

# Bosio Industrial Furnaces Advanced Heat Treatment Solutions



Reliability at Work



# About us

**Bosio, where tradition and quality intertwine.**

At Bosio we have over 25 years of experience in the business of heat treatment solutions and technology. We offer advanced solutions, characterized by high engineering and technology that ensures functionality, safety and convenience of the products.

We have our own R&D team within the company, which is heavily involved in the research and development of products and processes. We develop innovative solutions for continuous improvement in order to meet customer specifications.

**From design and engineering to production and after-sales.**

Company's main activities include design, development and manufacture of:

- Custom heat treatment solutions (industrial furnaces and washing lines);
- Equipment for load handling (manipulators, conveyors and lifting systems);
- Equipment for tempering (hardening pools, spray ers);
- After-sales activities, service, and repairs and;
- Sales of insulation materials.

**Company network – part of Aichelin Group.**

Aichelin Group is a global market leader in the area of thermal and thermo-chemical treatment of metal components. Aichelin has a 150-year long tradition of offering worldwide services, expertise and products of the highest engineering quality. Since 2012 Bosio is one of the key partners in Aichelin's competence centre for industrial furnaces with and without protective gas for continuous and batch processing.

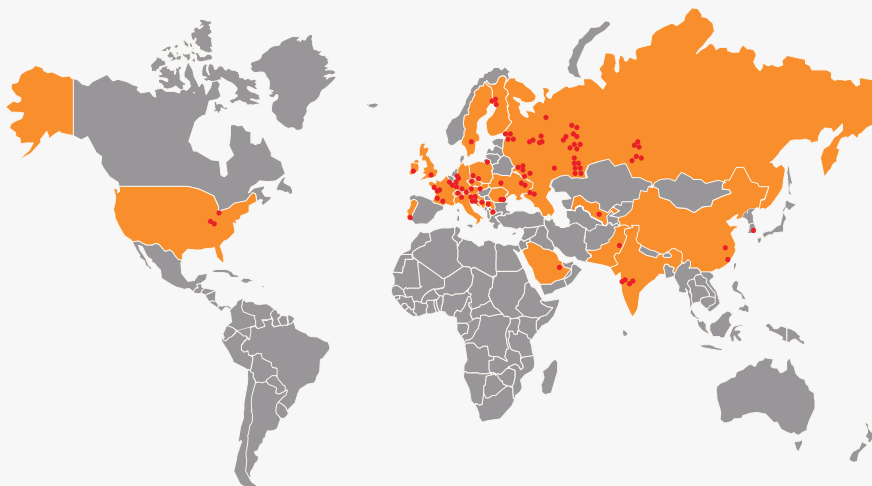
**High commitment to internationalism and flexibility.**

Headquartered in Slovenia, we are a company with a strong commitment to internationalism. Our objective is expanding and developing sales networks abroad, which result in the continuous search for new markets and constant growth.

**References with reputable brands.**

Bosio in collaboration with Aichelin has worldwide references, among them also Aubert & Duval, BMW, Daimler-Chrysler, Danfoss, Volvo, Alstom, Larsen & Toubro, OMZ Group, Thyssen Krupp, General Motors, Akers and others.

**“We aim to become the most successful global manufacturer of comprehensive heat treatment solutions.”**



Locations of larger furnaces worldwide.

## Bogie Hearth Furnaces



gas heated furnace - 51 m<sup>3</sup> - 1200°C



gas heated furnace - 90 m<sup>3</sup> - 1150°C

### Application purpose

Wide range of use

- Steel industry
- Reheating
- Foundries
- Aluminum industry
- Ceramic Industry

Various heat treatments

- Different annealing process
- Normalization
- Tempering
- Hardening
- Drying
- Ageing of aluminum



gas heated furnace - 55 m<sup>3</sup> - 450°C



gas heated furnaces - 47 m<sup>3</sup> - 1100°C



gas heated furnace - 50 m<sup>3</sup> - 1300°C



gas heated furnace - 70 m<sup>3</sup> - 1200°C



gas heated furnace - 70 m<sup>3</sup> - 1150°C



gas heated furnace - 55 m<sup>3</sup> - 450°C



gas heated furnaces – 23 m<sup>3</sup> – 1000°C



gas heated furnace - 32 m<sup>3</sup> - 1300°C



gas heated furnaces - 6 m<sup>3</sup> - 1100°C



electro heated furnace - 22 m<sup>3</sup> - 1200°C



gas heated furnaces with quench tank - 59 m<sup>3</sup> -



gas heated furnace - 16 m<sup>3</sup> - 1100°C



gas heated furnaces - 34 m<sup>3</sup> - 1200°C

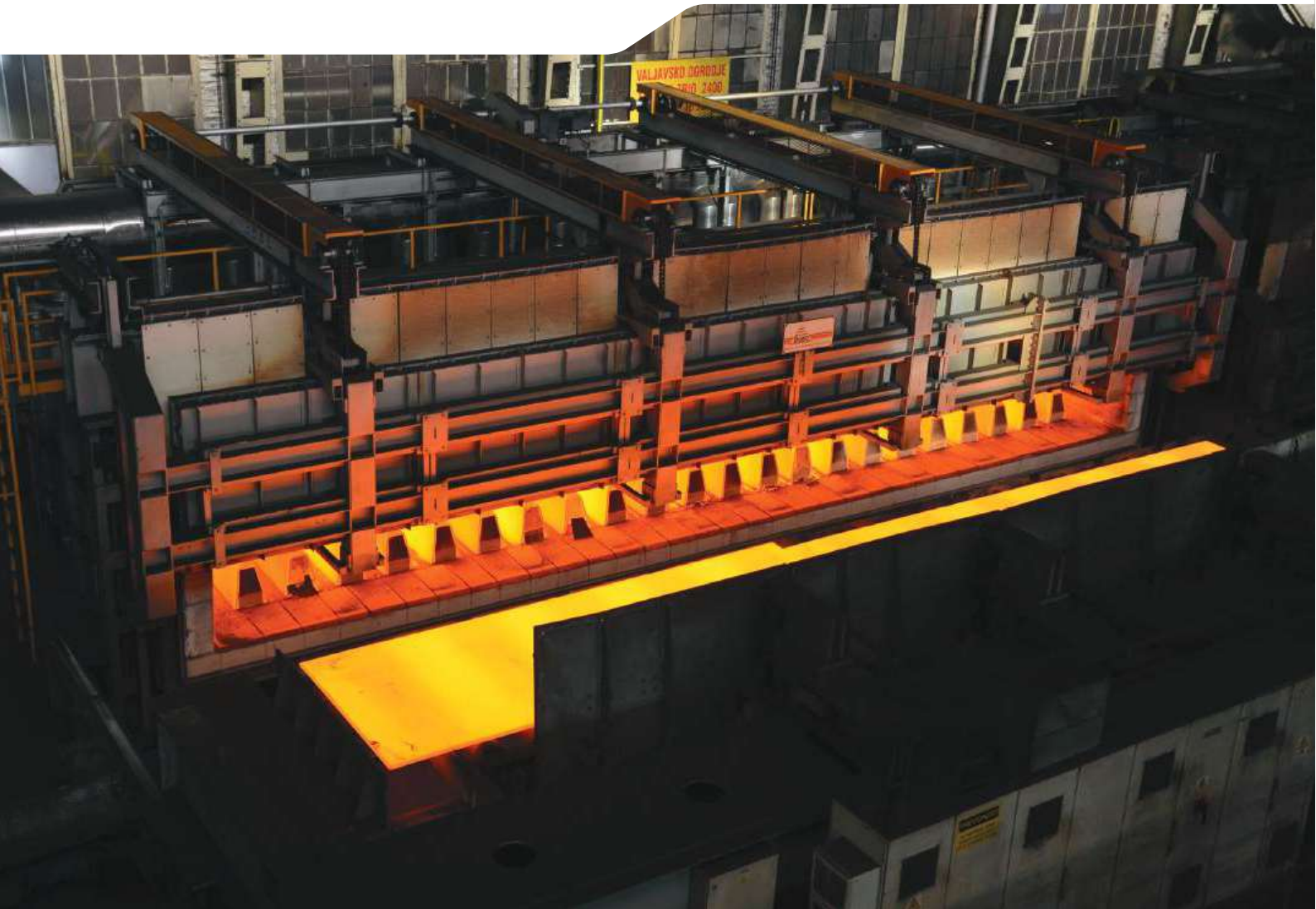


gas heated furnaces - 70 m<sup>3</sup> - 1150°C



gas heated furnace - 3 m<sup>3</sup> - 1100°C

## Chamber Furnaces



gas heated furnace - 15 m<sup>3</sup> - 1200°C



gas heated furnace - 8 m<sup>3</sup> - 1200°C

### Application purpose

Wide range of use

- Steel industry
- Reheating
- Foundries
- Aluminum industry
- Ceramic Industry

Various heat treatments

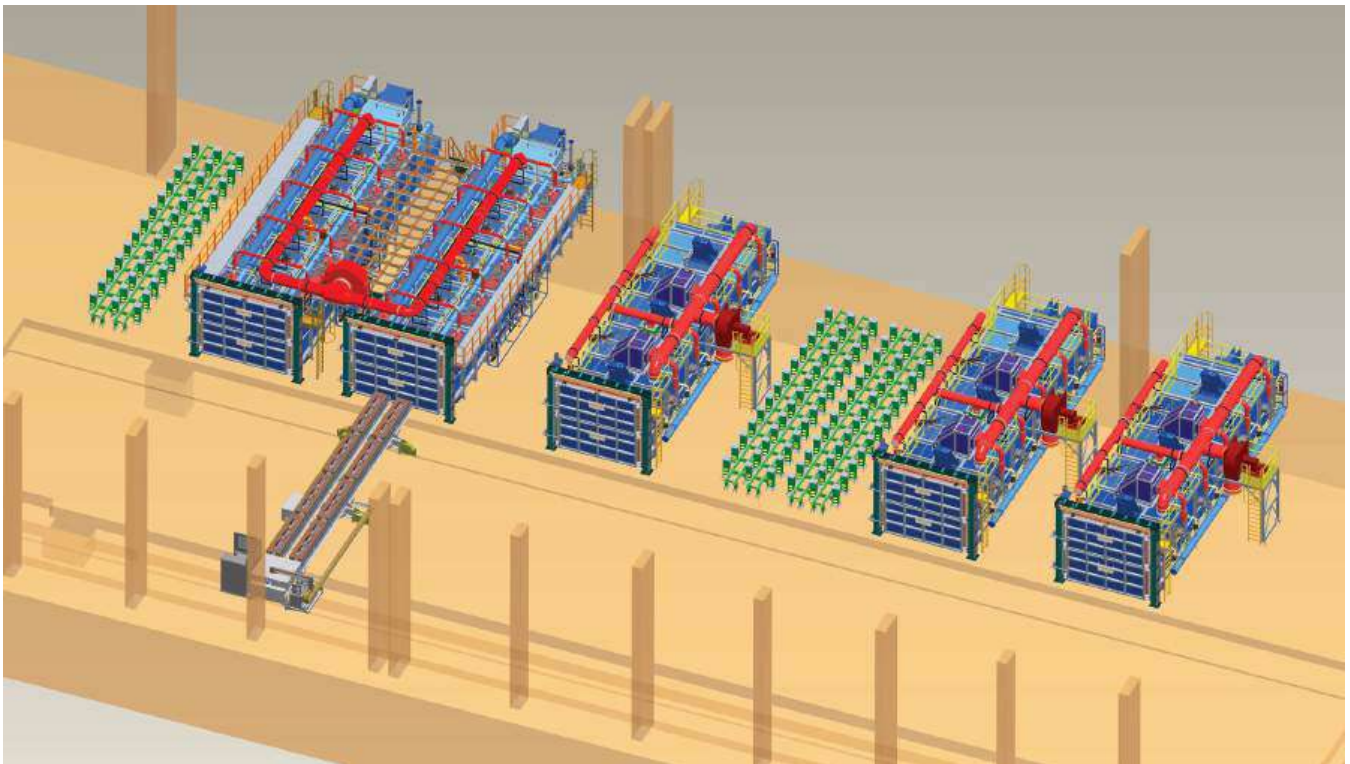
- Different annealing process
- Normalization
- Tempering
- Hardening
- Drying
- Ageing of aluminum



gas heated furnace - 6 m<sup>3</sup> - 1150°C



gas heated furnace - 6 m<sup>3</sup> - 1150°C



gas heated furnaces with manipulator 26 m<sup>3</sup> - 900°C



gas heated furnace - 6 m<sup>3</sup> - 1150°C



gas heated furnace - 17 m<sup>3</sup> - 1300°C

## Reheating Furnaces



gas heated furnace - 20 m<sup>3</sup> -1300°C



gas heated furnace - 23 m<sup>3</sup> - 1300°C

### Application purpose

- forging

### Various type

- Bogie hearth furnace
- Chamber furnace
- Walking hearth furnace
- Pusher type furnace
- Ring hearth furnace



gas heated furnace - 30m<sup>3</sup> - 1300°C



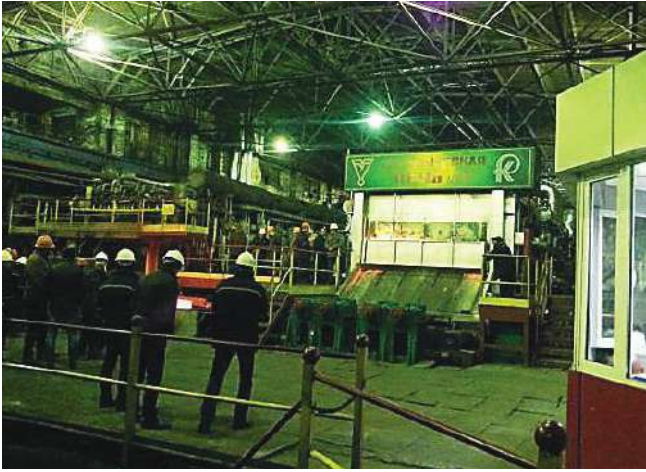
gas heated furnaces - 6 m<sup>3</sup> - 1300°C



gas heated furnace - 27 m<sup>3</sup> - 1300°C



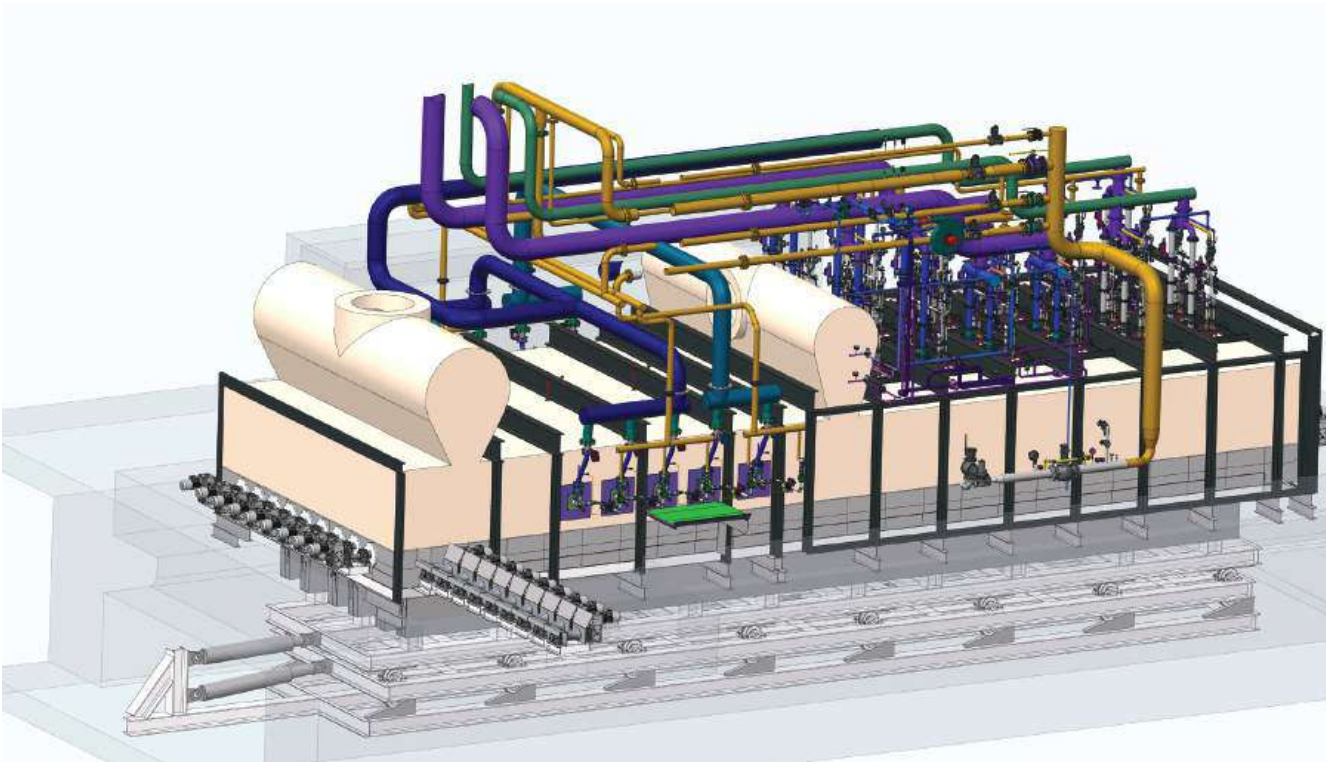
chamber with load



gas heated pushing reheating furnace - 1300°C



pushing of load



gas heated walking hearth reheating furnace - 1300°C

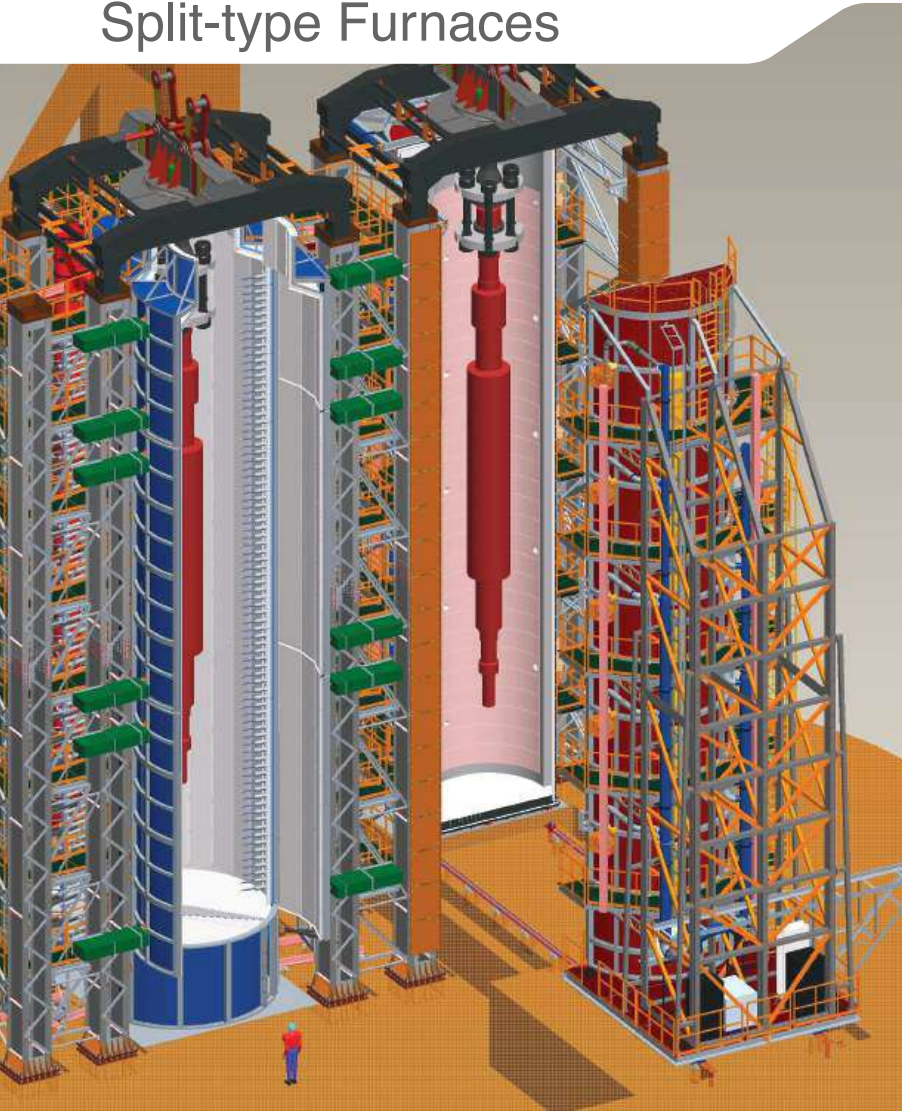


walking hearth reheating furnace



gas heated reheating furnace line with manipulator - 15 m<sup>3</sup> - 1.200°C

## Pit & Vertical Split-type Furnaces



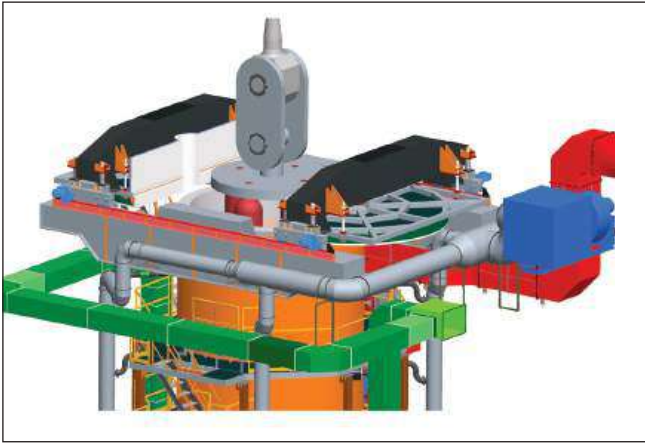
electro heated split type furnace with spray quench unit -  
170 m<sup>3</sup> - 1100°C



electro heated furnace with controlled atmosphere- 9 m<sup>3</sup> - 950°C

### Application purpose

- Batch height up to 20 meters
- Batch diameter up to 5 meters
- Batch weight up to 200 tons
- Various heat treatments:
  - Annealing
  - Normalization
  - Tempering
  - Hardening
  - Carburizing
  - Nitriding



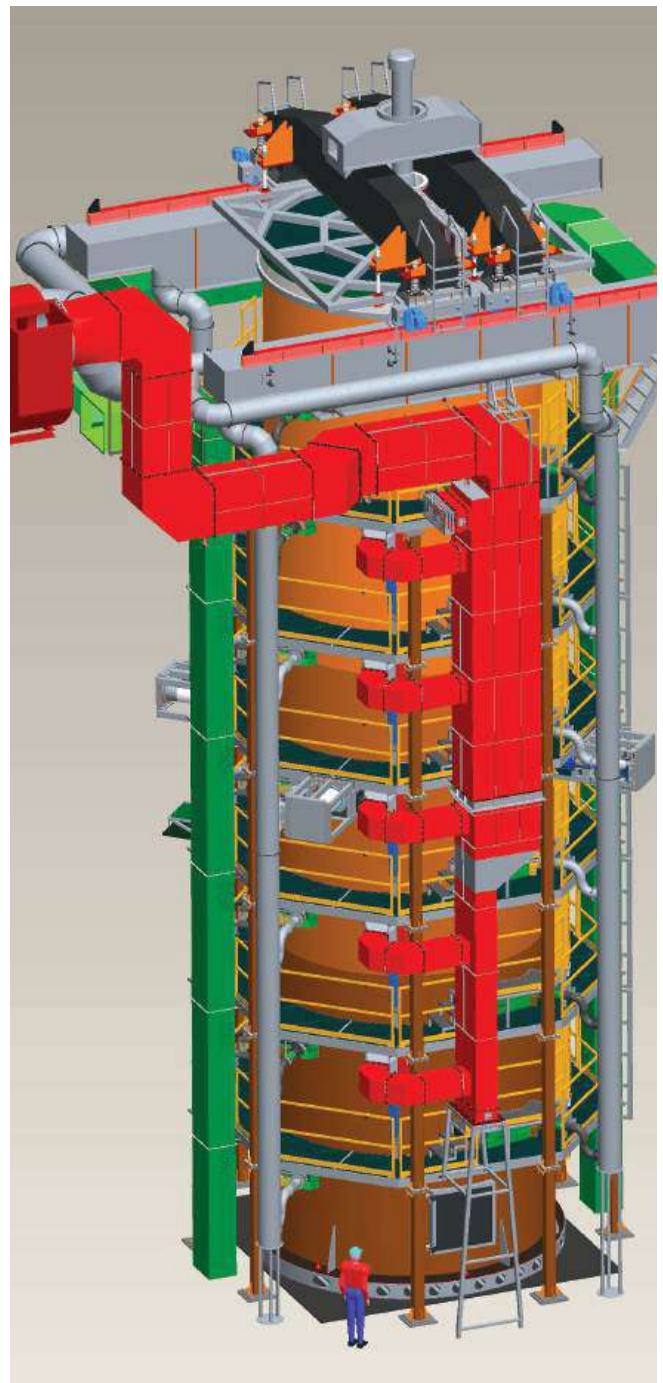
electro heated pit furnace - detail



electro heated pit furnace



electro heated pit furnace - 175 tons -  
22 m load - 1100°C



electro heated pit furnace - 175 tons - 22 m load - 1100°C



electro heated nitriding pit furnace - 2 m<sup>3</sup> - 600°C

## Protective Atmosphere



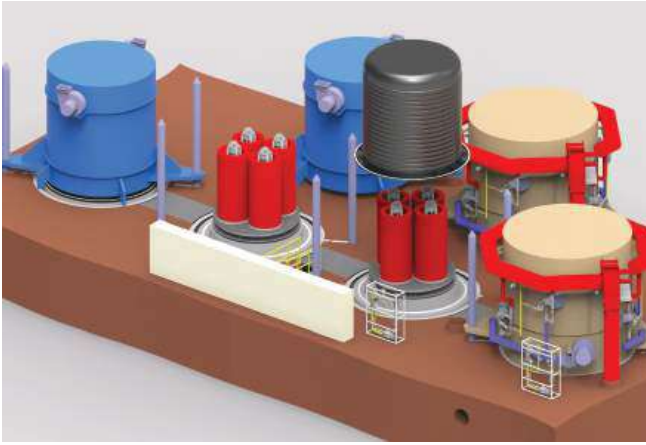
two chamber furnace 1500 kg – 950°C



two chamber furnace line

### Application purpose

- Protection against decarburisation
- Batch diameter up to 5 meters
- Batch weight up to 200 tons
- Various thermochemical process:
  - Bright annealing
  - Carburizing
  - Carbonitriding
  - Nitriding
  - Nitrocarburizing



gas heated bell furnaces with cooling chambers



gas heated furnace - N<sub>2</sub>/natural gas atmosphere - 22 m<sup>3</sup> - 950°C



electro heated chamber carburizing furnace - 1000°C



electro heated chamber furnace for annealing in protective atmosphere with fast cooling



electro heated furnaces with controlled atmosphere (N<sub>2</sub>, H<sub>2</sub>, NH<sub>3</sub>, CO<sub>2</sub>) & rapid cooling- 3 m<sup>3</sup> - 650°C



electro heated furnace with controlled atmosphere- 9 m<sup>3</sup> - 950°C

## Continuous Furnaces



gas heated step chain conveyor furnace - 950°C



step chain conveyor

### Application purpose

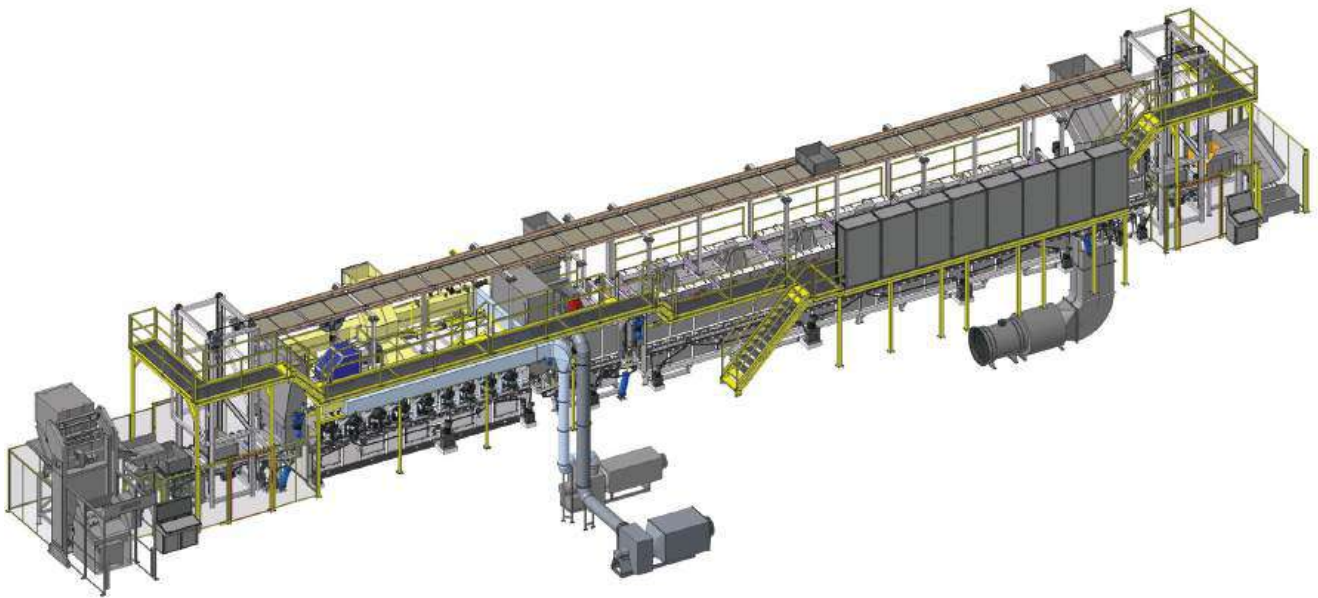
- Various type
- Step chain conveyor furnace
  - Kiln car conveyor furnace
  - Conveyor belt furnace
  - Roller furnace



automatic continuous roller-hearth line



chamber with rollers



roller furnace with isothermal annealing



continuous cast link belt furnace – 22 m – 600°C



gas heated kiln car conveyor furnace - 600°C

## Aluminum Industry



gas heated aging oven - 15 tons - 250°C



gas heated aging oven - 12 tons - 250°C

### Application purpose

- Various heat treatments
  - Ageing
  - Quenching
  - Homogenization
  - Melting
  - Holding



electro heated bath holding furnaces - 1000 kg -



gas heated tilting melting furnace - 1000 kg - 800°C



gas heated drop bottom furnace - 4 m<sup>3</sup> - 600°C



gas heated furnace - 5 tons - 550°C



gas heated furnace & cooling chamber - 20 m<sup>3</sup> 450°C

## Ceramic Industry



Ceramic industry



technical ceramics

### Application purpose

- Various heat treatments
- Sintering
- Drying
- Firing
- Baking



gas heated bogie hearth furnace



gas heated bogie hearth furnace - 5 m<sup>3</sup> - 1300°C



gas heated kiln car conveyor furnace - 28 m - 250°C



resin bonded grinding wheels



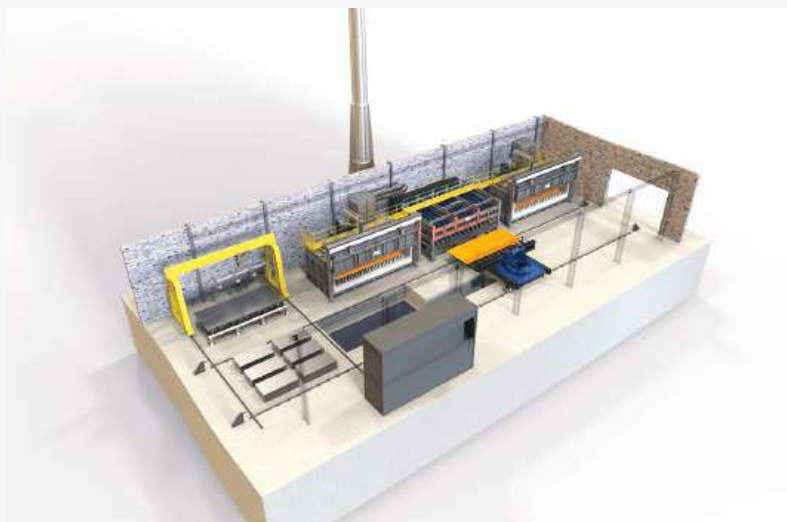
electro heated chamber dryers - 8 m<sup>3</sup> - 250°C



## Manipulators



furnace line with quenching tanks and manipulator



heat treatment line for thermal processing of sheet plates with fully automatic system and fast cooling by air or water

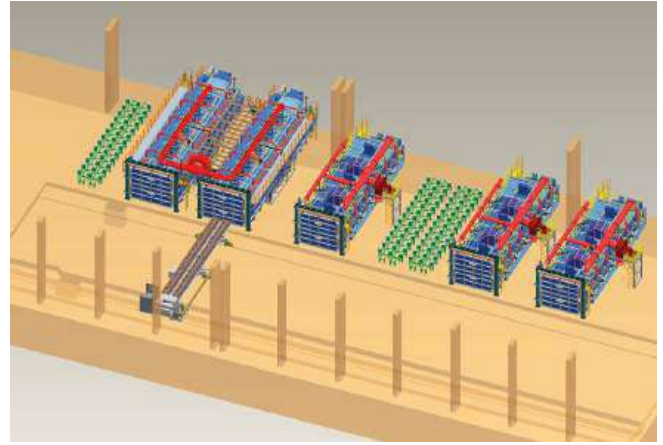
### Application purpose

Batch transport from furnace to quenching unit

- Steel sheets
- Baskets
- Trays
- Transportation of hot or cold batch
- Batch weight up to 60 tons
- Batch dimension 13 x 3 x 2 meters



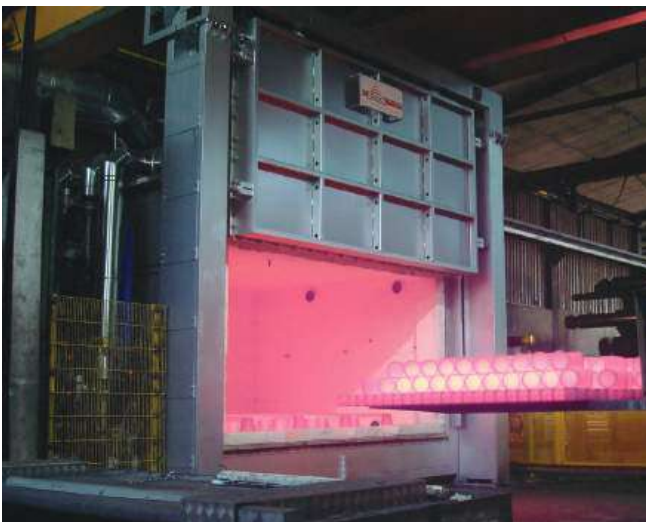
manipulator XYZ - 13 m - 40 tons



gas heated furnaces with manipulator 26 m<sup>3</sup>- 900°C



gas heated furnace line with manipulator



unloading of chamber furnace with manipulator



manipulator XYZ - 13 m - 40 tons

## Quench Tanks & Sprayer Units



quench tanks with lifting table - water/polymer - 100 m<sup>3</sup>



lifting table & submersible agitators

### Application purpose

- Steel
- Nonferrous materials
- Volume up to 200 m<sup>3</sup>
- Batch weight up to 200 tons

### Quenching media

- water
- oil
- polymer



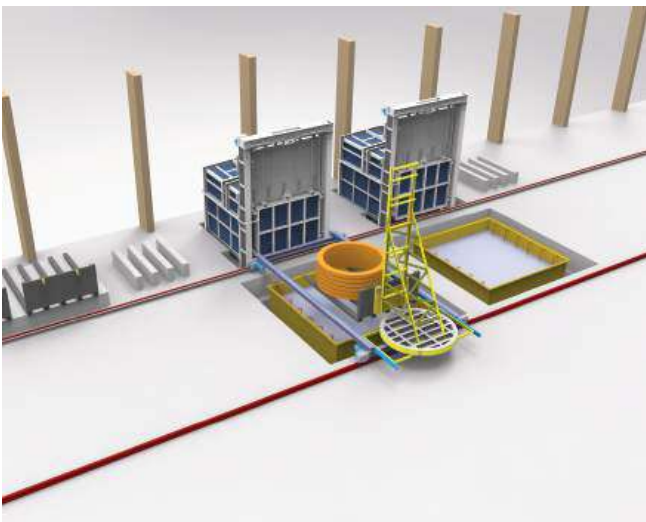
furnace with quench tank



furnace with quench tank



sprayer unit - 22 m height



furnace with quench tank & manipulator



quench tanks with lifting table - water/oil - 100 m<sup>3</sup>

## Washing Machines



chamber washing machine with transport system



washing chamber

### Application purpose

- Washing and degreasing of steel parts
- After machining
- Before and after heat treatment
- Before surface protection process (painting, galvanizing, ...)
- For maintenance purpose
- Nonferrous materials
- Batch dimensions upon customer needs
- Batch weight upon customer needs
- Washing media
- Water with alkaline or organic neutral cleaners



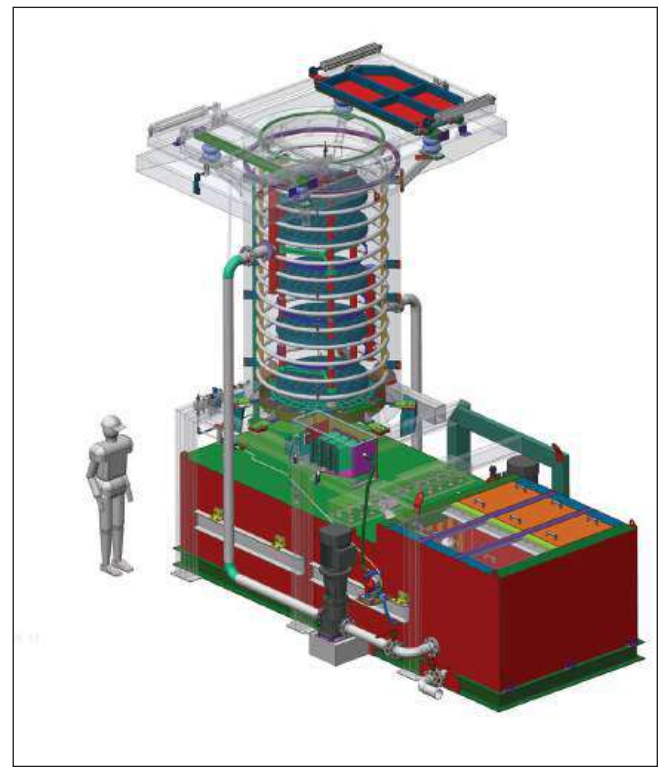
vacuum washing machine with rotating chamber



chamber washing machine



vacuum washing machine with rotating chamber



vertical washing machine

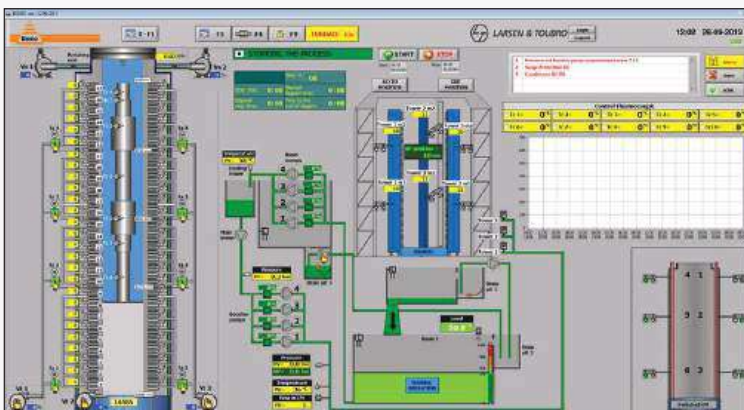
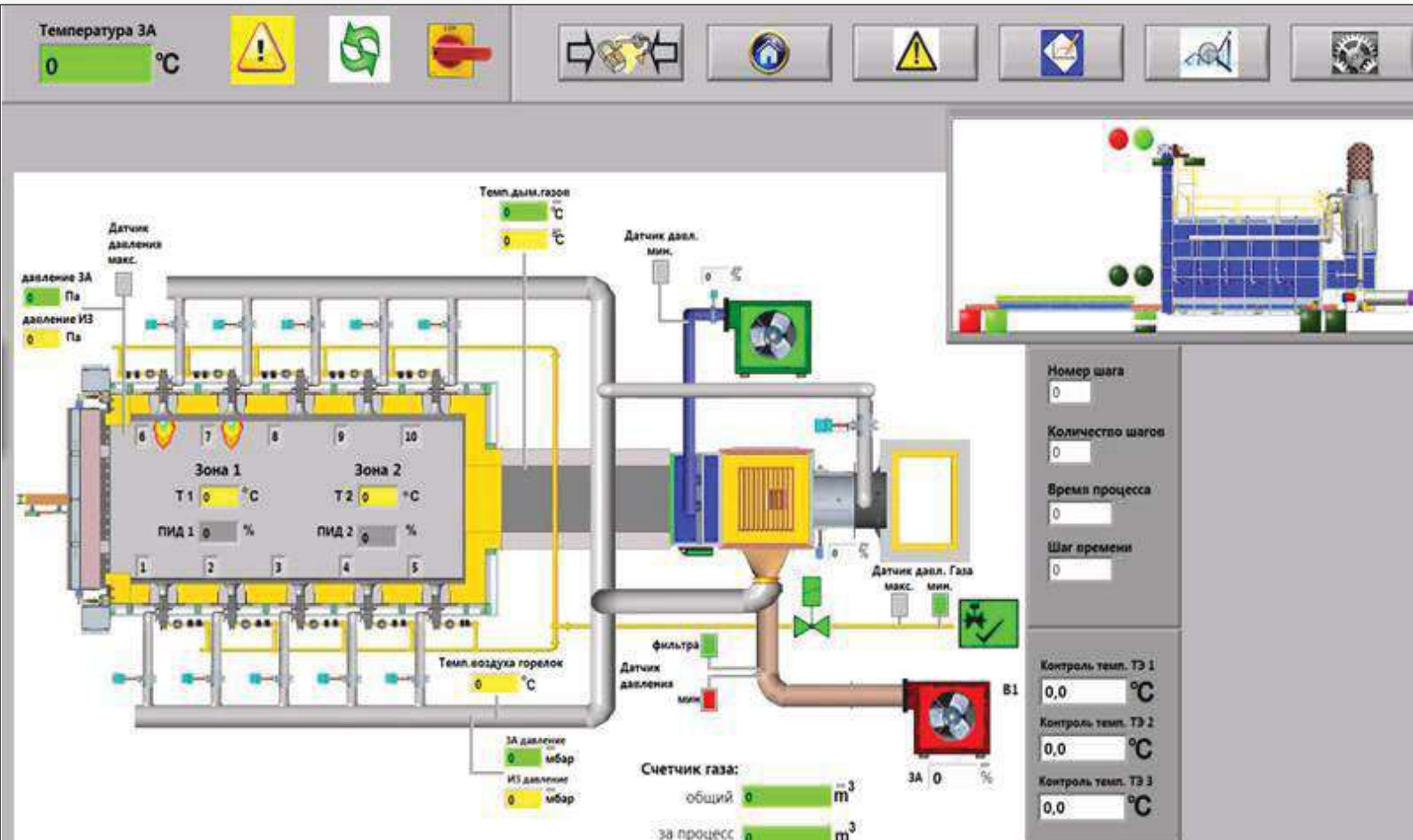


drum washing machine



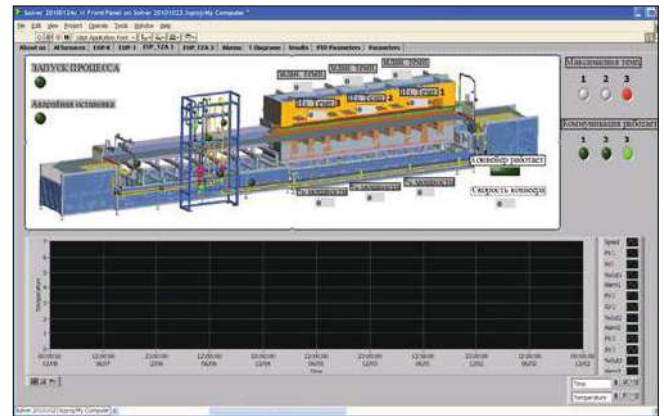
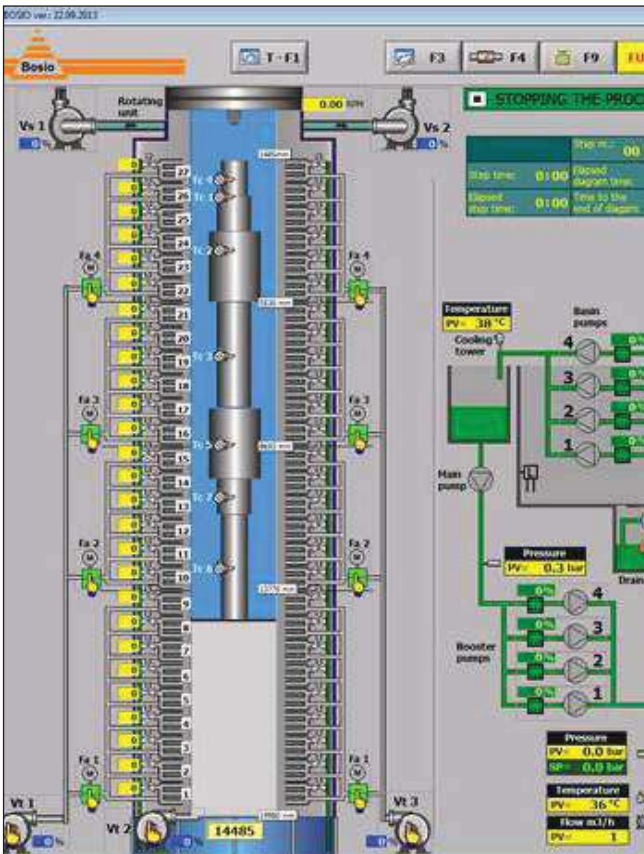
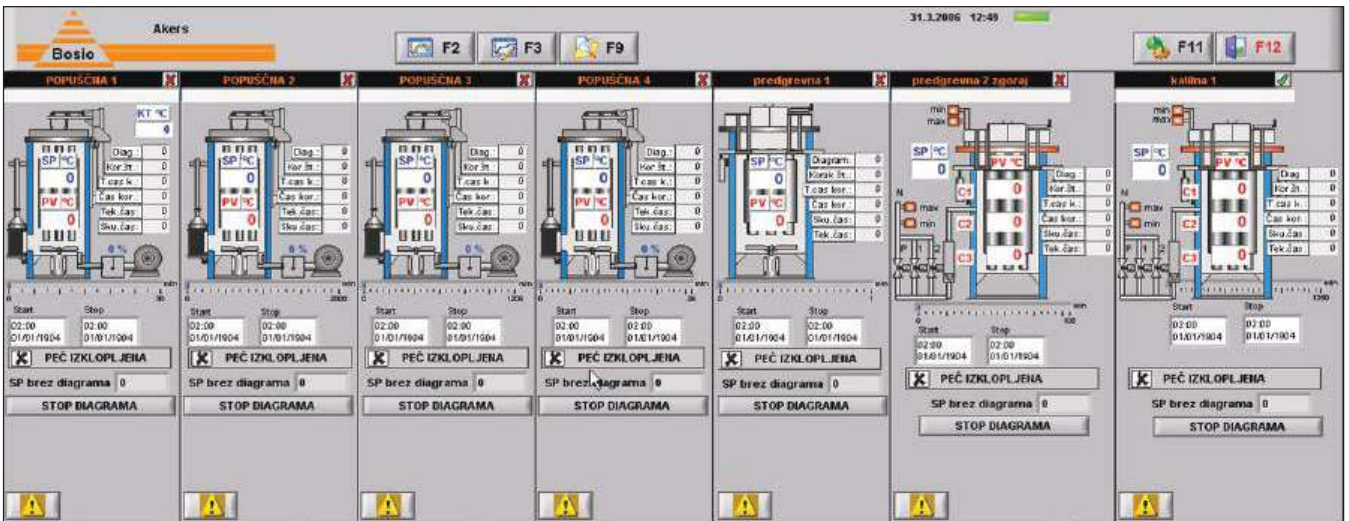
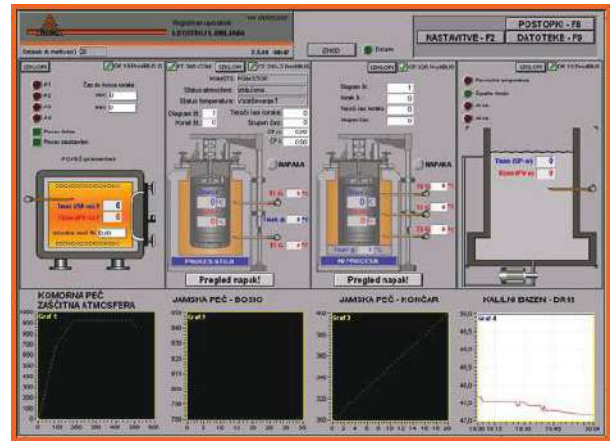
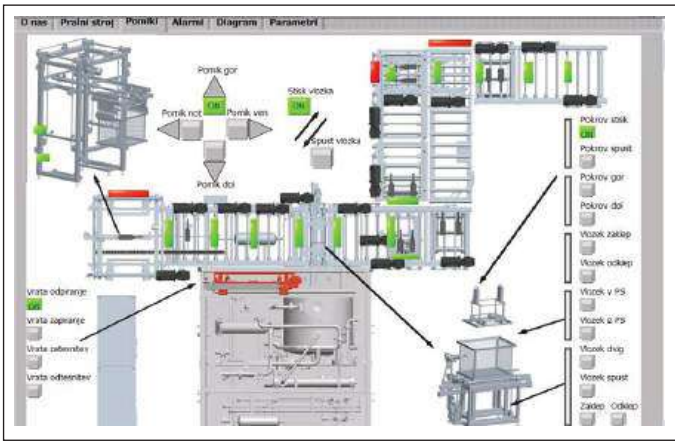
conveyor belt washing machine

## Process Control Software



### Application purpose

- Process supervision
- Saving of important process data
- Quick look at status of all important process values
- Alarm detection
- Black box system
- Easy to manage automatically or manually all components on the equipment and process



## Reconstruction & Modernization



reheating gas heated furnace for ingots



reconstruction of electro heated furnace - before



reconstruction of electro heated furnace - after

### Application purpose

- Service of Bosio equipment
- Service of other producers equipment
- Modernization of old equipment
  - Energy Efficiency
  - Supervision of processes
  - Increase equipment safety
- Reduce downtime in production
- Revamping of insulation

Aichelin

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