

AUBERT & DUVAL *Holding*

For

Urenco

**Enrichment
Technology**



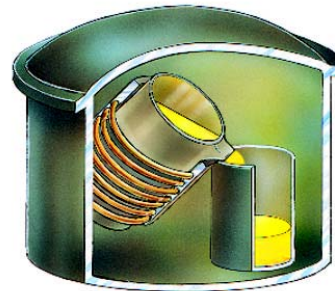
Melting Process



Selected scraps



New material
(Ni, Co, Mo etc.)



V.I.M. furnace
Vacuum Induction melting



4 electrodes diameter 350 mm

CONTROL = chemical analysis

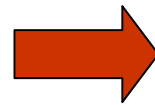
Remelting Process



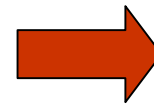
4 electrodes diameter 350 mm



- GRINDING
- CUTTING ENDS



V.A.R. furnace
Vacuum Arc remelting



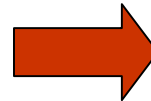
- INGOT**
- Diameter 400 mm
- Weight \approx 2 tons

CONTROL
= Checking the remelting parameters

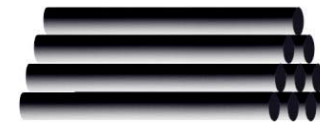
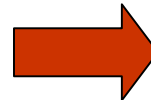
Forging Process



- heating ingots (Homogenizing)
- Forging to dimensions :
 - ▶ ▣ 180 mm for bars diam. 55 mm
 - ▶ Ø 290 mm for cold pilgered tubes



Grinding + Cutting ends square bars
before hot rolling




Machining bars to diam 273mm
Cutting into billets

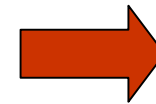
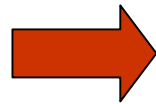
CONTROL

- intermediate Ultrasonic control
- 1st analysis - macroexamination

Hot Rolling Process



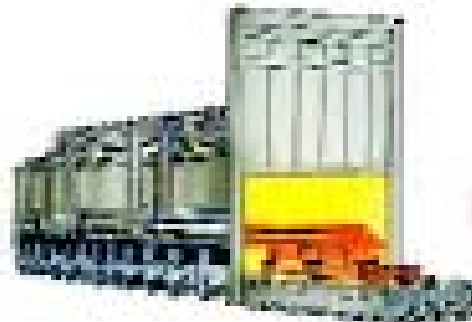
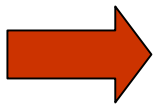

Ø 180 mm



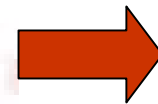
Ø 58 mm

Hot Rolling

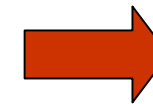
Ø 58 mm



Heat Treatment



MACHINING



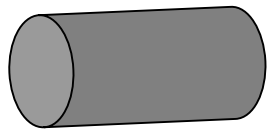
Ø 55 mm

CONTROL:

- Dimensional check
- Final immersion Ultrasonic testing
- Magnetic particle inspection

- taking specimens for Mechanical properties
- Macro & micro exam + production analysis

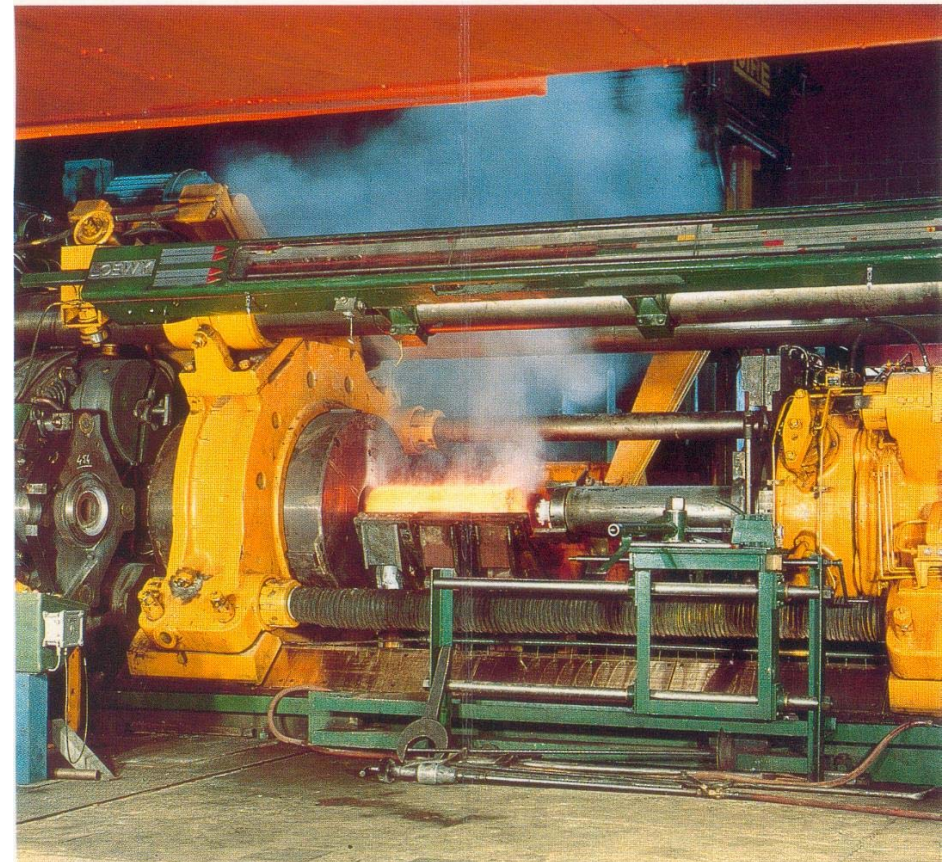
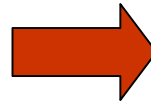
Tubes



Billet



Heating



Hot Extrusion

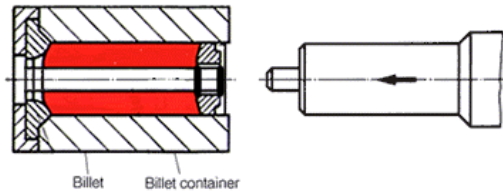
CONTROL
Dimensional check

Tubes

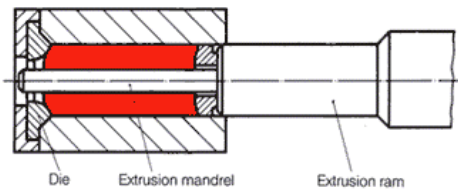


Hot Extrusion

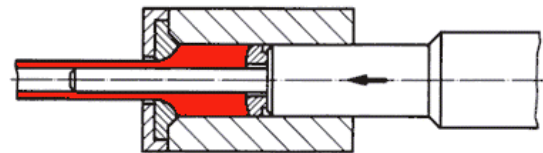
Press ready for operation



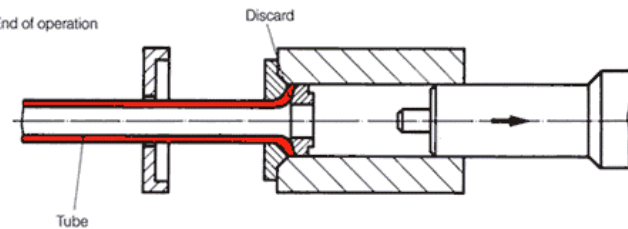
Start of operation



Extrusion process



End of operation



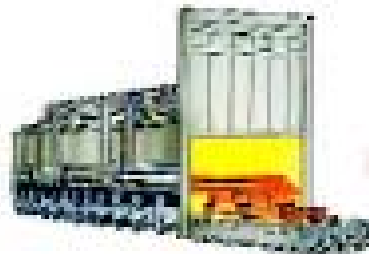
CONTROL
Dimensional check

Tubes



Cold pilgering

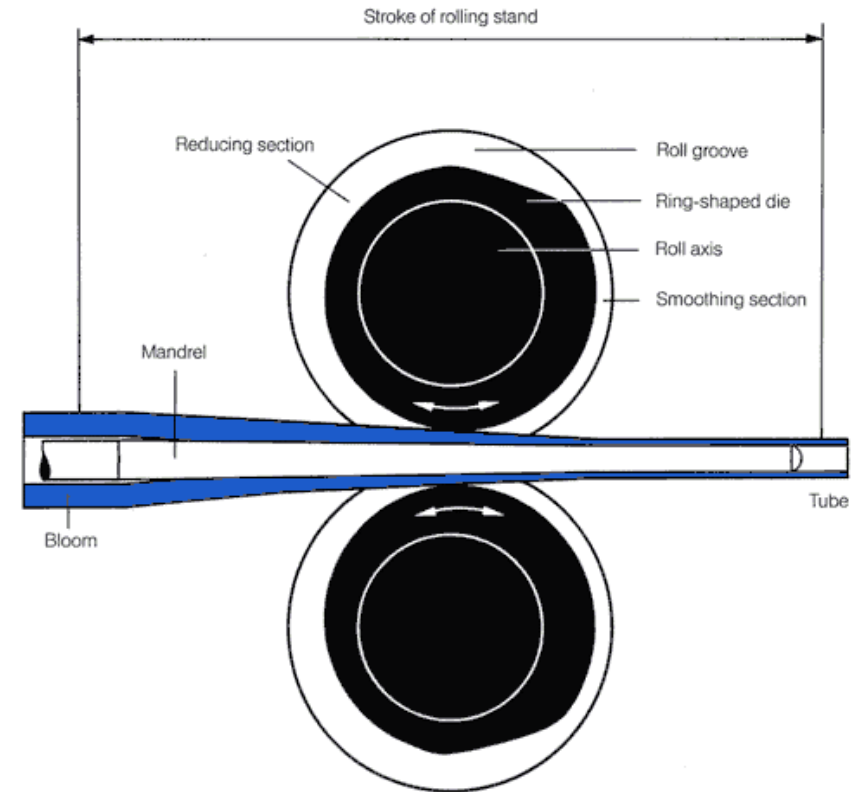
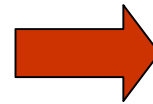
Hot Extrusion



Heat Treatment

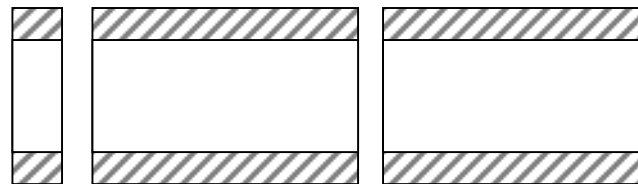
+

Grinding



TO FINAL DIAMETERS

CONTROL
Dimensional check



.... Cutting to final length & specimens

■ Vacuum heat treatment

CONTROL

- Ultrasonic inspection
- Dimensional check
- Making specimens for mechanical properties and product analysis

■ Protecting

■ Packaging into boxes