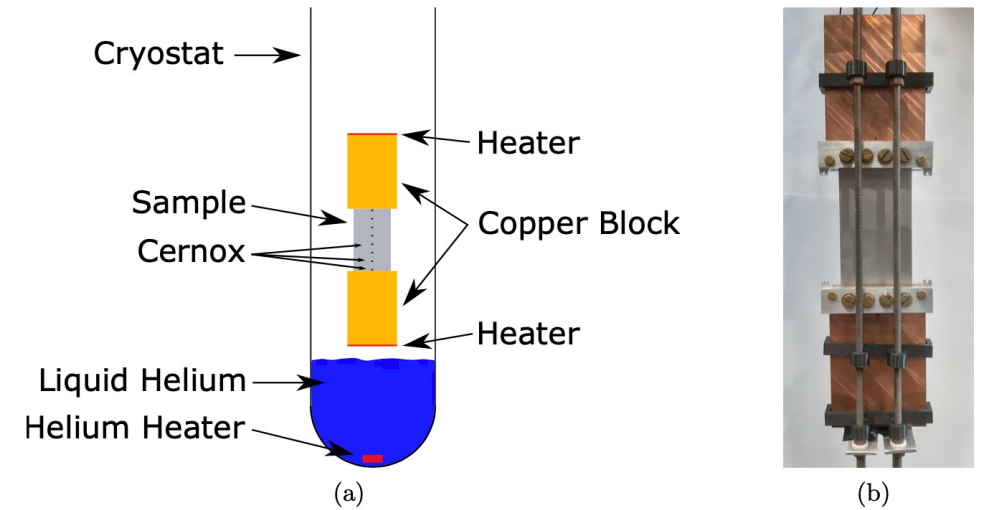
03. November 2024

3D Tour  
inside

## MOTIVATION

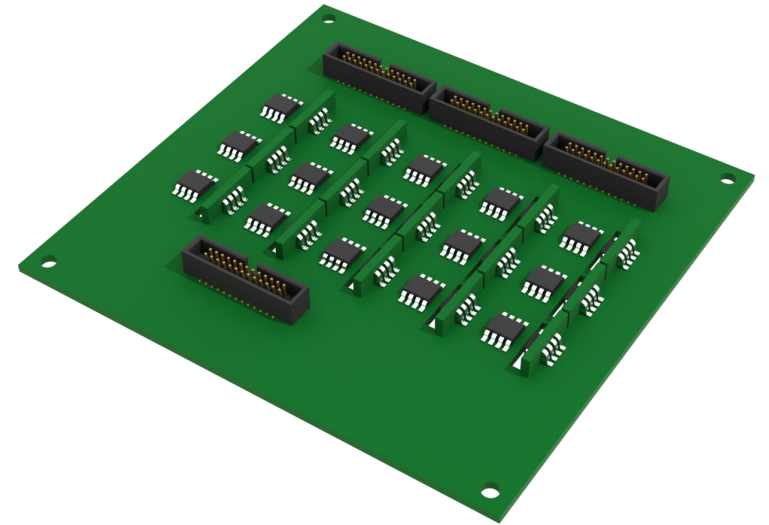
- Analysis of trapped magnetic flux dynamics in SRF materials  
→ Minimizing trapped flux leads to reduced  $R_s$
- Cryostat based experiment by F. Kramer
  - Analysis of samples with (100x60x3) mm
- Trapped flux measured by 45 AMR sensors after sc transition with an applied external field
- Need for liquid helium results in high costs and long lead time  
→ Limited number of samples in time

## Motivation for switching to cryo-cooler based teststand

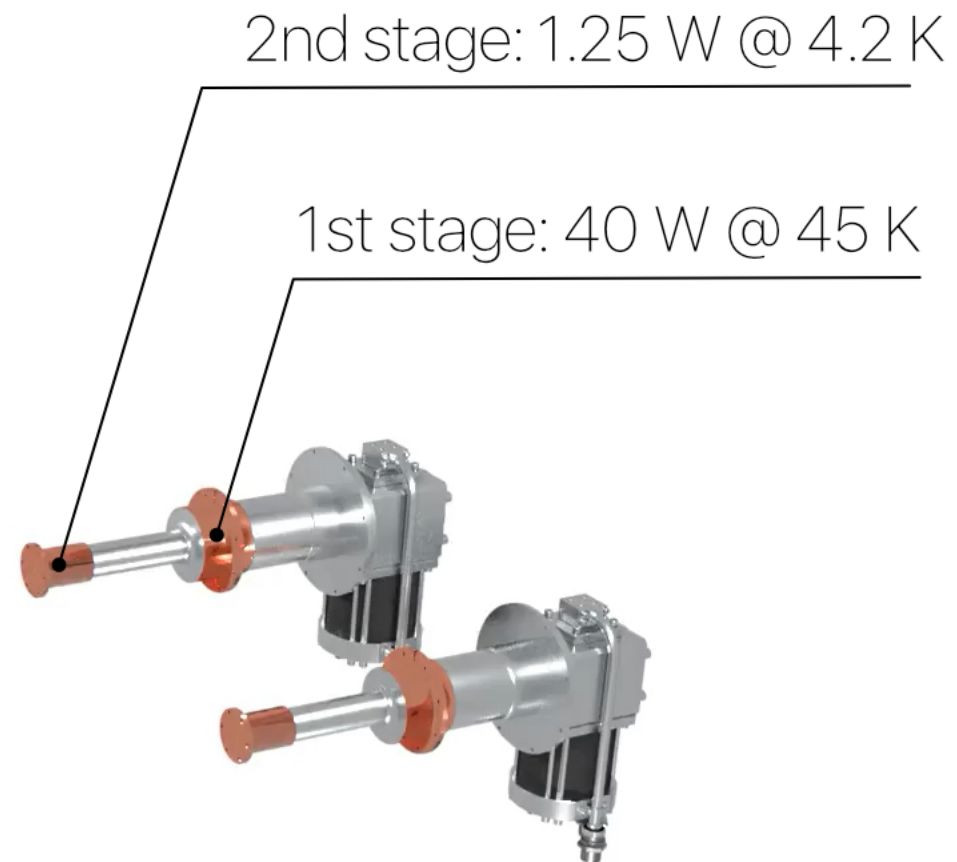
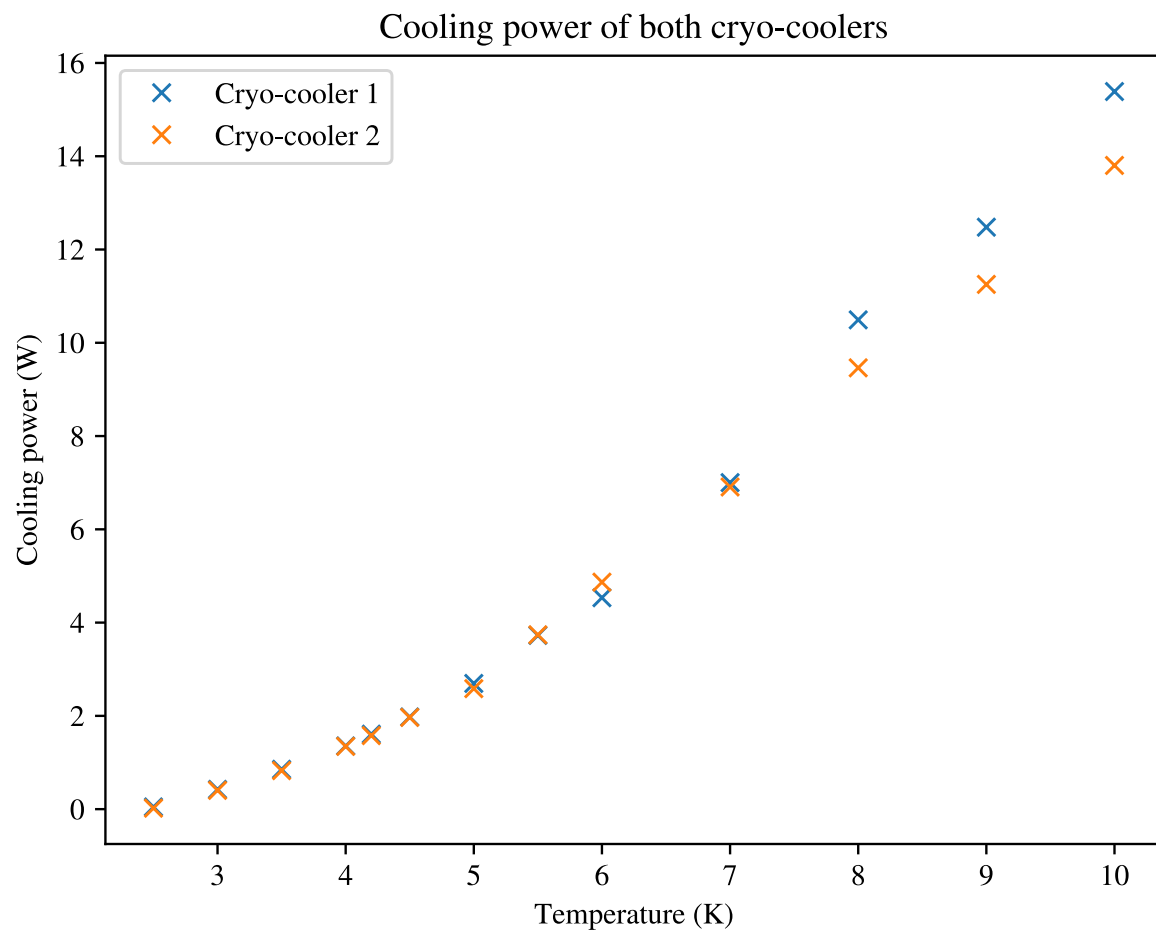


## BOUNDARY CONDITIONS FOR CRAFT

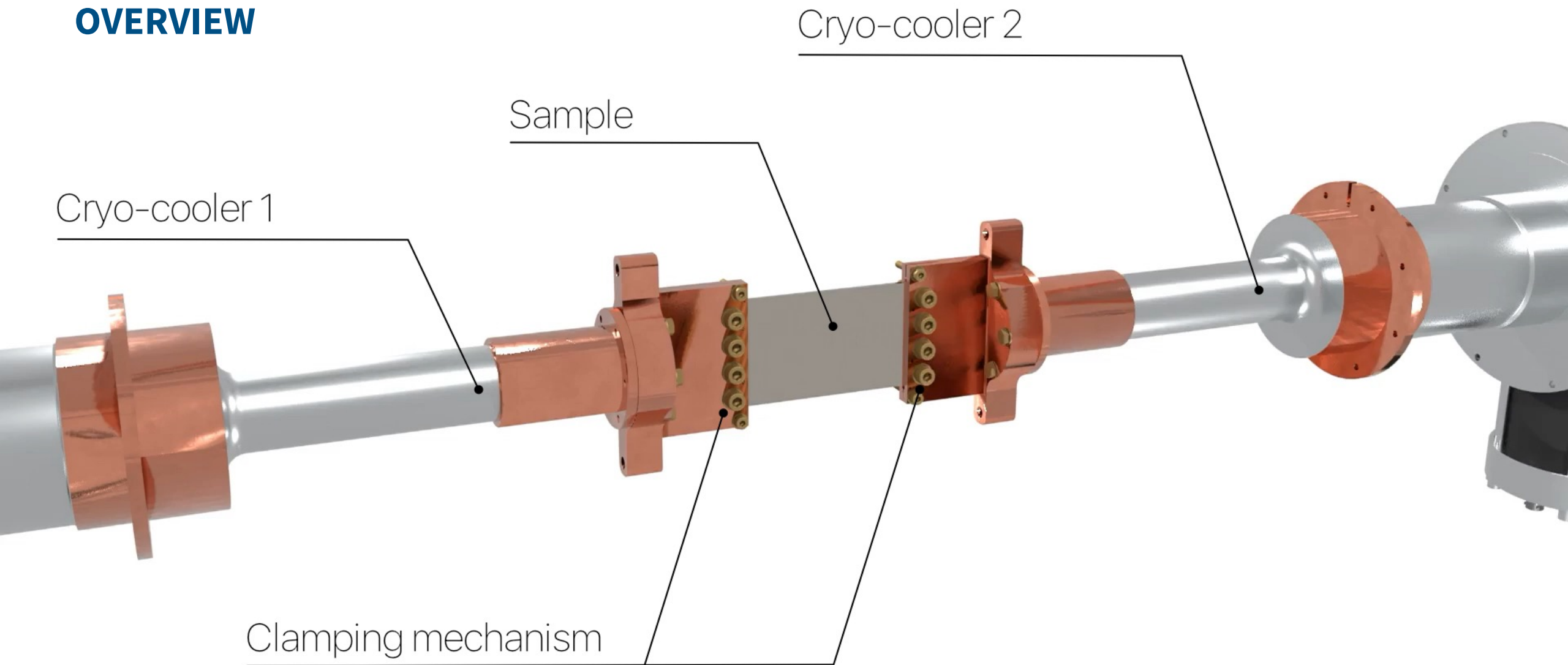
- Desired similarities of CRAFT and the cryostat-based experiment:
  - Same measurement principle of trapped flux
  - Same sample dimensions
  - Same sensor system
- Parameters to be varied
  - Temperature gradient
  - Cooldown speed
  - External magnetic field
- Simple handling of the setup, preferably from a single person



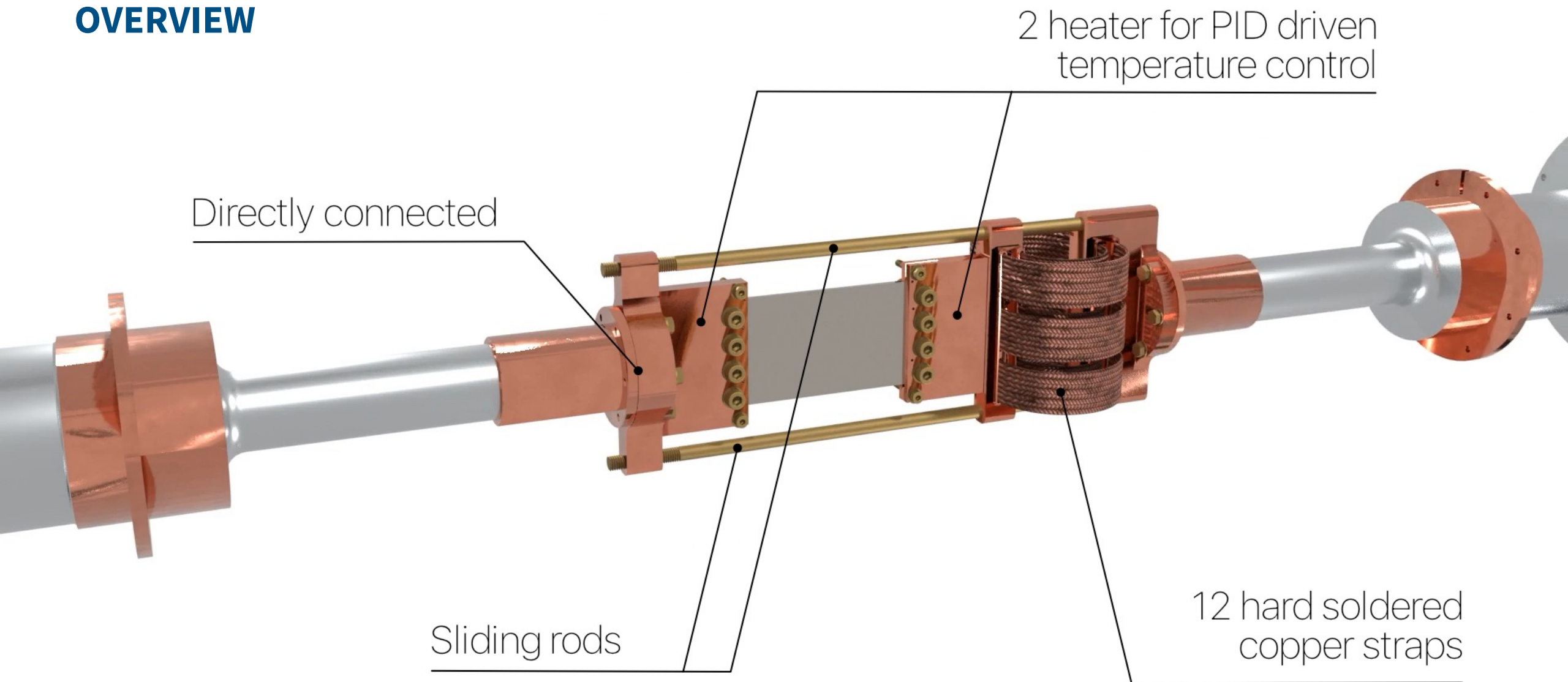
# OVERVIEW



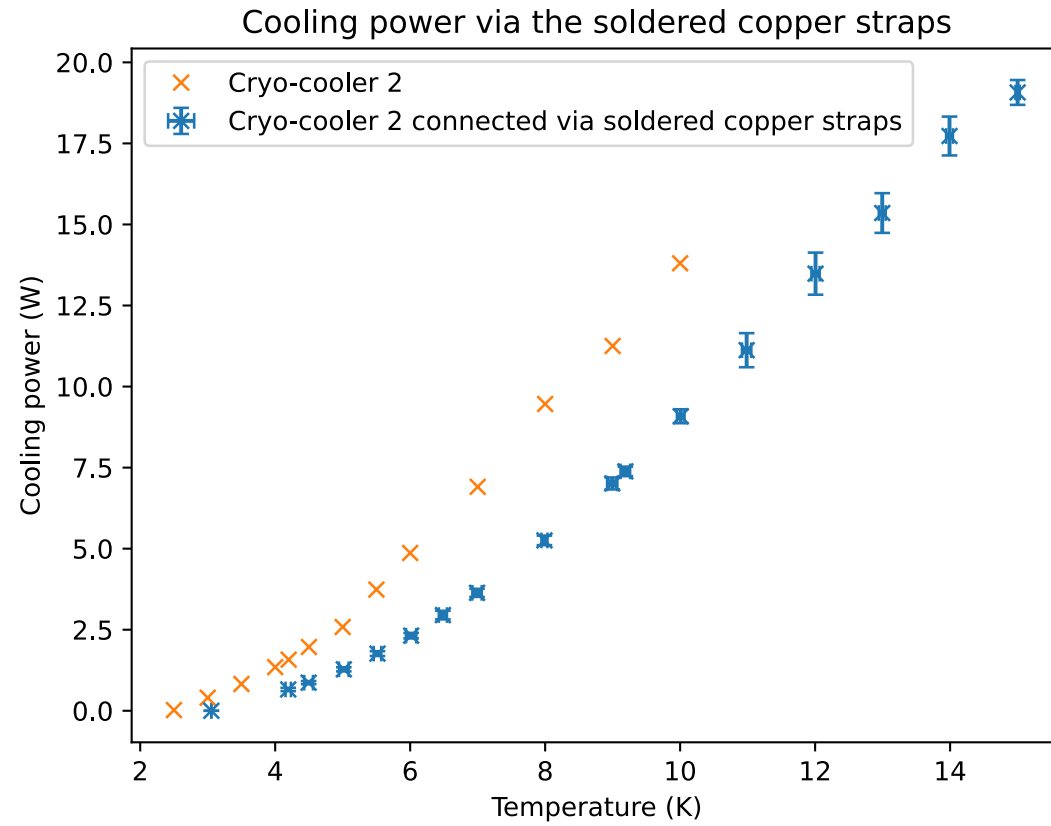
## OVERVIEW



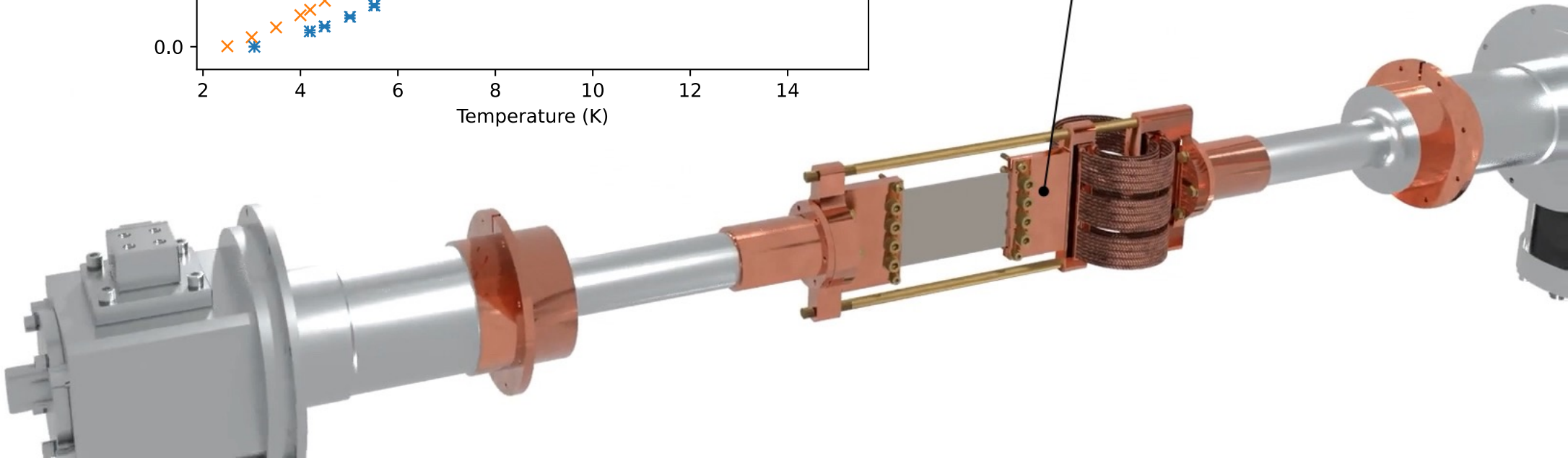
## OVERVIEW



# OVERVIEW

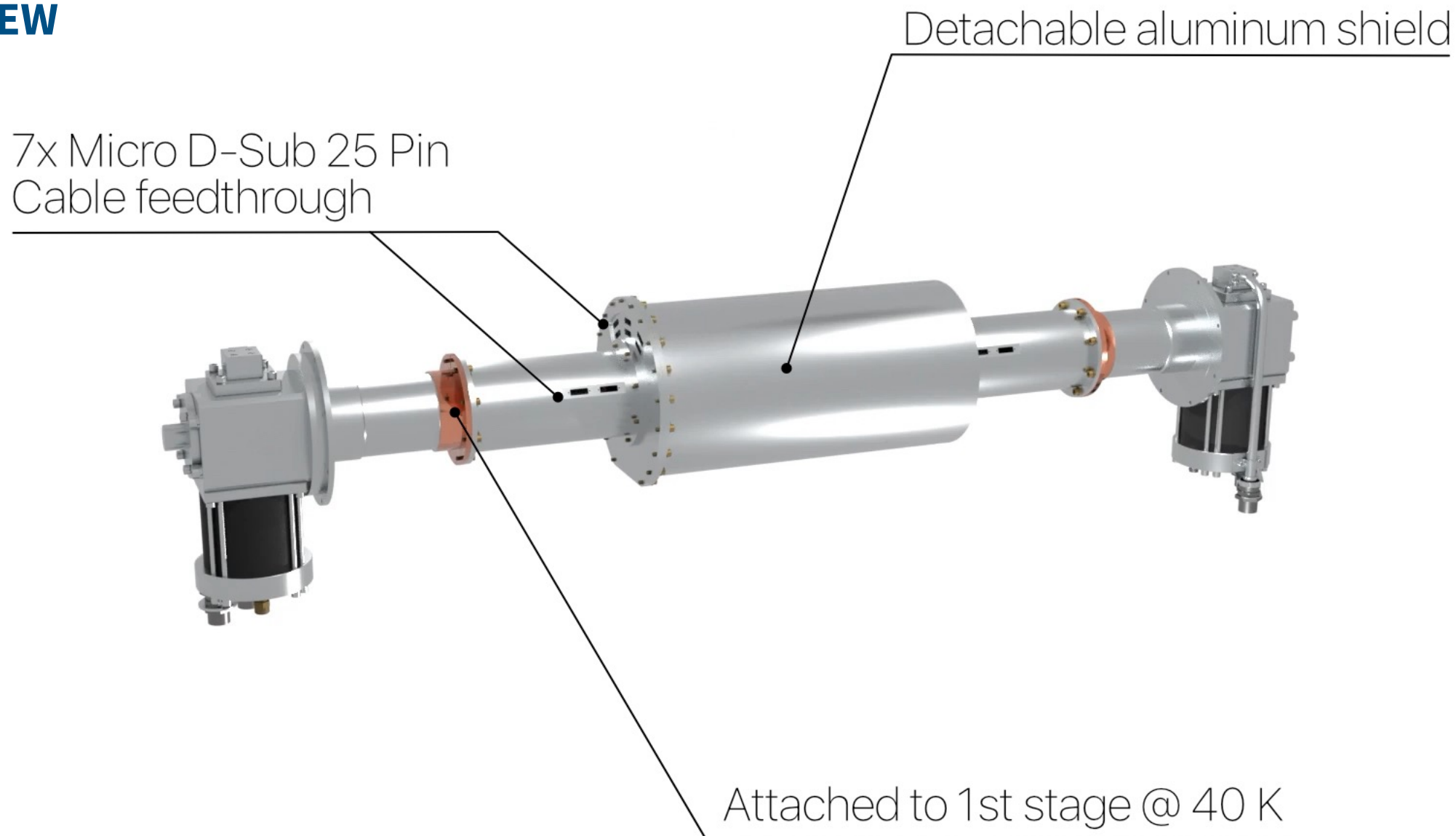


Cooling power  
measurement



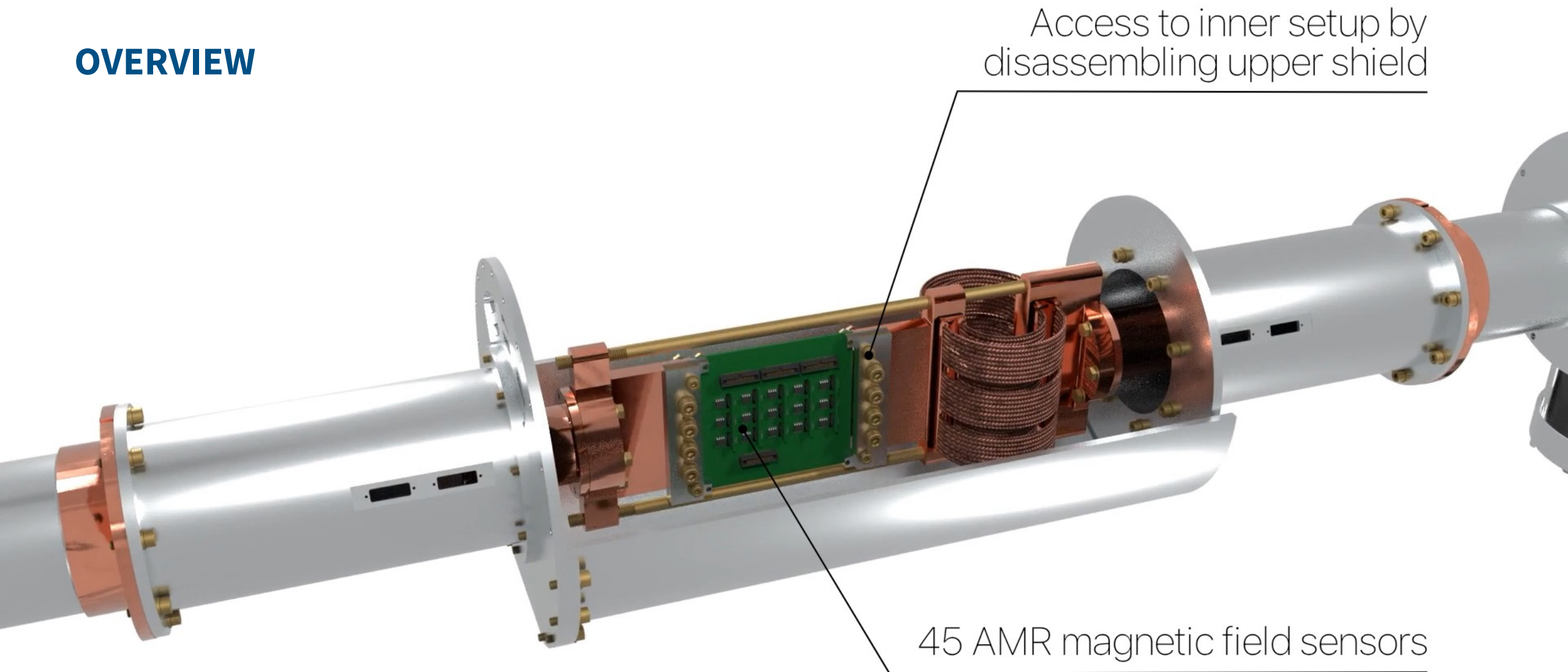


## OVERVIEW

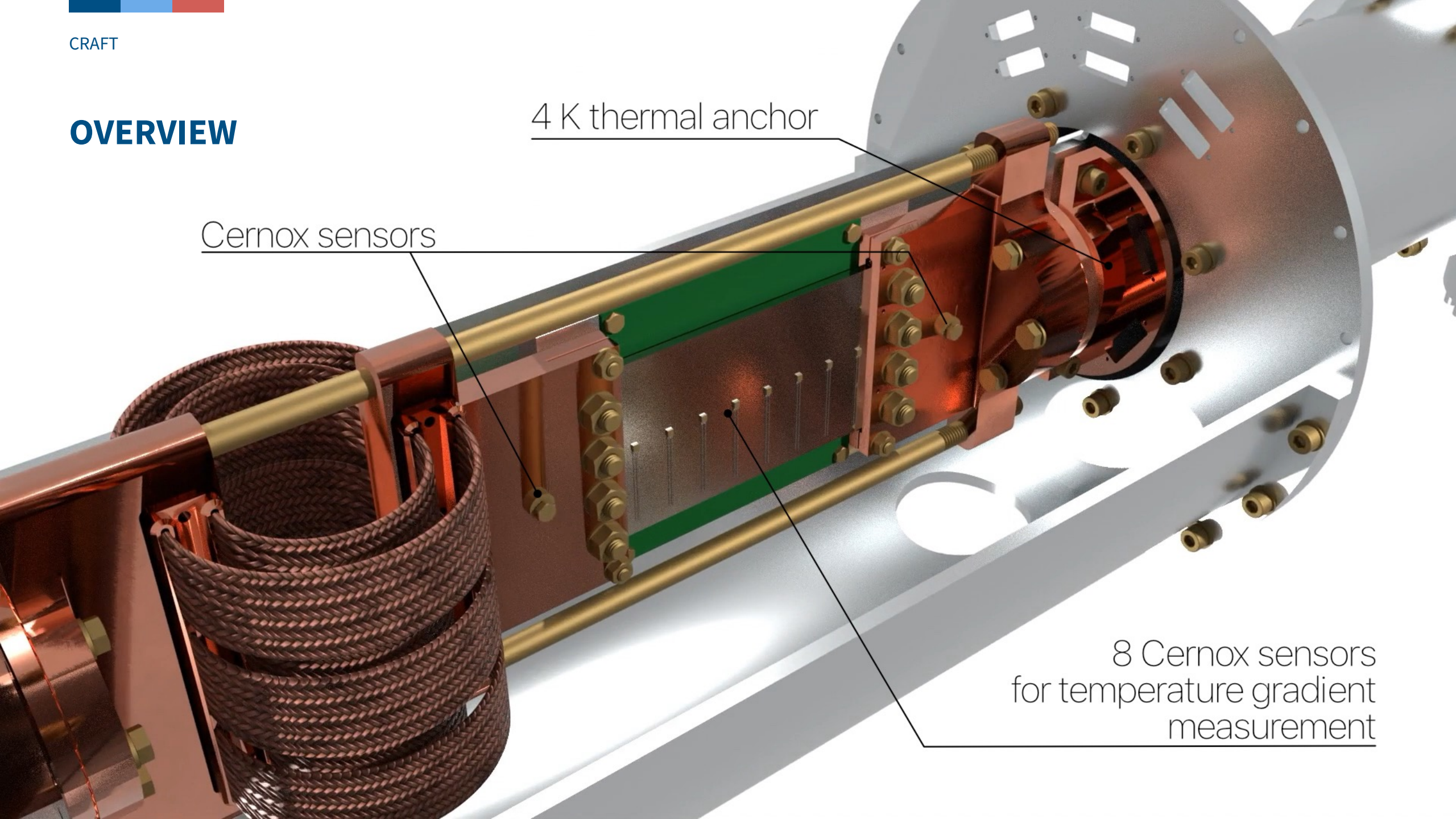




## OVERVIEW



## OVERVIEW



4 K thermal anchor

Cernox sensors

8 Cernox sensors  
for temperature gradient  
measurement



## OVERVIEW

Helmholtz-coil system  
with 4 coil-pairs

Vacuum chamber  
for isolation vacuum

