



STEEL FORGINGS – ROLLED RINGS – HEAT TREATMENTS





# The Company



- *Description*
- *Safety – Introduction - Risks*
- *Key Figures*
- *Management – Organization chart*
- *Manufacturing Process*
- *Quality Control*
- *Future Investments*





# The Company - Description

*Felb Srl has been constituted in 2006 from a demand of the market for medium weight forgings. Thanks to a versatile plant Felb is able to offer “state of the art” products in any kind of steel:*

- *for construction, cementation, hardening, nitrification, surface tempering.*
- *for special uses at low temperatures, creeps, bearings.*
- *for hot and cold workings, stainless steel. duplex and ASTM series.*

*The special equipment permits the production of semi-moulded items and forgings shaped according to drawing, bars of various sectional size, discs, shafts, rollers, mouldings forms, bushes, flanges etc up to a maximum weight of 10 tons, a maximum length of 6 meters, a maximum diameter of 2500mm and a maximum width of 2000mm.*

*The circular rolling mills can produce rings up to a maximum diameter of 4000mm and a maximum height of 870mm.*





*Felb, through the Policy for Safety and Health at Work, has defined its objectives in order to pursue the reduction of the number of accidents (prevention) and their effects on the health of workers (protection).*

## EXAMPLE OF RISK MANAGEMENT IN FELB

### RISKS ASSESSMENT

 RUNNING OVER	 BIOLOGICAL
 ELECTROCUTION	 WORK ENVIRONMENT
 WORK EQUIPMENT	 MICROCLIMATE
 NOISE	 IONIZING RAYS
 HANDLING	 OFFICE – VDT
 IRRADIATION	 WORKS ABOVE GROUND
 EMERGENCY	 ROA
 CHEMICAL RISK	 VIBRATIONS



*IRRADIATION heat emitted by incandescent object*



### HANDLING





# Quality

## Quality Assurance

*Pursuing a continuous improvement and a rationalization of the procedures concerning the carried on activities, during the last years the Company has increased the facilities and resources both human and technological assigned to the development of Quality Management.*

*All this is formalized and grouped in a “Quality Handbook” where the procedures are detailed in harmony with the new guidelines ISO 9001-2015 in accordance with which FELB SRL has been certified by Lloyd's Register*

**Lloyd's Register**

### Certificate of Approval

This is to certify that the Management System of:

**FELB S.r.l.**  
Via Rag. Evangelista Laini 52, 25043 Breno - BS, Italy

has been approved by LRQA to the following standards:  
**ISO 9001:2015**

Gilles Bessiere - Area Technical Manager  
Issued By: Lloyd's Register Quality Assurance Italy Srl  
for and on behalf of: Lloyd's Register Quality Assurance Limited

Current Issue Date: 16 March 2018  
Expiry Date: 5 February 2021  
Certificate Identity Number: 10065639

Original Approvals:  
ISO 9001 – 6 February 2009

Approval Number(s): ISO 9001 – 00009397

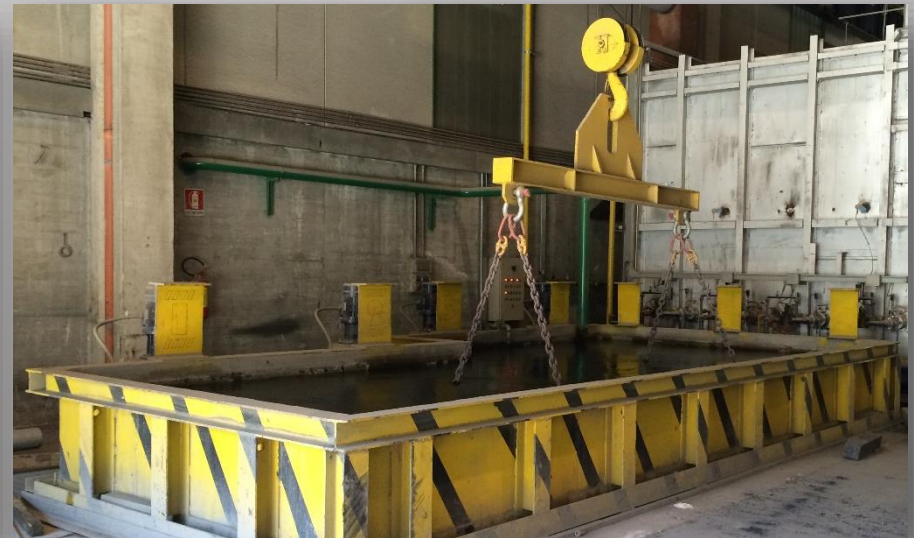
The scope of this approval is applicable to:  
Manufacture of carbon, alloy and stainless steel open dye forging & rolled rings.

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- *Material Inspection*
- *Cutting*
- *Forging*
- *Heat Treatments*
- *Machining*
- *Testing*





## Incoming Material Inspection

- **Material check through weighing check and correspondence of heat numbers and presence of certificates.**
- **Radiometer control.**
- **Checking of Chemical Analysis stated by the supplier in the certificate against the data required by the standard of reference.**
- **Check analysis performed by means of Spectroport.**



## Cutting

- n° 12 band saws with a cutting capacity of up to 1000mm x 1000mm.





## Forging

*1 forging press of 1000 tons;  
1 forging press of 2000 tons;  
1 forging press of 3000 tons (ready end of 2020).*

*5 manipulators with capacities from 1,5 to 50 tons.*

*1 rolling mill WAGNER 100/80 for radial-axial rings: maximum diameter 2500mm x max. height 650 mm.  
1 rolling mill WAGNER 80/50 for radial-axial rings: maximum diameter 2000mm x max. height 400 mm.  
1 rolling mill BANNING 160/125 for radial-axial rings: maximum diameter 4000mm x max. height 700 mm.*





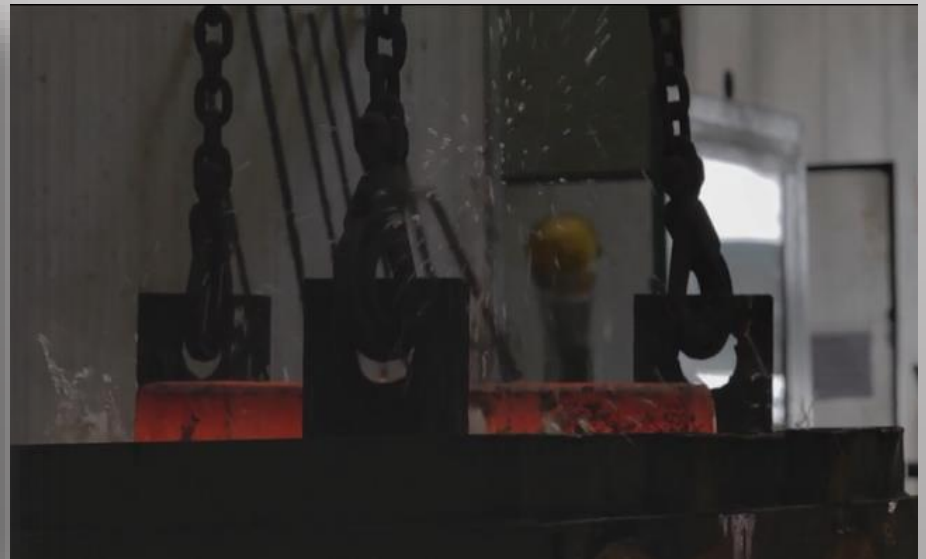
# Manufacturing Process

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## Heat treatment

*3 heat treatment furnaces ( 1 qualified API 6A ).*

*1 Tanks for heat-treatment of shafts up to 8mts of length and rings with a diameter up to 4000mm.*

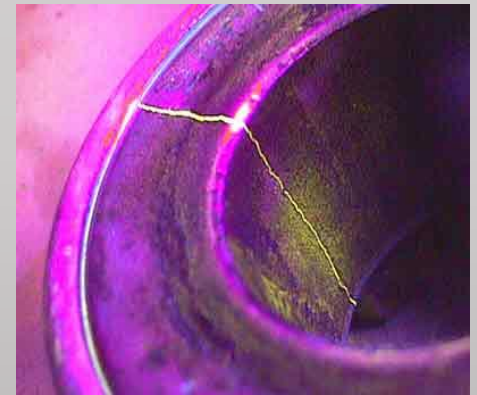


## NON DESTRUCTIVE TEST

- *The non-destructive tests are executed by technicians qualified according to UNI EN 473 and ASNT-TC-1A*

### *Performed tests :*

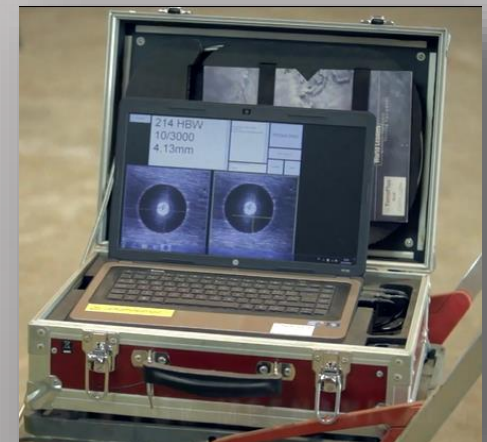
- *Ultrasonic test*
- *Penetrant test*
- *Magnetic particle test*
- *Fluorescent magnetic tests (100 and 250 watt)*
- *Visual and dimensional test*





## EQUIPMENT FOR MECHANICAL TESTS

- *Machinery for tensile test with a furnace for hot testing.*
- *Pendulum for Charpy test with equipment for testing at a low temperature.*
- *Durometers Brinell 3000/10.*
- *Portable Durometer King 3000/10.*
- *Durometer STE.*
- *Instrument with camera to read Brinell values (Brintronic).*
- *Automatic Brintel misure microscope.*



## EQUIPMENT FOR CHEMICAL ANALYSIS TEST

- *Portable Spectrometer SPECTRO for chemical analysis.*

## INSTALLATION THE NEW PRESS 3000Ton.



BEFORE



AFTER  
"OVERLAP PHOTO"



# Contacts

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