

Performance Optimizations and Quality Improvements for Belt Furnaces

Chute optimization, belt tension and dumping height monitoring,
and improved inspection glasses



REBUILDING AND MODERNIZATION

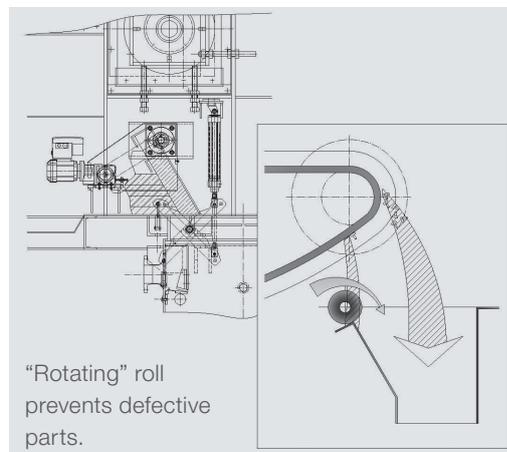
Performance optimization + process reliability

CHUTE OPTIMIZATION

- The heat treatment horror scenario: **Soft, improperly hardened parts.**
- The critical point of parts transport through the furnace plant: the chute between the belt furnace and the quenching bath.
- The temperature of the parts must not fall below a critical level; parts should be quenched e.g. in oil.
- Parts “stuck” on the chute edge will cool down.
- This means: **Unhardened parts mixing with good parts!**

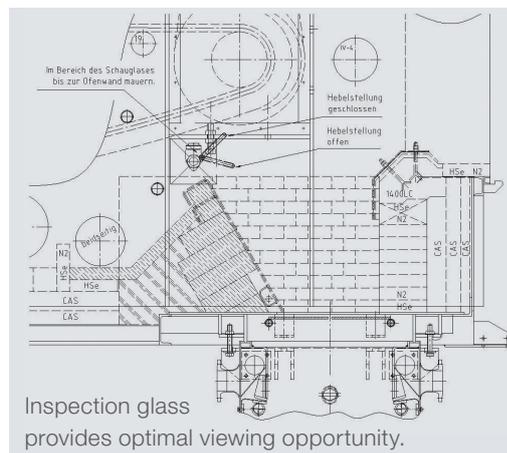
THE AICHELIN SOLUTION: ROTATING ROLL IN THE CHUTE

- Replacement of the rigid edge of the chute below the belt deflection with a **rotating roll.**
- The parts are pushed in the direction of the chute and no longer get caught on the edge.
- The roll is driven by a gear motor mounted on the furnace casing.
- The speed is set by a frequency converter.



IMPROVED INSPECTION GLASS FOR MONITORING THE CHUTE

- **New inspection glass installed** on the left and right side of the chute.
 - Easier to recognize stuck parts.
 - Parts are pushed from the chute in the collection area below the belt furnace.



YOUR ADVANTAGES

- Improvement of process and quality.
- Reduction of soft parts and mixing of defective parts with good parts.
- Parts can be removed with a rod.
- Overfilling easy to detect in the return side area of the belt.

YOUR RELIABLE PARTNER

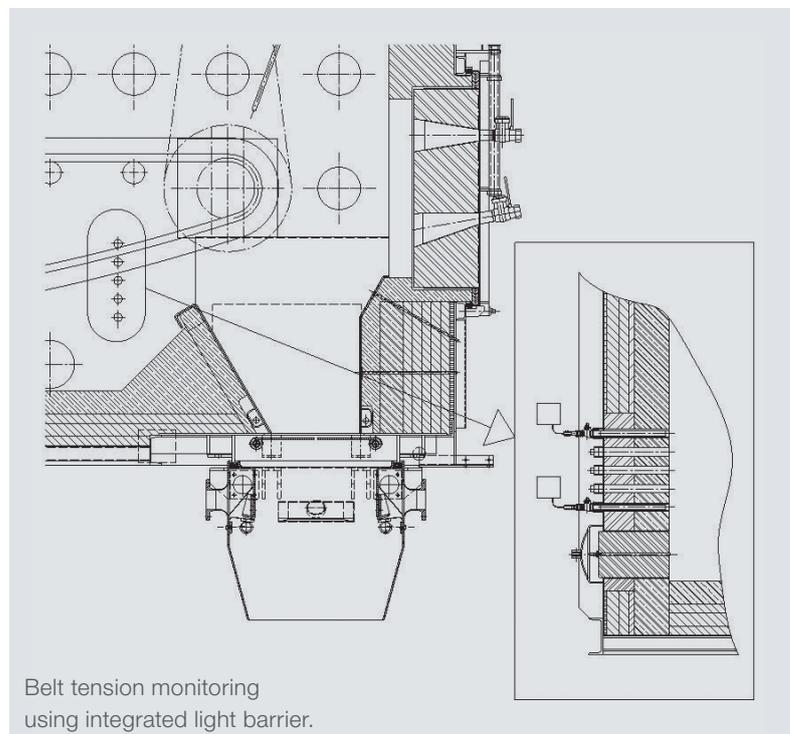
- This AICHELIN product (rotating roll) is patent protected and optimally adapted to your specific conveyor furnace plant.
- Perfect integration into your AICHELIN conveyor furnace plant by the original manufacturer.
- Competent engineering partner
- Reliable supplier of components
- High level of expertise in plant modernization
- Experienced partner

OPTIMIZED BELT TENSION MONITORING

- **Damage of the furnace belt or disruption of the transport of parts:**
 - Belt too taut: high tensile forces and premature destruction of the belt.
 - Belt sag too great: Damage to the belt and drive system, problems transporting parts.
- Considerable repair and downtime expenses result from damage to the cast plate conveyors.
- Correct belt tension extends the conveyor belt lifetime.

THE AICHELIN SOLUTION: AUTOMATIC BELT TENSION DETECTION

- Installation of a **query (light barrier system)** on the return side of the transport belt below the tail pulley.
- Detection of belt sag.
- Message sent to the controller when the sag exceeds a limit value or the tension is too high.



YOUR ADVANTAGES

- Reduction of repair and downtime expenses.
- Optimal and improved parts transport.

YOUR RELIABLE PARTNER

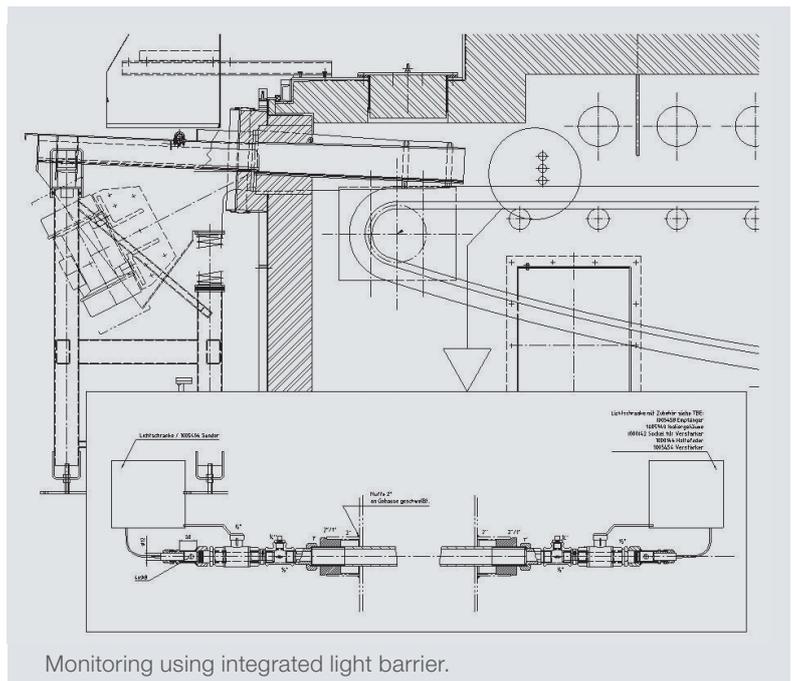
- Only AICHELIN offers this solution and provides a perfect adaptation to your existing AICHELIN conveyor furnace plant.
- Competent engineering partner
- Reliable supplier of components
- High level of expertise in plant modernization
- Experienced partner

DUMPING HEIGHT MONITORING

- **Uneven heating of parts** as a result of irregularities loading the belt furnace.
- Uneven hardening distribution possible.
- Soft, improperly hardened parts in extreme cases.

THE AICHELIN SOLUTION: AUTOMATIC MONITORING USING LIGHT BARRIER

- Installation of a **light barrier system** after the loading chute in the inlet area directly over the belt furnace.
- The respective light barrier reports impending overloads.
- Varying heights as well as part-dependent (recipe-controlled) activation possible by request.



YOUR ADVANTAGES

- Improvement of process and quality.
- Reduction of ejection.
- Automatic recognition of clustering of the heat treatment goods; message sent to the operating company.
- Discharge of critical parts after heat treatment.

YOUR RELIABLE PARTNER

- Perfect integration into your AICHELIN belt furnace plant including control adaptation.
- Competent engineering partner
- Reliable supplier of components
- High level of expertise in plant modernization
- Experienced partner