Major References

• **Temper Rolling with Cold Tandem Mill, SSAB / Borlänge, Sweden, 2014**
  extension of the sheet production process by temper rolling process for extremely hard material
  - extension of Level 2 model computer for temper rolling technology
  - extension of technological control system
  - implementation of operation functions (HMI, pulpit)

• **Level 2 Upgrade for Plate Mill ThyssenKrupp / Duisburg, Germany Deutschland, 2013**
  Upgrade of existing Level 2 System from DEC Alpha Computer to Windows based environment
  - conversion of application program from VMS to Windows System
  - transfer of source codes
  - new implementation of data management
  - new implementation of adaptation
  - new implementation of time management for multiple plate rolling
Major References

• Automation System for New Plate Mill voestalpine / Austria, 2013/14
  - entire automation (automatic thickness control, bending control, CVC control, roll change control, hydraulic spindle support, hydraulic side guides etc.)
  - rigging of entire mill stand

• Flatness Control System for Cold Tandem Mill Salzgitter / Deutschland, 2013/14
  retrofit of new flatness control system for mill stand no. 1 of 5 stand tandem mill
  - hardware
  - software,
  - commissioning
  - technological optimisation
Major References

• **Plate Mill Ruukki / Finnland, 2013**
  upgrade of visualisation system
  - Intouch

• **Push Pull Pickling Line voestalpine / Austria, 2013**
  automation for
  - new loop storage system for continuous operation with stitching machine
  - expansion of regeneration system

• **Plate Mill for Stainless Steel, Böhler Bleche / Austria, 2013**
  Automation for
  - technological control system of the rolling mill (automatic thickness control, CVC control etc.)
  - roll change control
  - Level 2 system for entire plant
Major References

- **Inspection Line No. 6 of voestalpine / Austria, 2012/13**
  as a sub-contractor of Andritz Sundwig
  - software for entire level 1 system (PCS7, WinCC, FM458, Safety PLC)
  - commissioning

- **Curling Oven for voestalpine / Austria, 2012/13**
  as a sub-contractor of Siemens Austria
  - software on PCS7
  - commissioning

- **Plate Mill ThyssenKrupp, Duisburg / Deutschland, 2012**
  implementation of new three-lane thickness gauge and integration into superimposed production planning system
  - Level 1 system
  - Level 2 system
Major References

- Flatness Control for Skin Pass Mill voestalpine, Austria 2012
  - new interface to existing BFI flatness measurement roll (SIKO,…)
  - application software for flatness control on Simatic TDC
  - WinCC HMI

- Plate Mill voestalpine / Austria, 2012
  hardware-Upgrade of technological control system from VANTAGE to X-Pact Embedded
  - rolling mill
  - ultra fast cooling system

- Hot Strip Mill Shagang / China, 2012
  Quality Improvement Package for Wedge and Crown performance for
  - software for Level 1 and Level 2 at roughing mill
  - software for Level 1 and Level 2 at finishing mill
Major References

• Aluminium Cold Rolling Mill AMAG / Austria, 2011
  New Thickness Control:
  - Mass Flow Control
  - Feed Forward with Adaptation via Cross Correlation
  - Roll Eccentricity Control

• Plate Mill EVRAZ Vitkovice / Czech Republic, 2011
  - upgrade of Level 2 HMI
  - Level 2 software package for quality improvement:
    - dynamic strategy-tree for rolling strategy
    - ski-compensation
    - dynamic compensation of over thickness of head and tail

• Hot Strip Mill Ruukki / Finland, 2011
  service-contract for entire automation
  - Level 2
  - Technological control system
  - Level 1
Major References

• **Cold Rolling Tandem Mill Salzgitter / Germany, 2011:**
  - Automation for semi-continuous cold tandem mill
    - Level1 PLCs
    - Technological control systems
    - Level 2 Systems
    - coil movement
    - engineer & operator training

• **Plate Mill Vitkovice / Czech Republic 2011:**
  - Study “Analysis of technological problems”
  - Engineers Training for automations-systems and rolling process

• **Hot Rolling Mill Shagang / China, 2011**
  - service contract for entire automation
    - Level 2
    - TCS
    - Level 1
Major References

• **Cold Rolling Tandem Mill Salzgitter / Germany, 2010**
  extension of service contract for entire automation for
  - Technological control systems
  - Level 2
  - Simatic PLCs

• **Inline-Temper Mill Push Pull Pickling Line voestalpine / Austria, 2010**
  new automatic thickness control for pickled hot strip
  - mass flow control
  - feed forward with adaptation via cross correlation
  - monitor control

• **Plate Mill Thyssen Krupp Duisburg / Germany, 2010**
  Implementation of fix pass schedule strategy for
  tube plates
Major References

- **Annealing Furnace Thyssen Krupp Rasselstein / Germany, 2010**
  - increase of process speed
  - optimisation of tension control on Simatic S7 system

- **Hot Strip Mill Essar / Indien 2010:**
  Level 1 automation for downcoiler
  - as subcontractor of **SMS-Siemag/Germany**
  - software
  - commissioning

- **Hot Strip Mill Colaku / Türkei 2009**
  Crop shear
  - as subcontractor of **SMS-Siemag/Germany**
  - software
  - commissioning
Major References

• **Pickling Tandem Mill MMK / Russia 2008**
  
  entire Level 1 automation
  
  - as subcontractor of *SMS-Siemag/Germany*
  
  - Engineering and commissioning (2011)

• **Plate Mill voestalpine / Austria, 2008**
  
  automation for new roller table and high pressure descaler
  
  - software & commissioning (2009)

• **Pickling Tandem Mill Sparrows Point / USA, 2008**
  
  implementation of Dummy stand rolling function for tin plate
  
  - technological control system
  
  - level 2 system