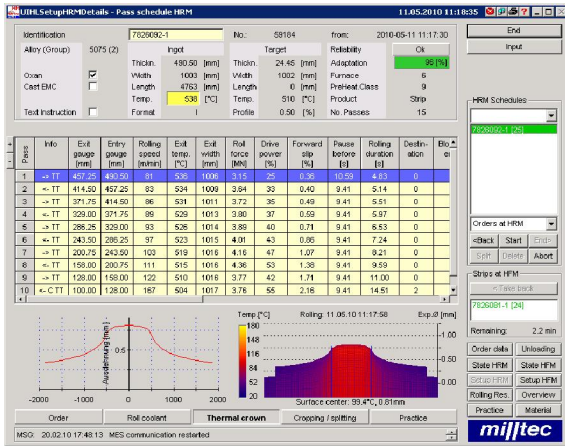


Model based Level 2 systems for hot rolling

milltec is specialised in the technological pre-setting and control of hot rolling mills based on self-learning process models.



The hot rolling process is by nature characterised by a large number of dynamic influences like time delays, product and roll temperatures and more. Furthermore, the hot rolling process is decisive for the recovery and quality of the whole production chain.

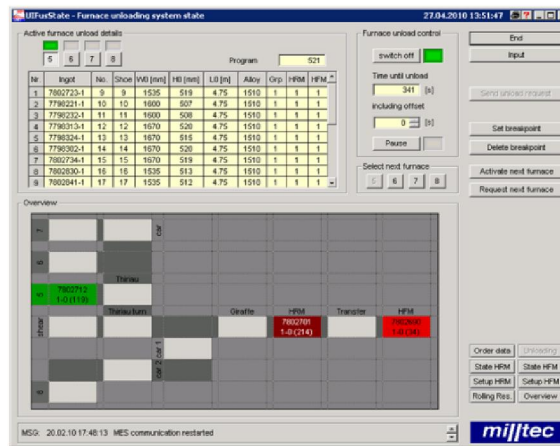
To reach the highest standards of productivity and product quality with respect to metallurgical and geometrical properties, model based process control is necessary.

Automatic closed loop adaptation in combination with state of the art process models embedded in customised strategy modules ensure precise prediction of all relevant process variables and thus precise and stable control of the process.

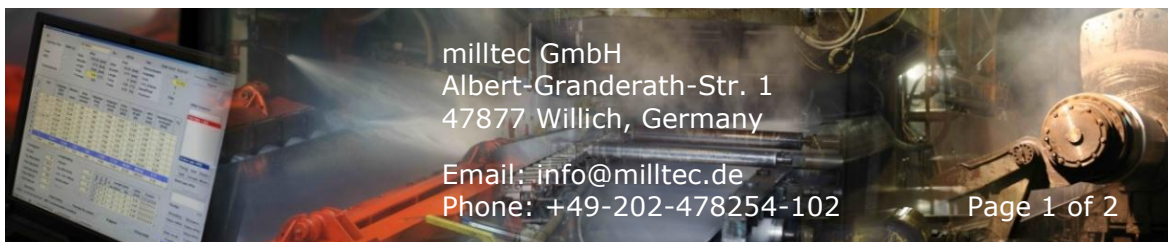
New alloys or clad compositions are automatically generated and adapted which ensures a maintenance free operation of the system.

The model based pass schedule generation ensures optimum throughput at best quality with minimized power consumption. Pass schedules are initially calculated when an ingot is planned and updated prior to each pass in order to suite the actual thermal condition of the mill and product.

Throughput is optimised via rolling speeds and pass reductions while the adaptive ingot pacing functionality ensures just in time extraction of the ingots from the furnaces, minimising delay times and ingot losses. Load balancing between hot roughing and finishing mill ensures best utilisation of the available drive power.



Especially the aluminium hot rolling process requires precise temperature control in order to meet the desired metallurgical properties.

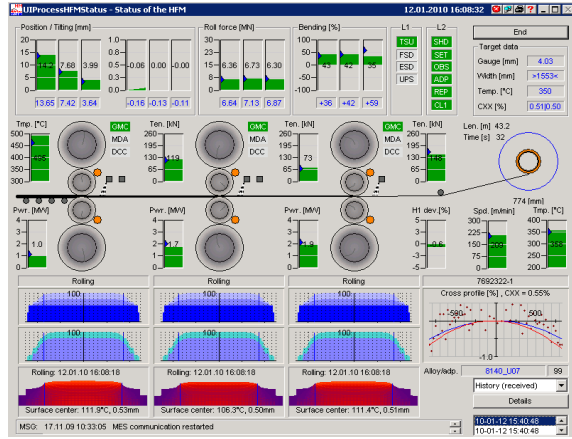


The *milltec* Level 2 system controls the absolute temperature and its distribution over the product length with all available measures like rolling speeds, strip cooling devices and pass reductions.

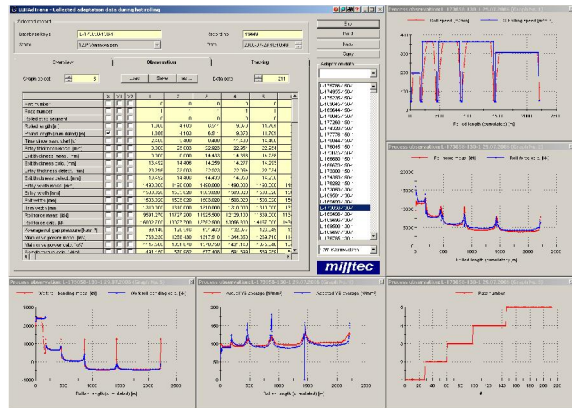
The strip cross profile imprinted at the hot mill has a significant influence on the whole plant recovery and productivity. The cold rolling mills and strip processing lines often react extremely sensitive to profile variations and usually counteract with productivity affecting speed reductions while the recovery is lowered by the need for wider side trimming.

The *milltec* Level 2 system controls the strip profile with all available actuators like bending, shifting, roll cooling as well as pass reductions. The shape of the strip profile is even controlled in pass with cyclically updated work roll coolant patterns facilitated by a high precision roll temperature model.

During mill delays, an intermediate coolant strategy package controls the thermal work roll camber in order to best suite the next product. This is extremely useful especially if significant width changes are unavoidable.

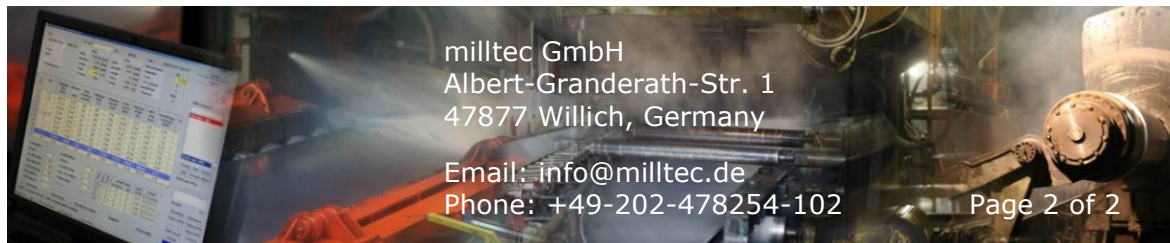


Process, adaptation and product data storages allow comprehensive visualisation and thus a detailed but lucid insight into the process which gets further supported by the statistical process control package featuring even email notification when process or process control variables are out of specified limits or simply when production planning data are incomplete.



Recent hot mill references:

- Aleris Aluminium Koblenz
- Aleris Aluminium Duffel
- Hulamin South Africa
- Aleris Dingsheng Aluminium China



milltec GmbH
 Albert-Granderath-Str. 1
 47877 Willich, Germany
 Email: info@milltec.de
 Phone: +49-202-478254-102