



# **Loval Oy - FINLAND**

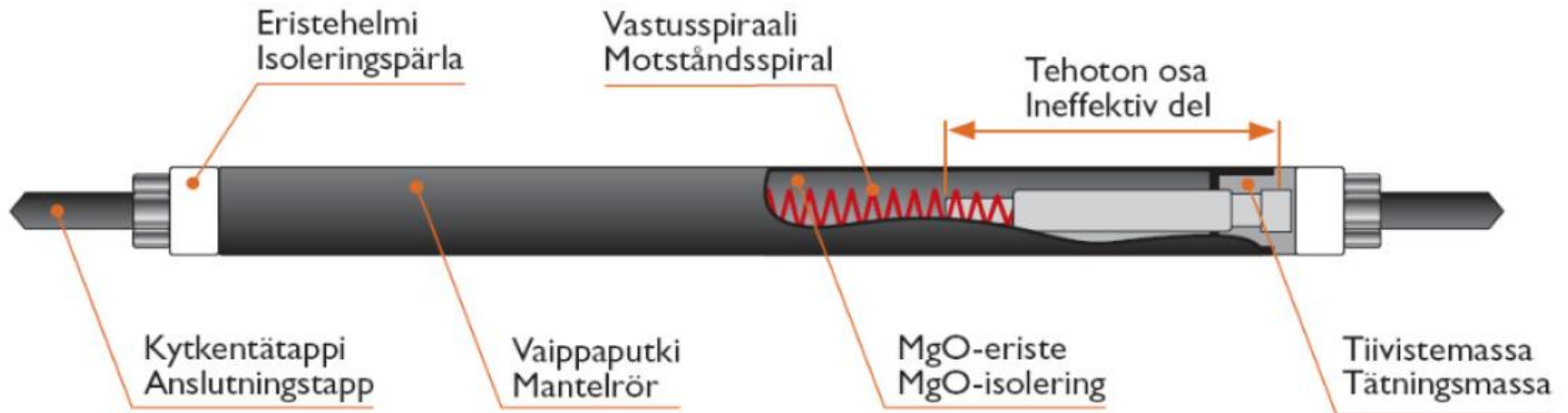
Diffusion bonding and brazing  
components for CLIC

# Loyal Oy

## Key figures:

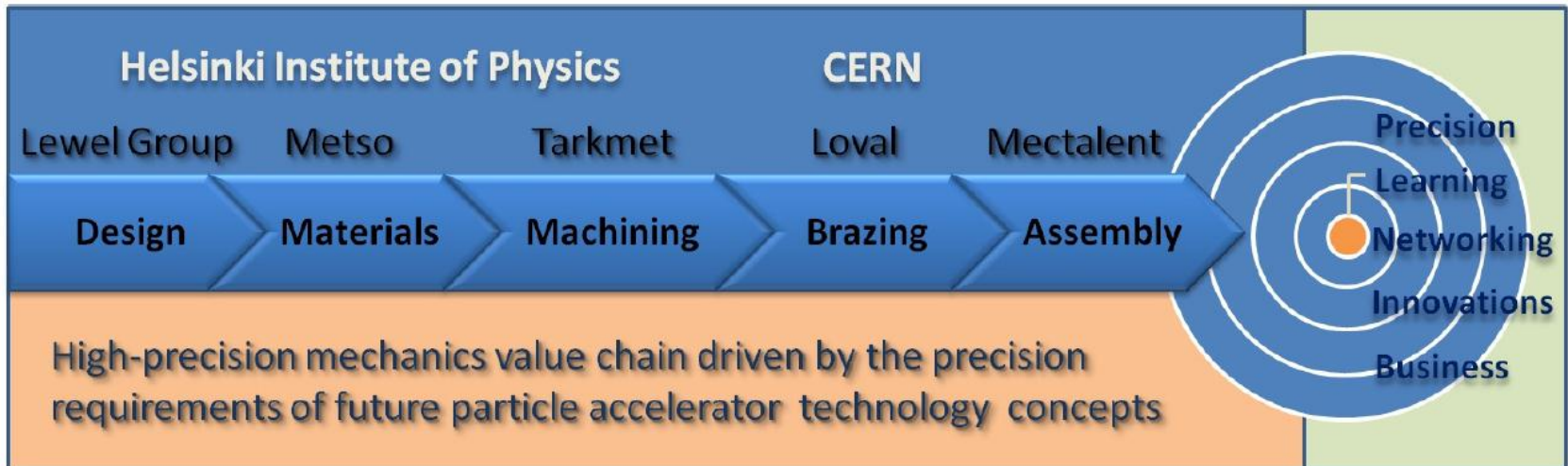
- Ω Turnover 23,5 Meur
- Ω 210 employees
- Ω Factory floor area 9000 m<sup>2</sup>
- Ω 2 Million elements a year
- Ω 30'000 BHE units / annum
- Ω 76% of sales exported
- Ω 50 export countries

# Core product since 1960



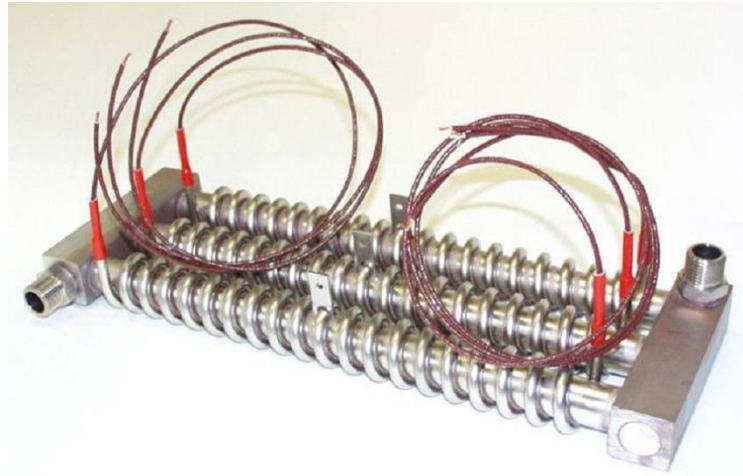
# MeChanICs

- “objective: enable and enhance long term industry participation in CLIC, Compact Linear Collider, RF structure R&D”





# Vacuum brazed products



# Brazed heat exchangers



# Brazing equipment

- 4 Vacuum-furnaces
  - Ipsen VFC-924 (HV) –  $1 \cdot 10^{-5}$  mbar
  - Ipsen GI-48x60x48 (FV) –  $1 \cdot 10^{-2}$  mbar
  - Ipsen VFC-924-R (HV) –  $1,3 \cdot 10^{-5}$  mbar
  - Schmetz I 240/1-H<sub>2</sub> (HV) –  $1 \cdot 10^{-5}$  mbar **NEW!**
- 3 Chain furnaces
  - Used for brazing in controlled atmosphere and heat treatment



# NEW furnace, installed in August 2012!

## Technical data:

Max temp:  
1350 °C

High vacuum:  
 $10^{-5}$  mbar

Atmosphere:  
**H<sub>2</sub>** (35 mbar), Ar, N<sub>2</sub>

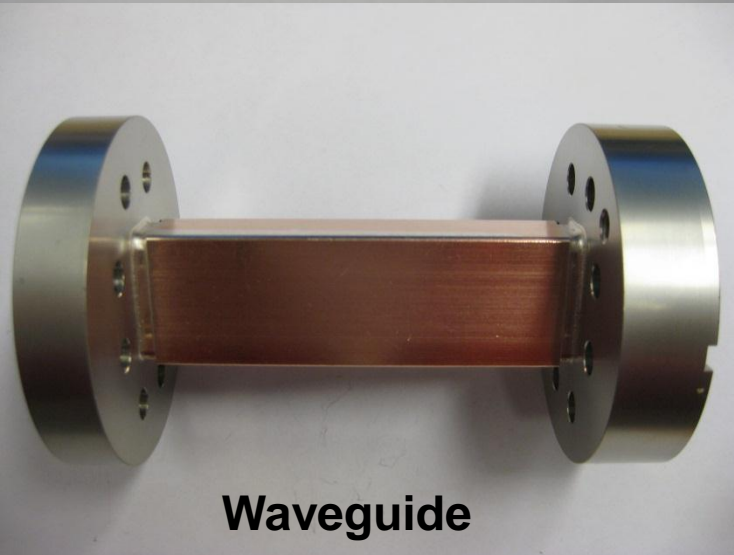
Load dimensions:  
1200x1680x1100 mm  
Max 2500 kg





- Several successful normal brazings of RF-structures have been done at Loyal.
  - More will be brazed in the future.
- With the new “hydrogen-furnace” successful diffusion bonding tests have been done.
  - More tests are planned at the moment.

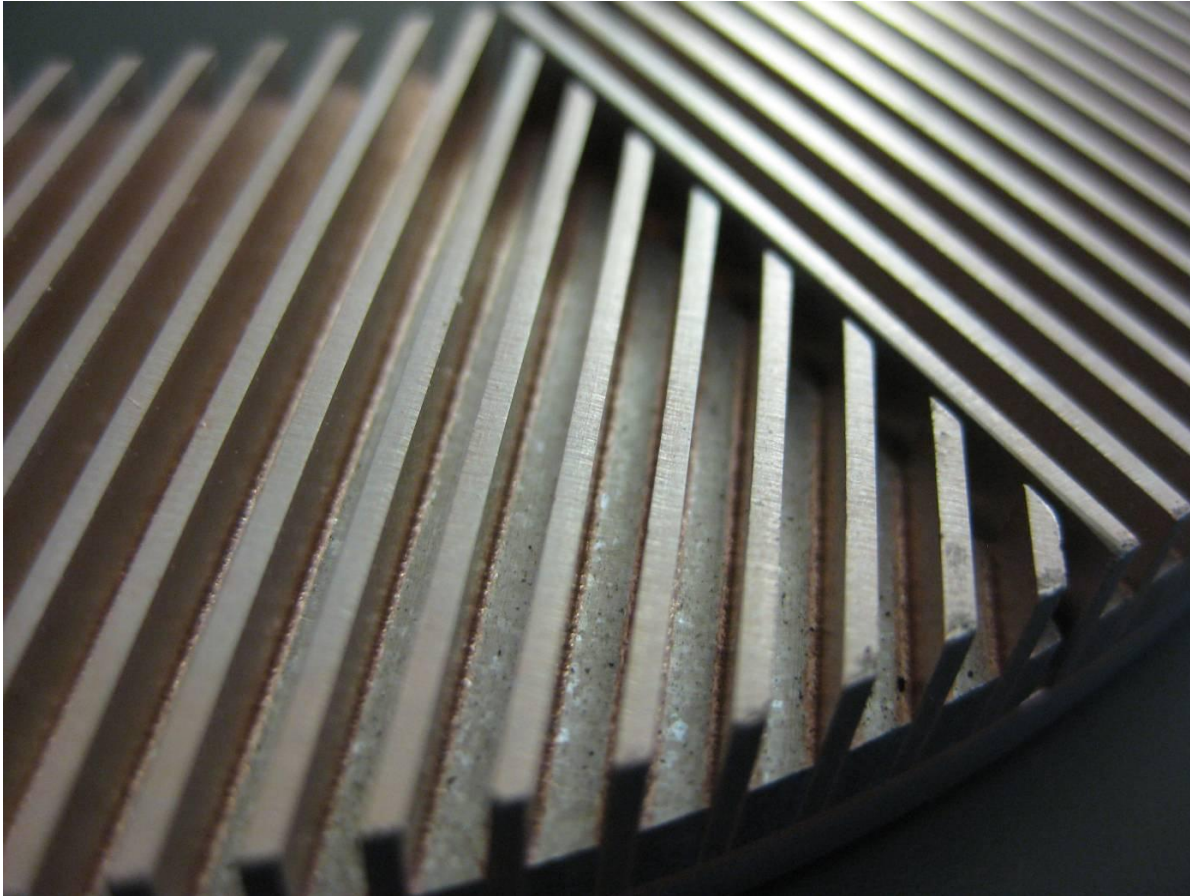
# RF-structures done at LOVAL



LOVAL is more than positive  
to projects like CLIC and MeChanICs!!

- Precision – yes!
- Learning – yes!
- Networking – yes!
- Innovations – yes!
- Business – yes!





Loval Oy, Felix Smeds - 31.01-13  
CLIC Workshop - CERN