

CONTINUOUS EB-WELDING OF REINFORCEMENTS — INDUSTRIAL APPROACH

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OUR EB SOLUTIONS MEET ALL YOUR CHALLENGES

TECHMETA
ELECTRON BEAM EXPERT
Engineering

INTRODUCTION

I. STARTING CONDITIONS

II. PRELIMINARY TESTS

- 1. Production line concept**
- 2. Chamber dimensionning**
- 3. Thick bar section handling**

RESUME

I STARTING CONDITIONS

Condition 1: AI stabilised Superconductor production process

Condition 2: Multi-product approach > Listing of dimensions

Condition 3: One Academic/Consortium partner

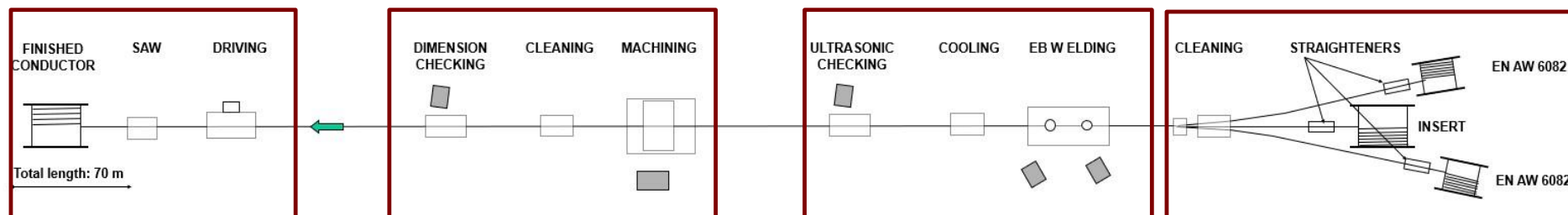
- **One production line**

Adaptable for all known reinforcement welding needs

Reasonable Time for Product shifting

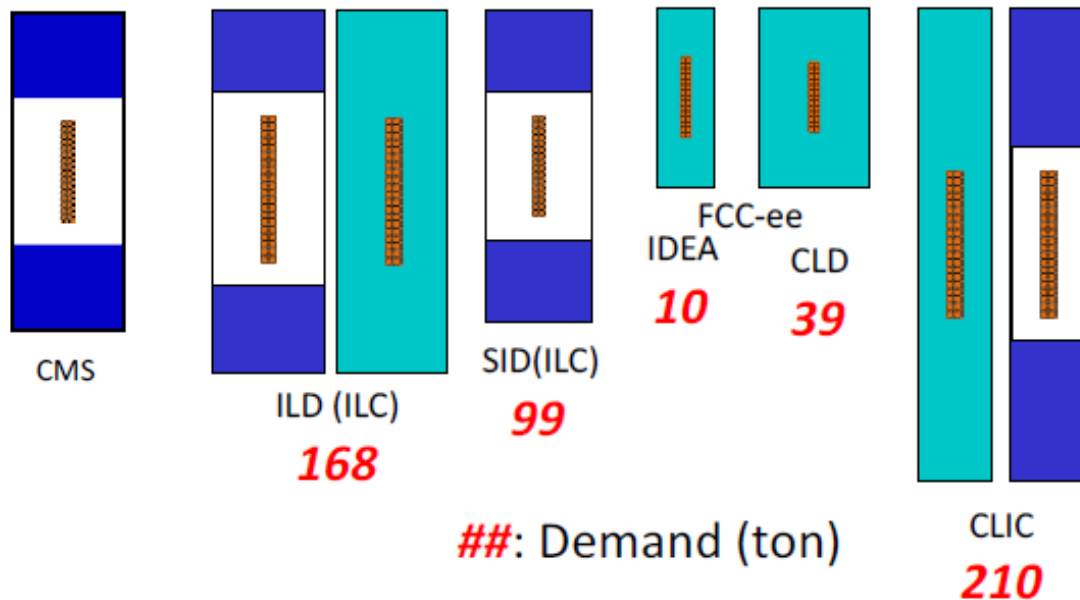
Longtime Disponibility

- **Long term production scheduling**



II.1 - TESTS - PRODUCTION LINE CONCEPT

- Need for data base: Thickness // Power & Speed // Temperature



- Optimisation of superconductor position and distance between NbTi/Cu cable and EBW boundary
- Thickness limit
- Multi-product line concept

II.2 - TESTS - CHAMBER DIMENSIONNING

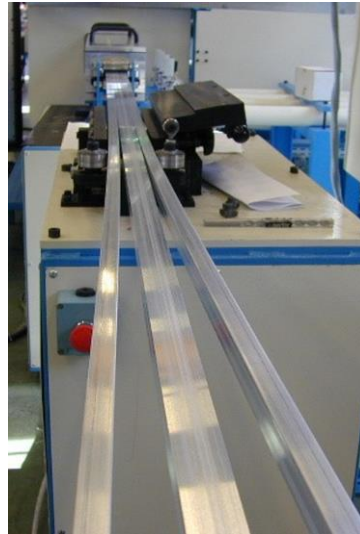
- Need for Temperature management:
Tmax ~ 200°C at chamber exit => Tmax ~ 300°C NbTi conductor
- Heat capacity adapted to beam power and speed
Oversized strip before machining..



- Adaptability
- Multi-product approach
- Disponibility

II.3 - TESTS - THICK BAR SECTION HANDLING

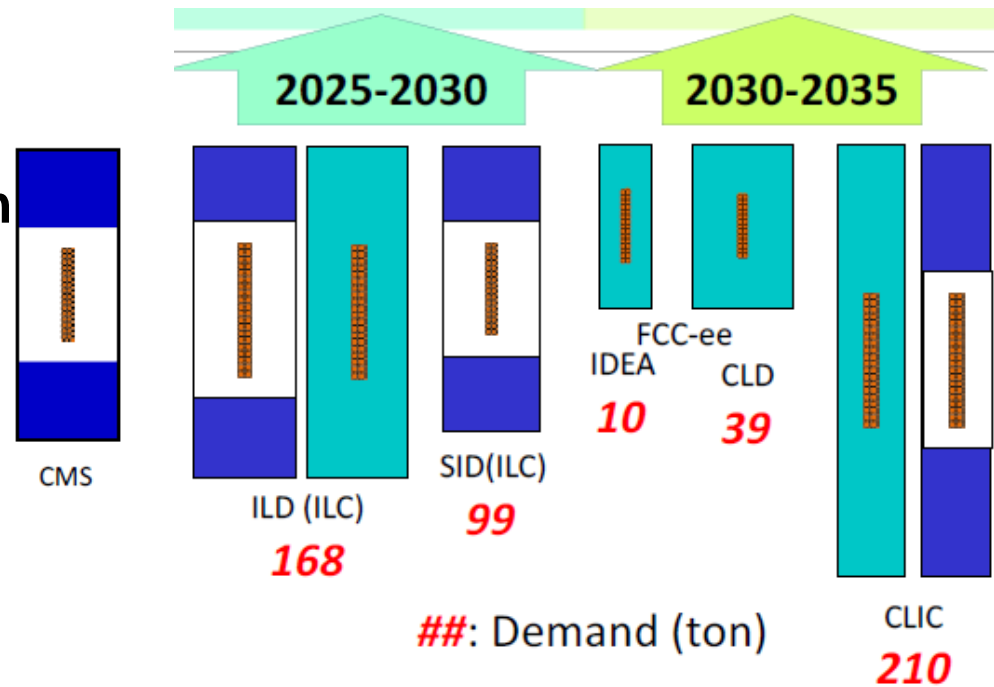
- Pre-straitening & Straitening thicker bars
- Inter-Connection
- Final coiling direction definition



- Adaptability
- Multi-product approach
- Security

SUMMARY

- **Conditions:**
 - AI stabilised SC production
 - Multi-product Approach
 - Single Coordinator
- **Centralisation of information**
 - (CMS 3Years)
 - Longterm schedule
 - ILD 2-3Years
 - SiD 1-2Years
 - CLIC 2-3Years
 - Disponibility
 - Shift of date



- Optimisation of geometry for optimal weld parameters
- Study to define maximum size for industrial production

AI stabilised Superconductor
+
Unique multi-product EB-welding line
v
Cost reduction
+
Repeatable product quality

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'Simplicity is complexity resolved' – C. Brancusi

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