

Conversion from oil to LPG at Ovako Boxholm

Gasens roll i industrins energiomställning
Enerigas Sverige, Konferens 2018-01-30



Ovako is structured around three complementary production flows, each with its own specific production method and product focus

Hofors-Hällefors



- EAF 100 ton, 100% Scrap
- ASE/SKF Ladle furnace, Vacuum degassing, Argon injection
- Ingot casting (4,2 ton) , Up-hill casting, Argon shroud
- Long term investment plan launched

Primary & Secondary metallurgy
Casting

- Round bars Ø 11 – 230 mm
- Hot rolled rings Ø 150 – 4000 mm
- Forged Bars & Rings
- Seamless tubes Ø 25 – 245 mm
- Bright Bars (peeled bars, ground bars, drawn bars, pre-components)

Further Processed Products

- Bearings
- Diesel injection systems
- Mining tools
- Power train
- Hydraulics

Example Applications



Example customers

Imatra



- EAF 75 ton, 100% Scrap
- Ladle furnace, Argon injection, Vacuum degassing , CaSi addition possible.
- Continuous casting, 2 strands, 370 x 310 mm Bloom. Magnetic stirring.

- Round bars Ø 25 – 200 mm
- Square bars 30 – 150 mm

- Forging applications (Light & Heavy Vehicles)
- Fasteners
- Mining tools
- High strength structural components
- Bearings



Smedjebacken-Boxholm



- EAF 125 ton, 100% Scrap
- Ladle furnace, Argon injection, CaSi always added
- Continuous casting, 6 strands, **165 & 200 mm sq Billet. 150 & 190 round billets.**
- Magnetic Stirring in CCM
- Hydrogen annealing

- Round bars Ø 14 – 120 mm.
- Flat bars 15 – 250 mm
- Special profiles 15 – 300 mm
- Hard-chrome plated Bars & Tubes

- Wear parts
- Flat spring
- Clips and plates for railway
- Tension bars
- Steering racks



Our attribute brands



M-Steel

BQ-Steel

IQ-Steel

SZ-Steel

WR-Steel



Machinability



Bearing Quality Steel



Isotropic Quality Steel



Sub-Zero Steel



Wear Resistant Steel

OVAKO

Our heating processes

High temperatur process $>1200^{\circ}\text{C}$

- Electricity
- Oxygen
- Oil
- LNG
- LPG



Low temperatur process $300^{\circ}\text{C}-500^{\circ}\text{C}$

- Electricity



Ovako Bar AB

Smedjebacken:

- Steel plant
- Medium section bar mill
- Heat treatment
- Finishing operations

Daily billet train



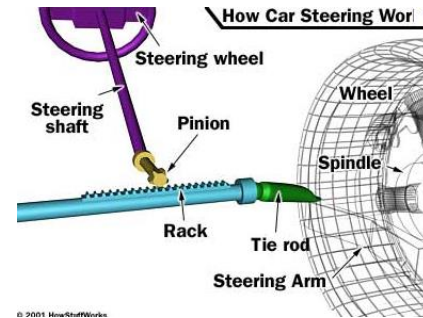
Boxholm:

- Fine section bar mill
- Medium section mill (profiles)
- Heat treatment
- Finishing operations
- Cutting / machining centre

Scrap return from southern Sweden

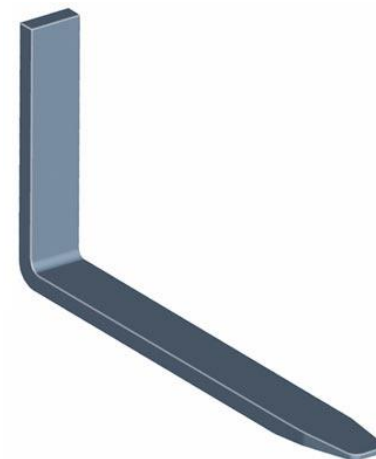
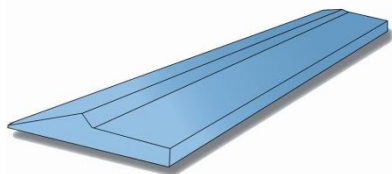


Micro alloyed



OVAKO

Boron grades



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Spring steel (Cr och Si)



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Investment: Conversion fine section mill (BXF) reheating furnace, Boxholm



OVAKO

Investment: Conversion fine section mill (BXF) reheating furnace, Boxholm

Summary

- Project targets were achieved
- LPG plant builder and owner E.ON.
- Challenging time schedule were met thanks to excellent cooperation.

Rationale for investment

- Emissions of pollutions to be reduced.
CO₂ emissions reduced with 16%, dust reduction of 54%
- Energy cost reduction
- Gives a future possibility to convert to LPG in the medium mill furnace in Boxholm

Technical solution

- Rebuilt of existing oil based burners to LPG
- Implementation of an LPG storage and distribution plant
- Exchange existing oil based burner to LPG in steam boiler
- LPG supply by trucks initially. Future possibility with add-on investment to supply by train.
- Pipes prepared to fit also LNG



Project timeline

Investment Conversion fine section mill (BXF) reheating furnace, Boxholm

	2017									2018	
Activity	Q1	Q2	w 29	w 30	w.31	w.32	w.33	Q3	Q4	w.1	w.2
Board Decision	X										
Supplier negotiation/ordering LPG-plant supplier incl.LOI											
Supplier negotiation/ordering Furnace burners rebuilt supplier											
Supplier negotiation/ordering civil work											
Authority permission application & negotitation (resp. LPG supplier)	6 weeks									Fall back if permission delayed	
Engineering											
Civil work											
LPG plant installation											
Furnace burners rebuilt			Summer shut down						X-mas & N.Y. Shudt.		
Commisioning											
Start-up											

Sustainability

Today

- Steel grade properties
- Over 90% recycled material
- CO₂ footprint from cradle to gate of our bar steel products is approximately 80% lower than the world average.
- "Green" electricity
- Well managed processes
- Transportation 40% of our tonnage by train, 60% by trucks (for southern Europe – intermodula)

Goal by end of 2020

- 30 % reduction of CO₂ footprint vs 2015
- 90 % of restproducts to re-use or recycle

Future

For heating processes apply "new developed technology", for example Hydrogen out of water.



Thank you for your attention!

