

WHEEL & AXLE PLANT, DSP



Welcomes
YOU.

WE SAY;

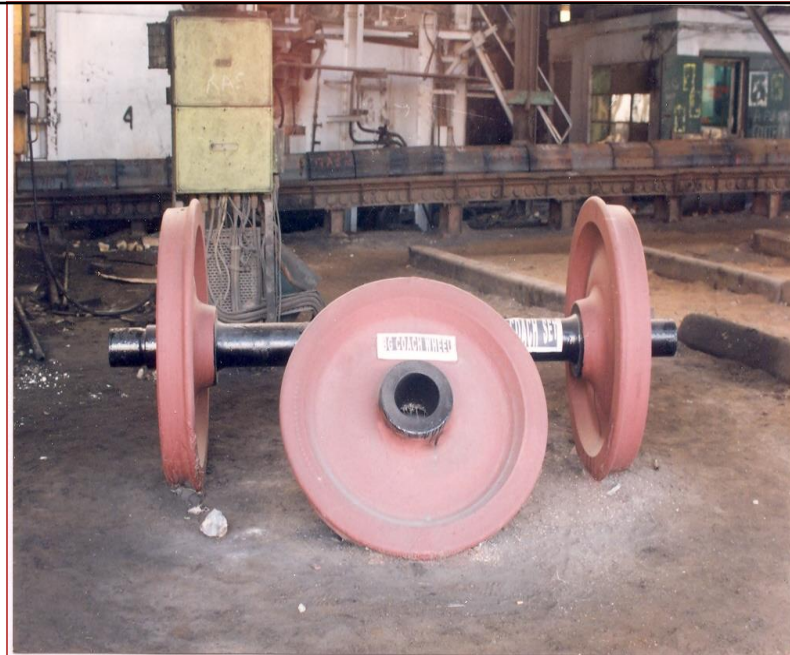


“LIFE IS LIKE AN **AXLE
ROTATE IT;**

LIFE IS LIKE A **WHEEL
TURN IT”**

❖ **BACKGROUND**

- Commissioned in 1961-62
- ❖ Capacity 45,000 wheel sets/Yr.
- Modernization in 1993 to produce
- ❖ 70,000 BG coach equivalent wheels
- Mainly catering to Indian



❖ 1 BG COACH=0.74 SP LOCO WHEEL.



❖ Narrow Gauge wheels

PRODUCT RANGE

- **Wheel**

- BG Coach Wheel
- EMU coach wheel
- **S-Profile Loco wheel**
- **BG Loco Wheel**
- **MG Loco Wheel**
- **WAG-9 Loco wheel**
- **WAP-5 Loco wheel**
- **WDG-4 Loco wheel**
- **NG Wheel**
- **LHB(Linke Hofmann Busch)wheel**
- **KOLKATA metro wheel**
- **NTPC merry go round wheel**
- **Train-18 wheel**
- **BOX-N wheel.**

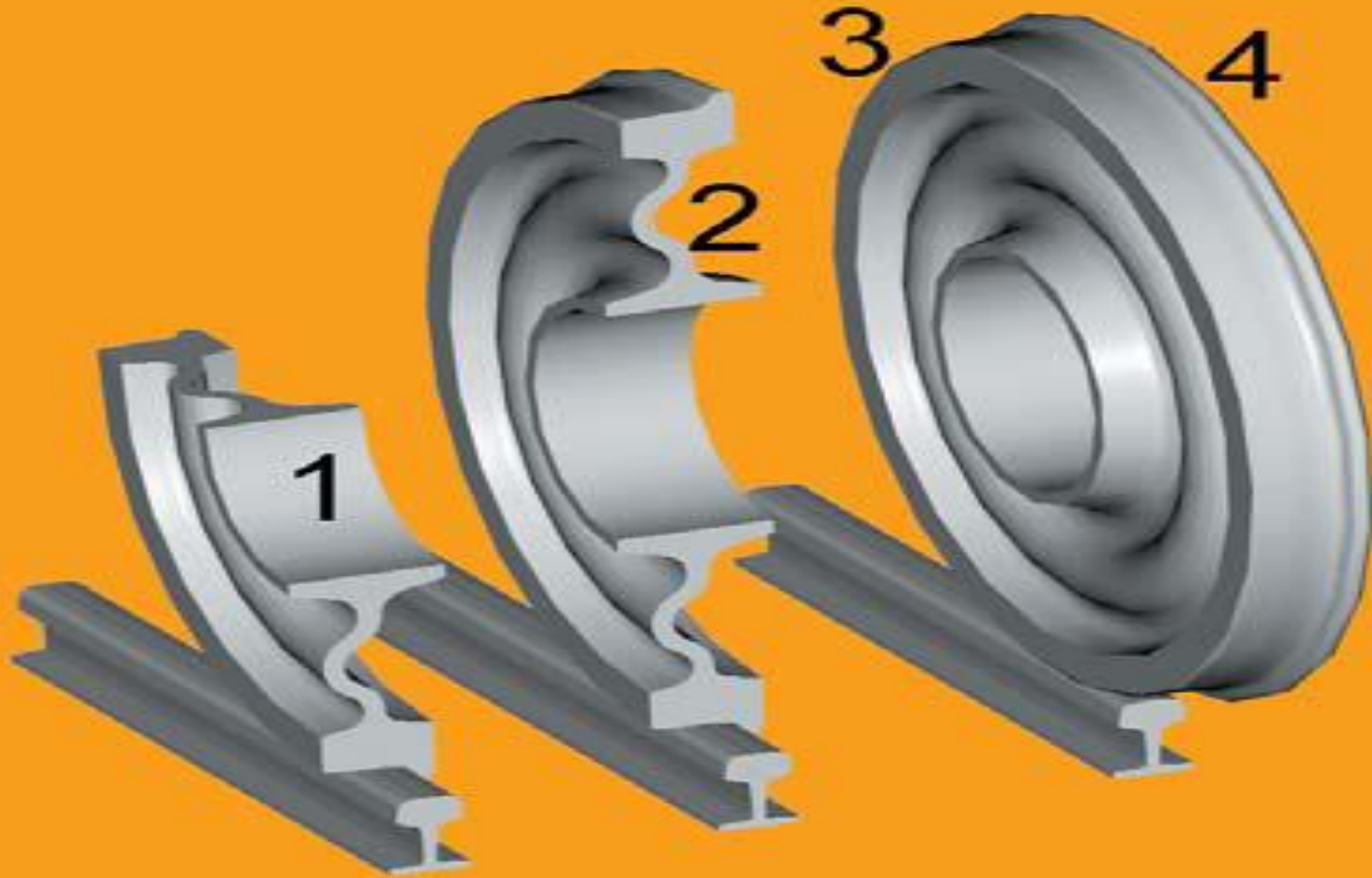
- **Axle**

- **BG Coach: (16.25T)**
- **LHB Coach**
- **BOX-N(22.9T)**



Hot rolled wheel

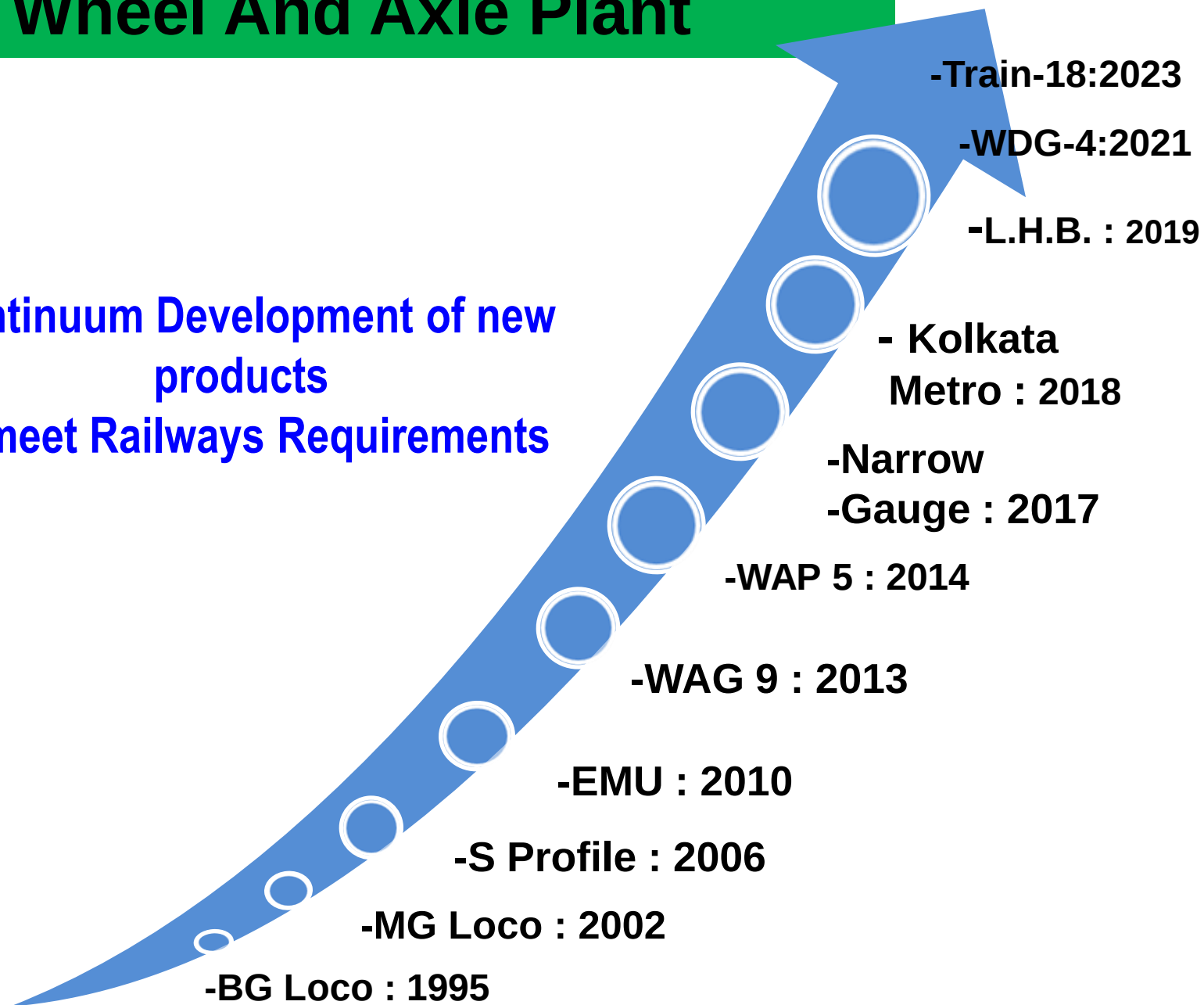
BASIC PARTS OF A WHEEL



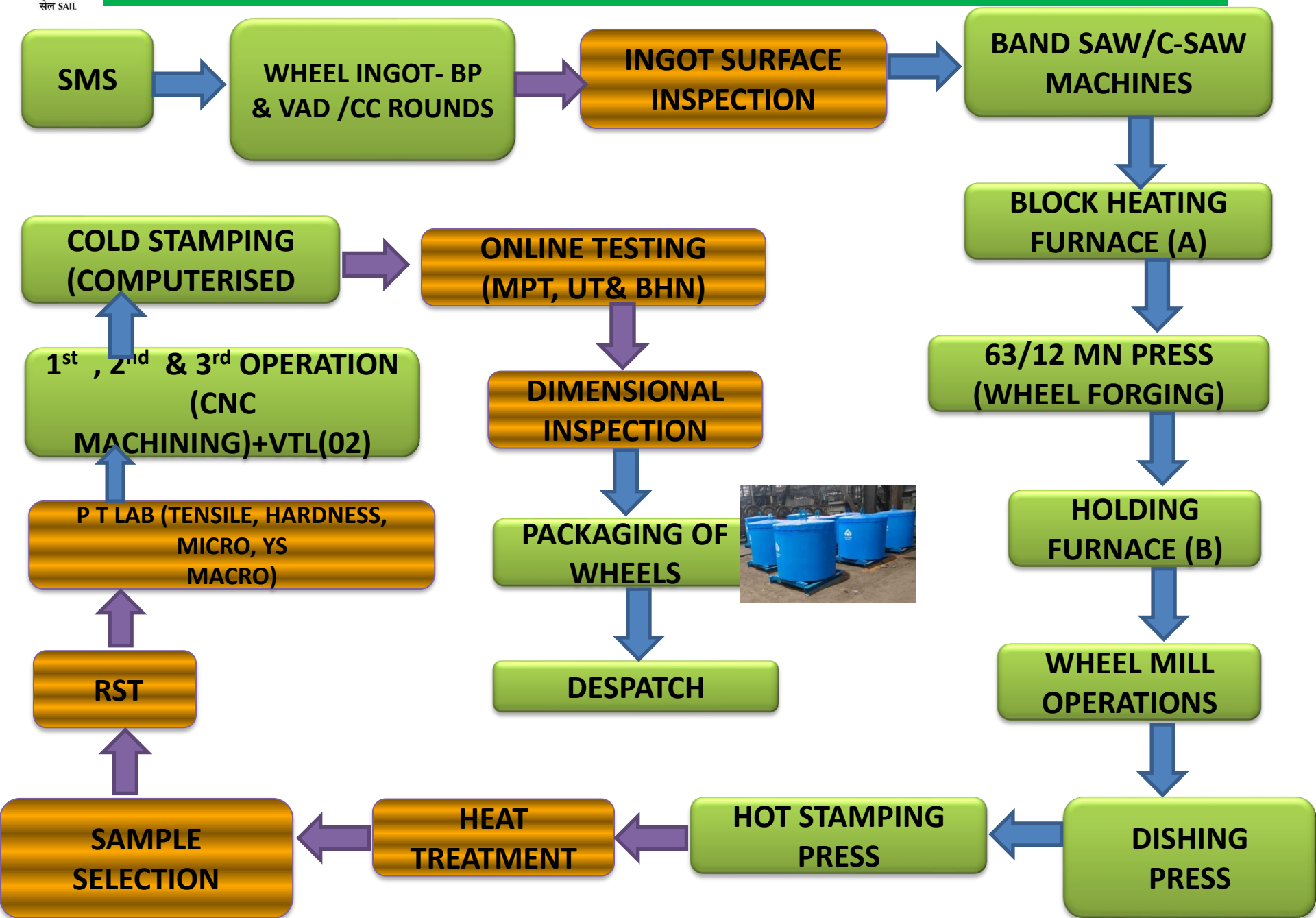
❖ 1-Hub, 2-Web, 3-Rim & 4-Flange.

Wheel And Axle Plant

Continuum Development of new products to meet Railways Requirements



MATERIAL FLOW DIAGRAM FOR WHEELS



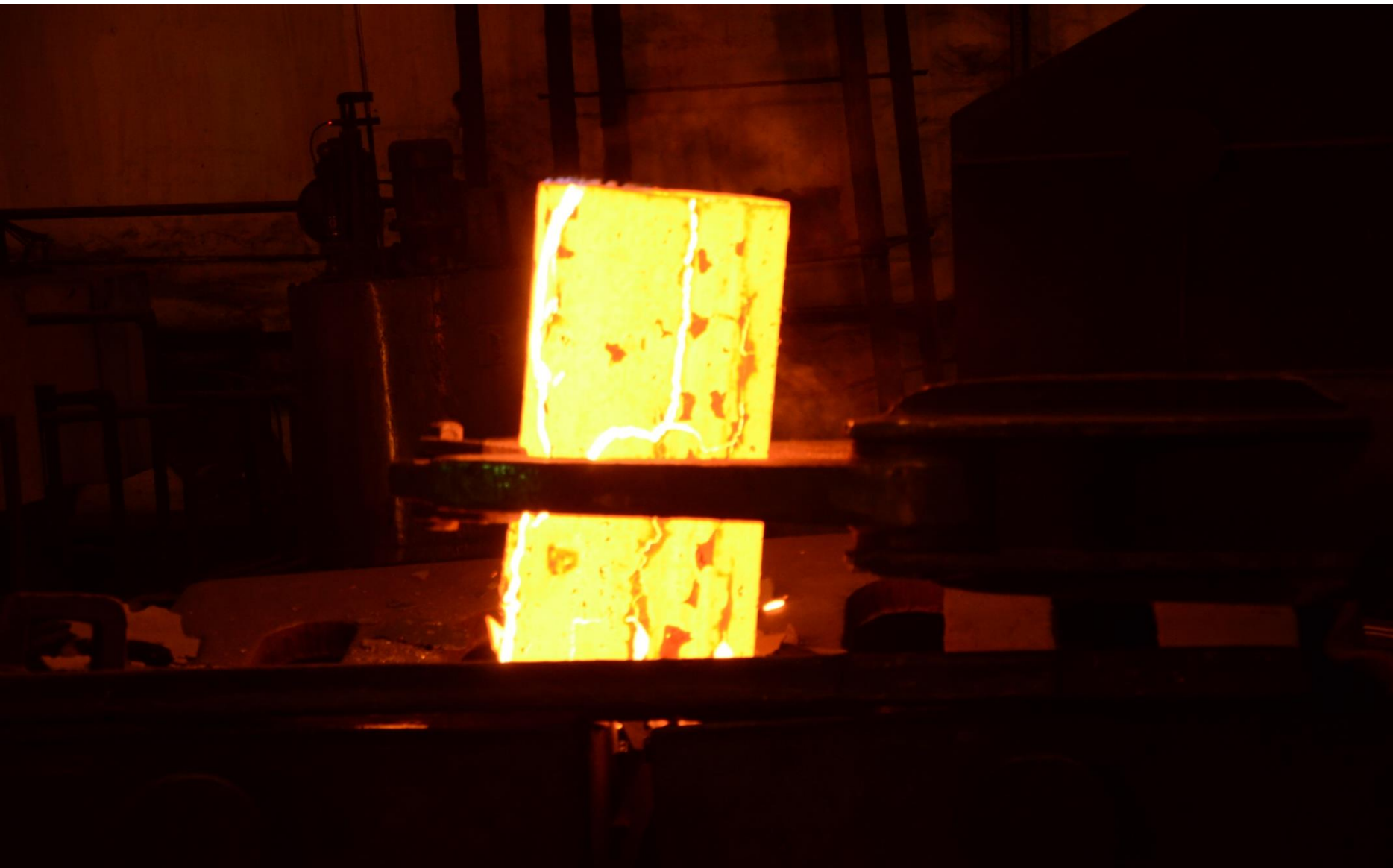
BLOCK REHEATING RH FURNACE -A

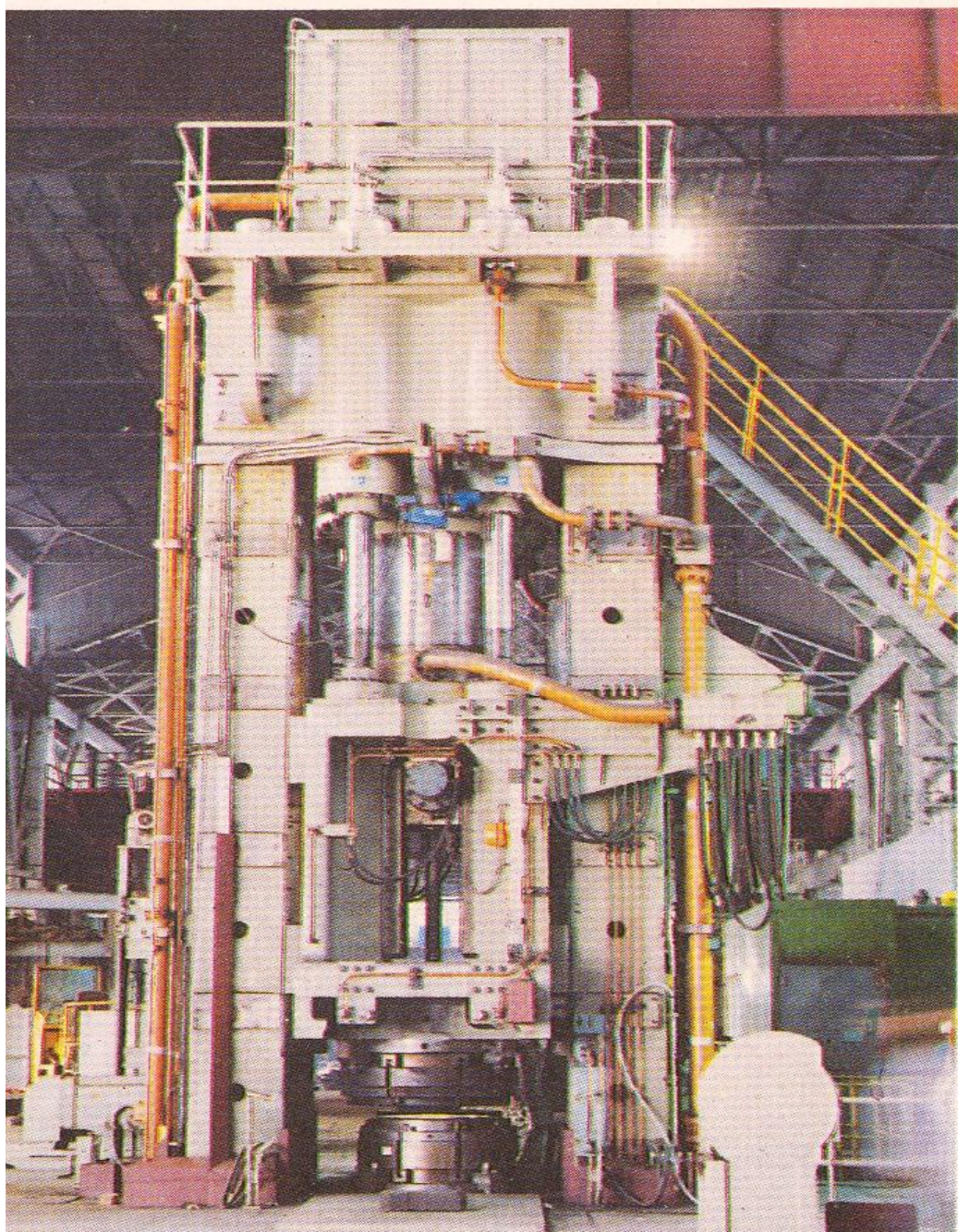


Reheating furnace-A

- **Type: Rotary Hearth Furnace (A-furnace)**
- **Make: Stein Atkinson**
- **Capacity: 25 blocks/hr**
- **Furnace size: 42'-6" X 9'**
(P.C.D. X Width)
- **Holding capacity: 132 blocks in 44 rows**
- **No. of burners in**
 - **Heating zone: 11**
 - **Soaking zone: 9**
- **Hearth drive mechanism: Paul-Ratchet hydraulic driven**
- **Fuel: COKE OVEN gas.**
- **Air Fans 2nos. 8000 cft/min at 28" WG each**

A PROPERLY HEATED & SOAKED BLOCK IS BEING DISCHARGED FROM FURNACE FOR FORGING





❖ **63 /12MN Press**

COMBINED FORGING & PUNCHING PRESS

➤ Make

- M/s SIEMPELKAMP, GERMANY
- M/s PAHNKE ENGINEERING, GERMANY (HYDRAULICS)

➤ Capacity

- 63/12MN

➤ Strokes

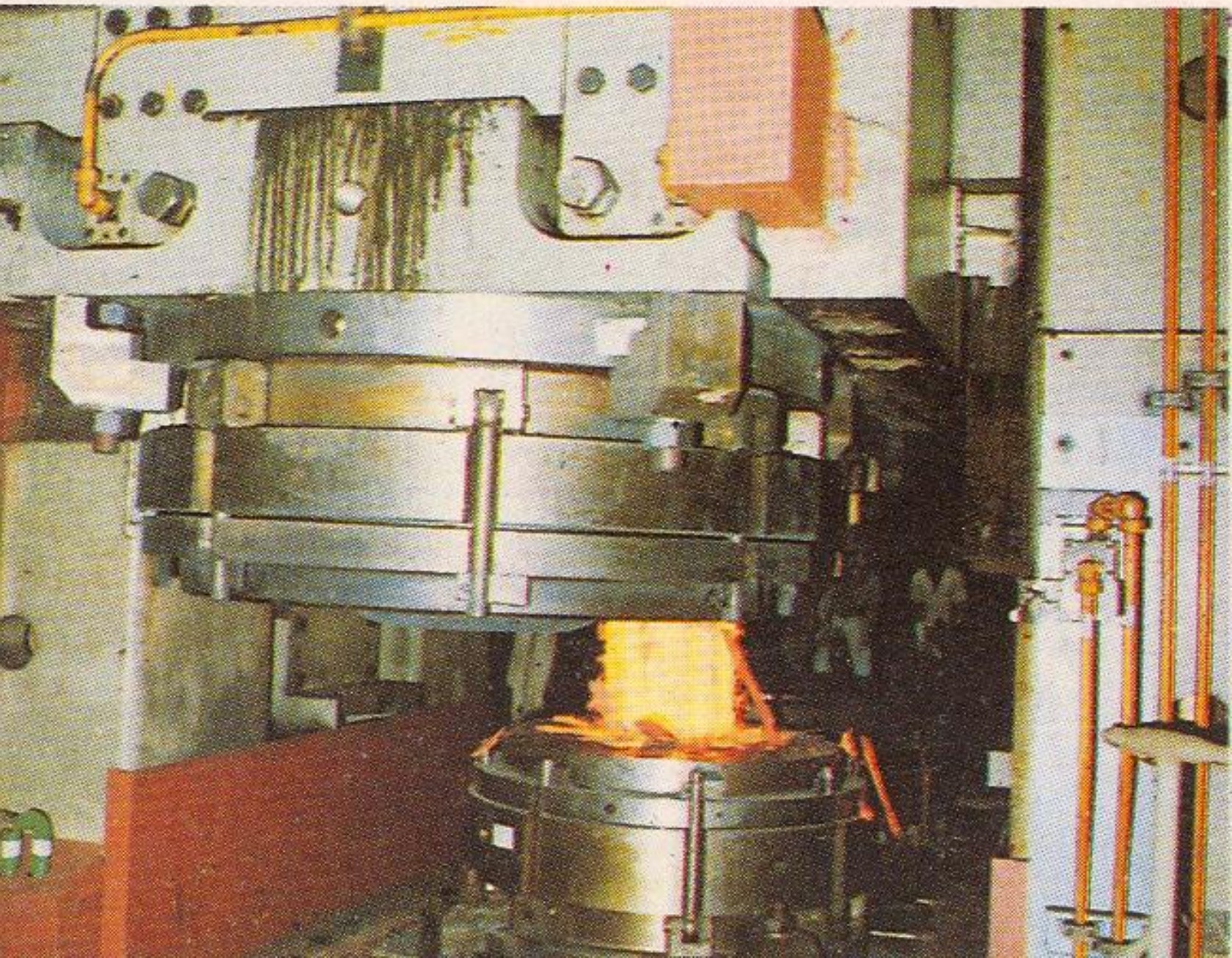
- Main ram –1500 mm
- Punching ram –1200mm

➤ Forces

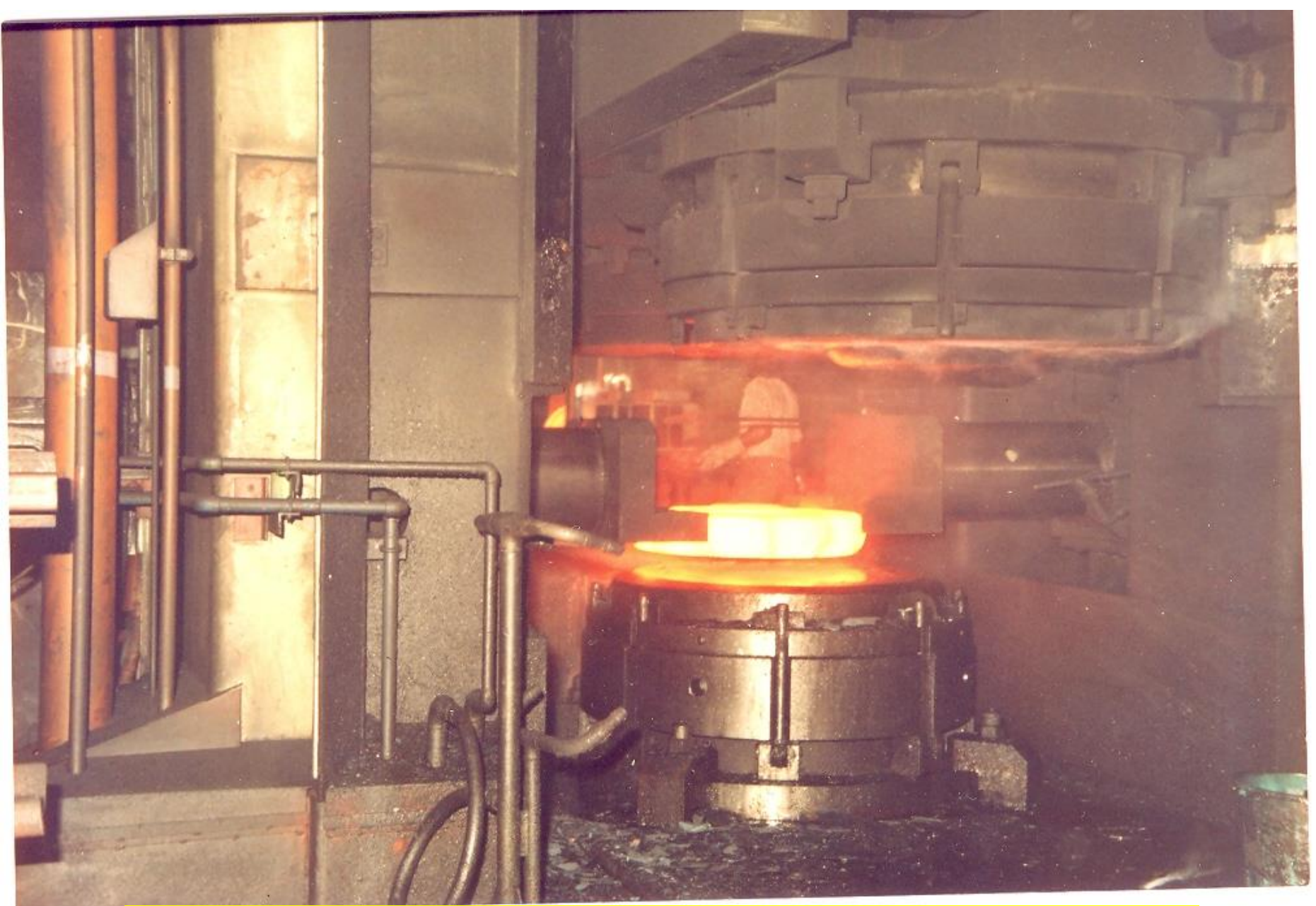
- Pressing force at 320 bar – 6,300 tons
- Pressing force at 245 bar – 4800 tons
- Punching force - 1200 tons
- Cycle time including handling –120 seconds



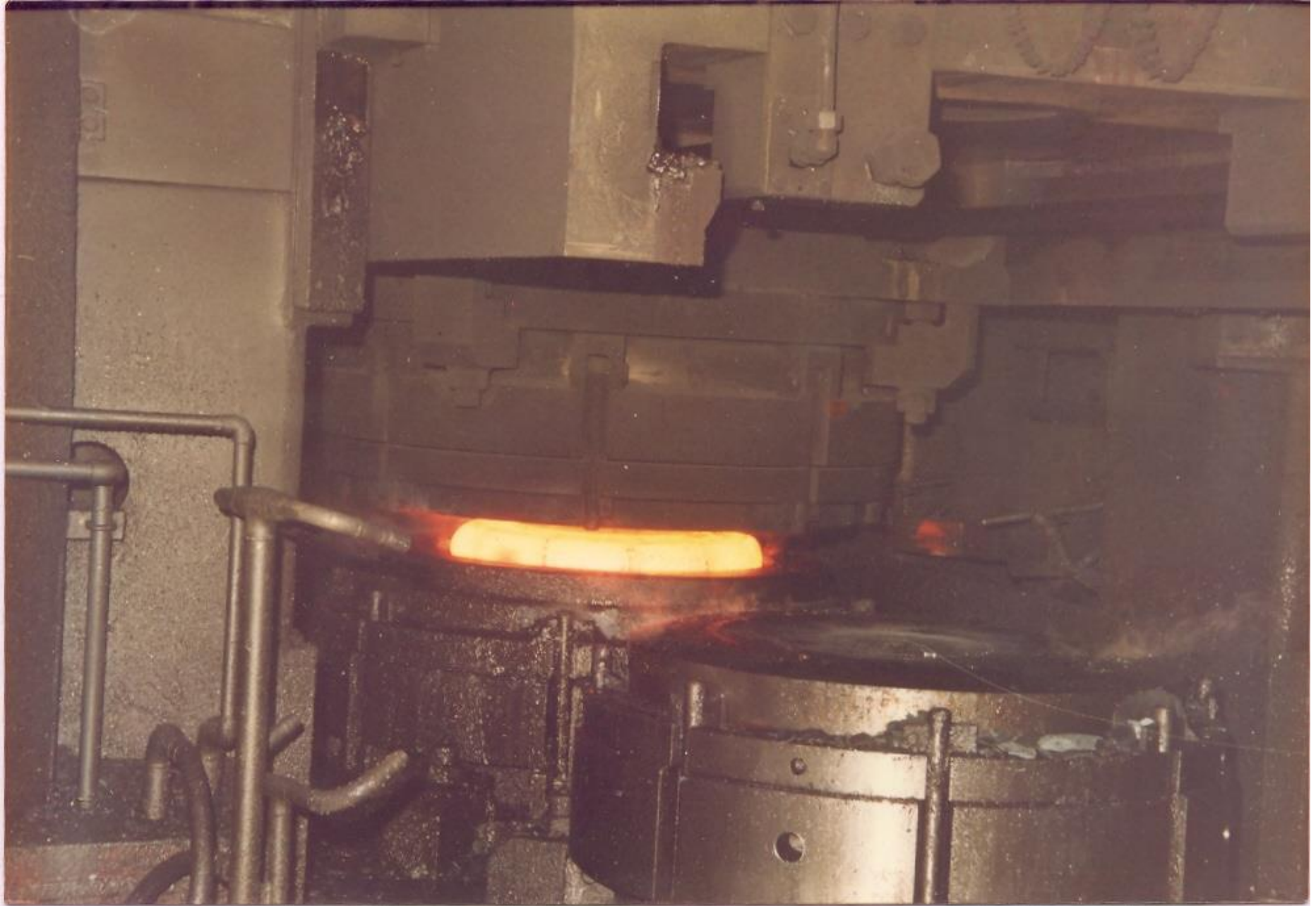
❖ ***Upsetting operation about to start***



❖ **UPSETTING**



❖ UPSET BLANK BEING TRANSFERRED



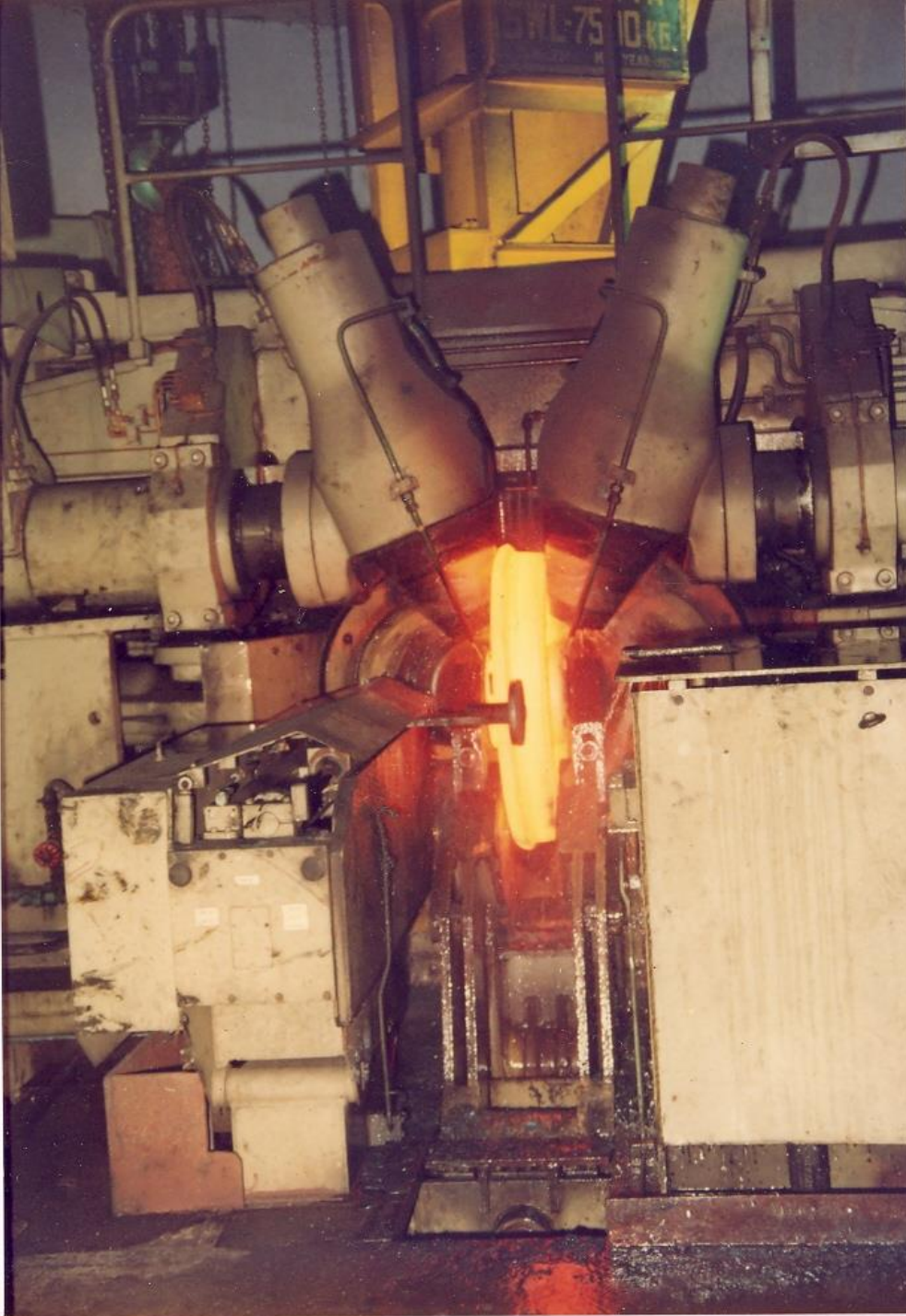
❖ ***FORMING TO START***



❖ ***AFTER
FORMING
THE
PUNCHING
WILL TAKE
PLACE***



❖ ***BATCH TYPE
'B' FURNACE
WHERE
FORGED
BLANK ARE
REHEATED
BEFORE
ROLLING***



❖ **ROLLING
GOING ON**

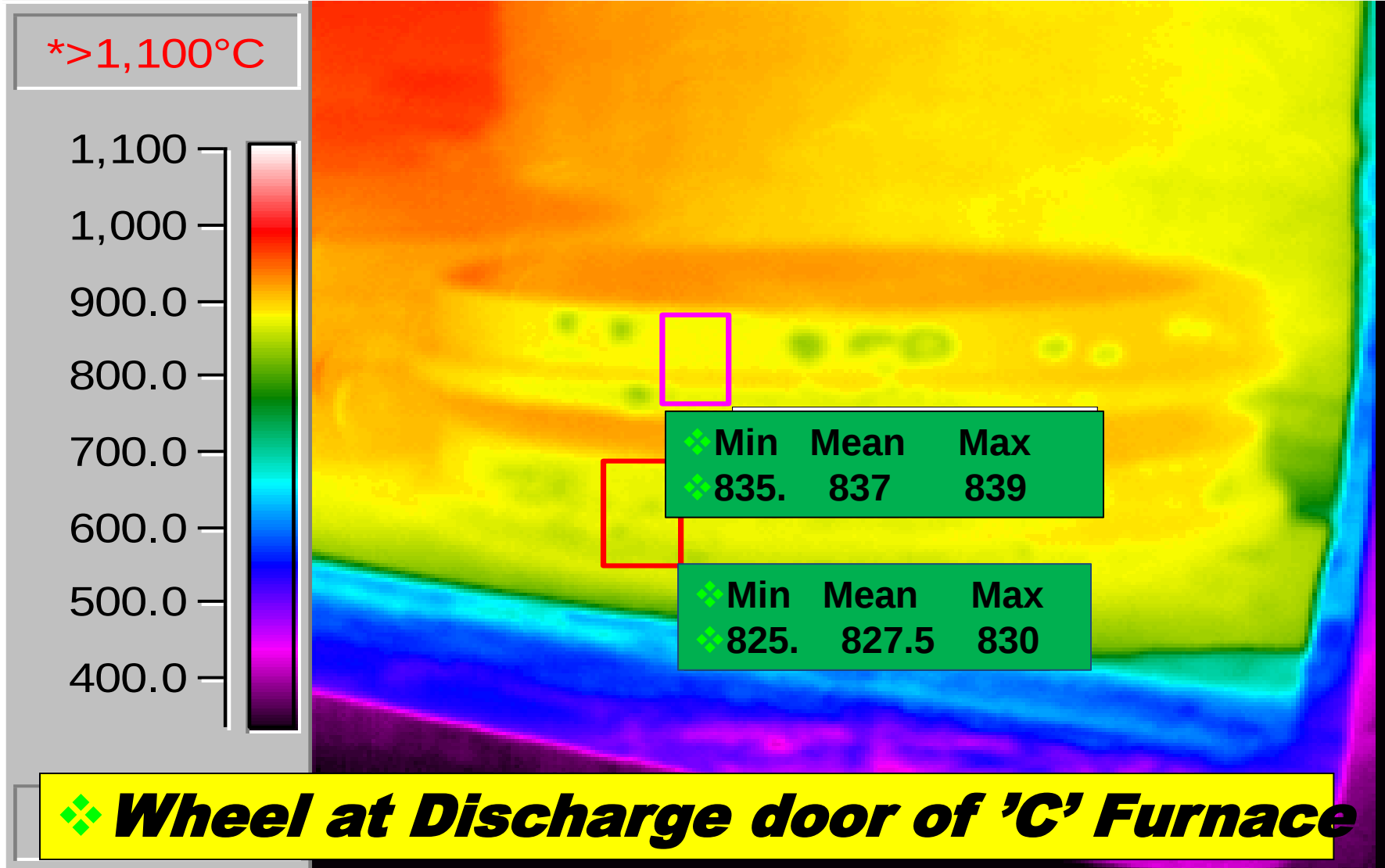


❖ ***DISHING
OPERATION***



❖ ***STAMPING
OPERATION***

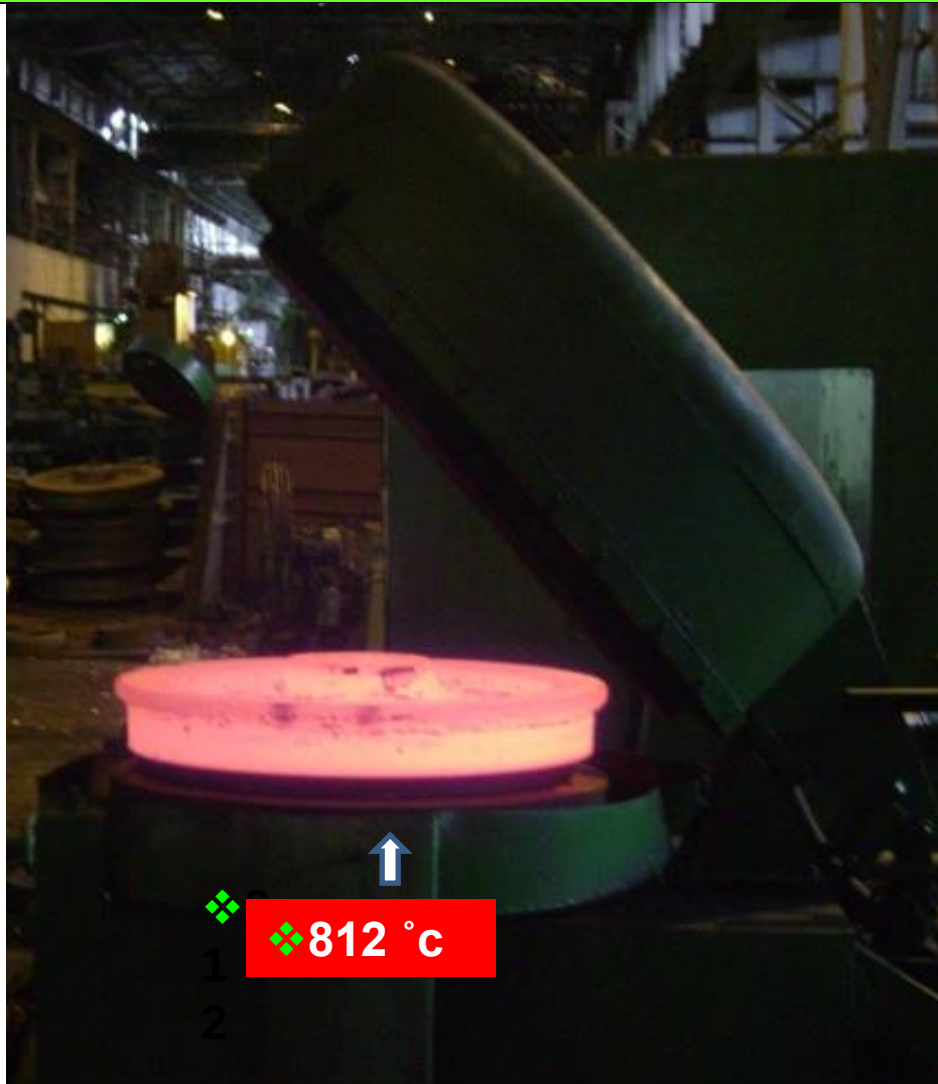
A PAIR OF WHEEL INSIDE C- FURNACE



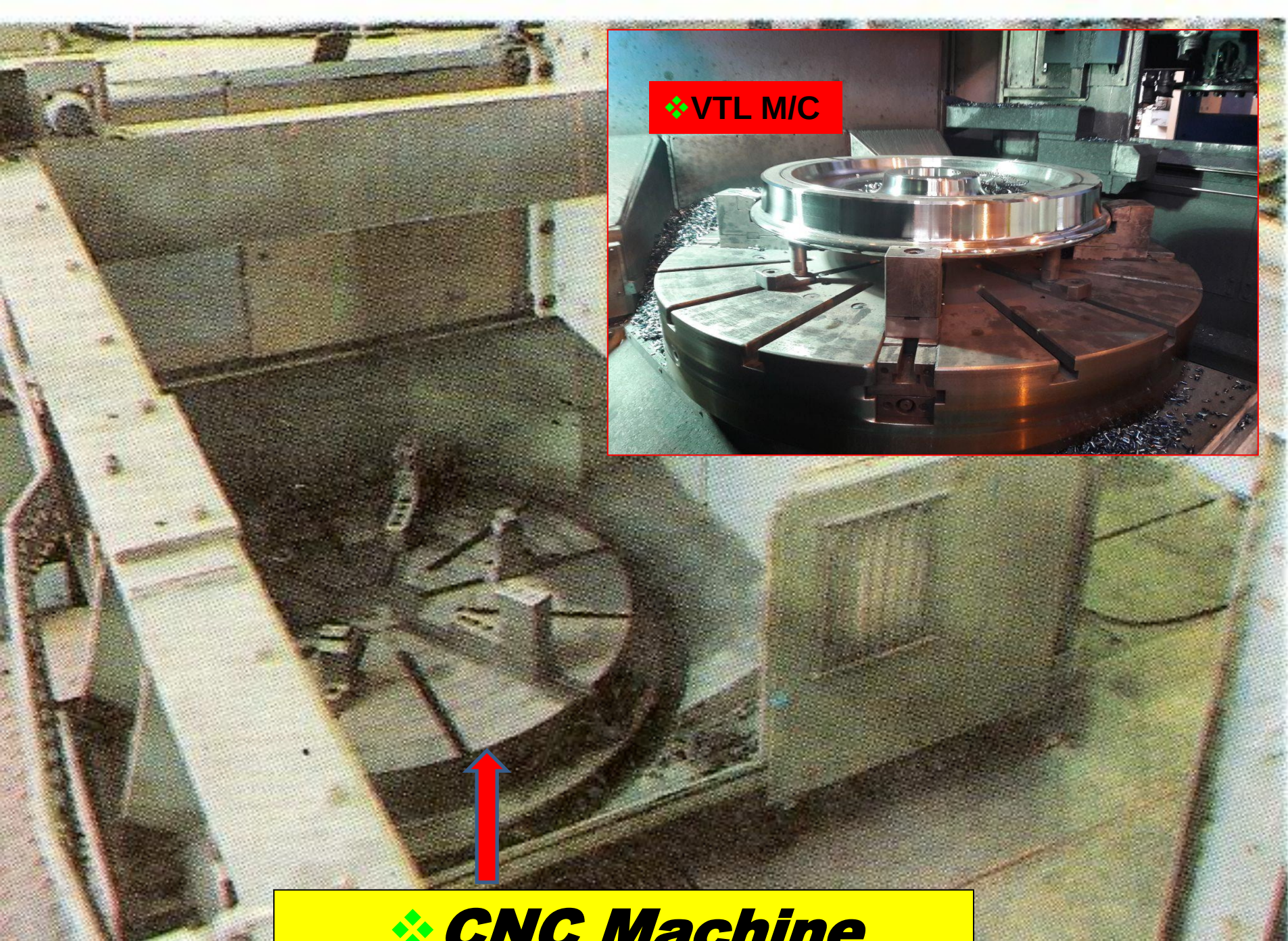


❖ ***Wheel on Rim Spray Machine***

HEAT TREATMENT-(RIM QUENCHING)



WHEEL	CHARGING TEMP. (°C)	% C	RIM SPRAYING TIME (Seconds)
BG COACH	780-830	≤ 0.50 %	330
		>0.50%	300
LOCO	790-830	≤ 0.61%	330
		>0.61%	300



❖ VTL M/C

❖ **CNC Machine**

Machining Operation

OP-I M/cs (7 nos.)

- **Machining on the outer faces of the wheel**
 - Facing of rim and hub
 - Rough machining of tread profile
 - Turning of limit groove and chucking recess
 - blending of hub and rim with web and
 - rough machining of bore

OP-II Machines (8nos.)

- **Machining of inner face is performed**
 - Facing of rim and hub
 - Blending of hub, rim with web
 - Rough turning of flange profile
 - Finish turning of tread and flange profile
 - Finish boring of hub leaving allowance for subsequent finish boring operation
 - **TWO NEW VTL MACHINES HAVE BEEN ADDED TO THE FLEET.**
 - **Each machine is capable of both side machining as tilting, clamping and simultaneous cutting by two inserts/tools are available.**

COLDSTAMPING OF WHEEL

The Machined wheels are stamped in a pin stamping machine on front side of the rim face

- ❖ Manufactures identity.
- ❖ Year of manufacture.
- ❖ Serial No.
- ❖ Batch Number

The wheels after marking are stacked cast wise.



❖ ***Machined Wheels***

ONLINE TESTING OF WHEELS (UT, MPT, BHN)



- ❖ **HARDNESS TEST**
- ❖ **LOCO : 300-341 BHN,**
- ❖ **BG CHG: 241-320 BHN**



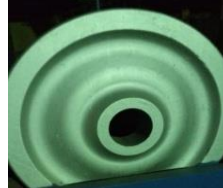
- ❖ **MAGNETIC PARTICLE TEST**
- ❖ **SOLUTION CONCENTRATION:**
0.2-0.4ml/100 ml.
- ❖ **LIGHT INTENSITY: 525mW/cm²**



- ❖ **ULTRASONIC TEST**
- ❖ **PROBE DIA: 24 mm**
- ❖ **PROBE FREQUENCY: 2 MHz**
- ❖ **RIM PROBES: R1, R2, R3**
- ❖ **TREAD PROBES: T1,T2,T3**

HIGH SPEED WHEELS

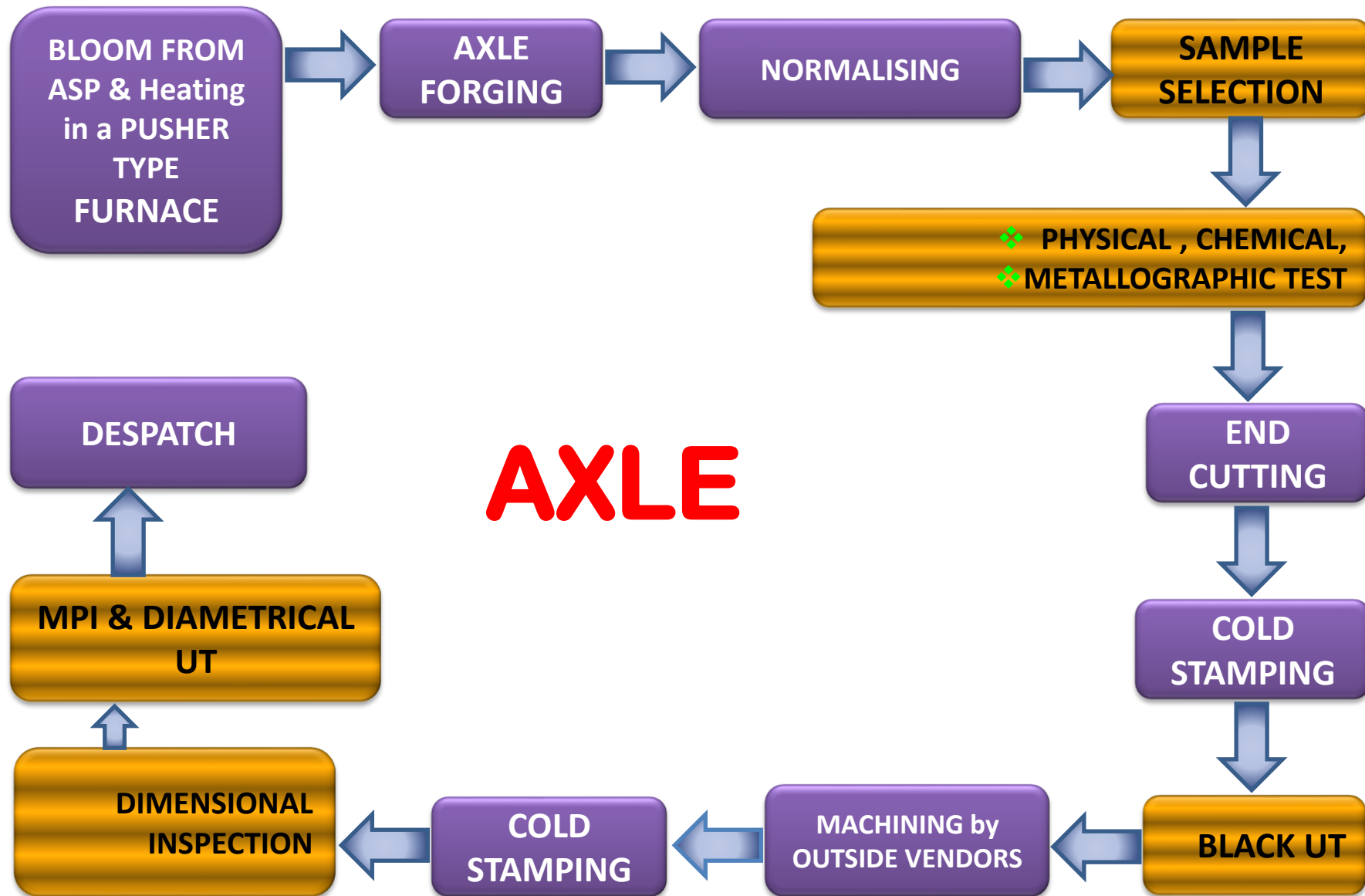
- **Wheels:**
- **LHB coach Wheel**
 - EMU coach wheel
 - **S-Profile Loco wheel**
 - **WAG-9 Loco wheel**
 - **WAP-5 Loco wheel**



WHEELS are ready for Dispatch...



MATERIAL FLOW DIAGRAM FOR AXLES



AXLE FORGE :7T HAMMER



Details	
Type of Hammer	Pneumatic (Air operated)
Capacity of Hammer	7 Ton (Reciprocating parts wt.)
Maximum Stroke	46 in.
Clear space between slides	34.5 in.
Total height from floor	20 ft. 9 in.
Weight of Anvil	105 Ton

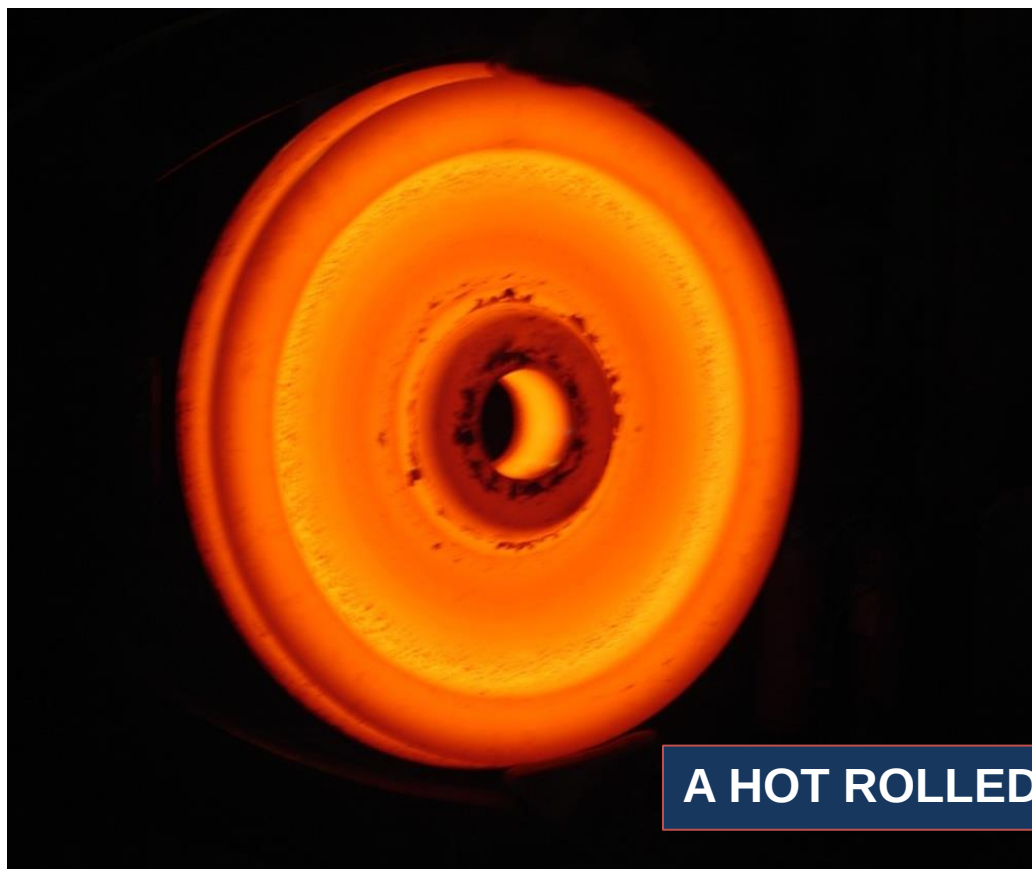
AXLE MANIPULATOR



FORGED AXLES



THANK YOU .



A HOT ROLLED WHEEL

Our Wheel: the symbol of growth and progress turns on the rails to go miles before.....