

Röntgengeregelter Glühprozess X-CAP® (X-ray Controlled Annealing Process) 2. Aachener Ofenbau- und Thermoprozesskolloquium am 10.10.2019

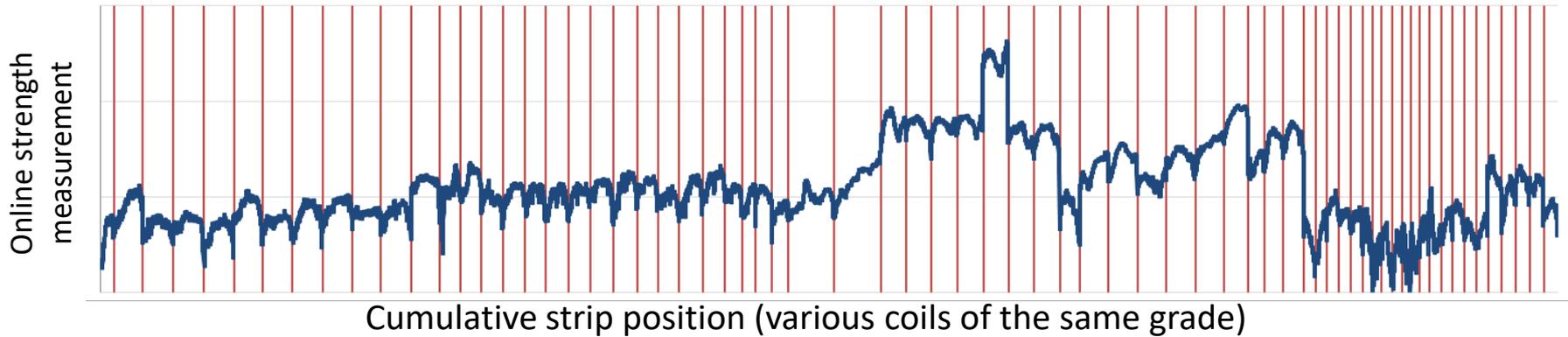
SMS group, IMS Messsysteme, Drever International, Tata Steel IJmuiden, Tata Steel Segal

SMS  **group**

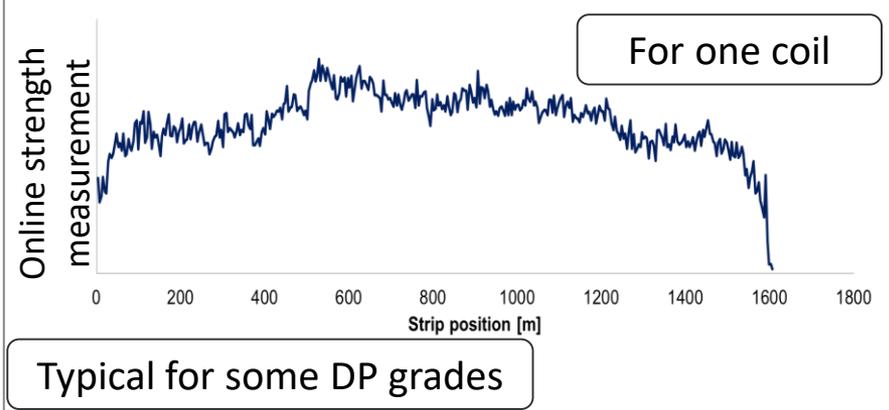
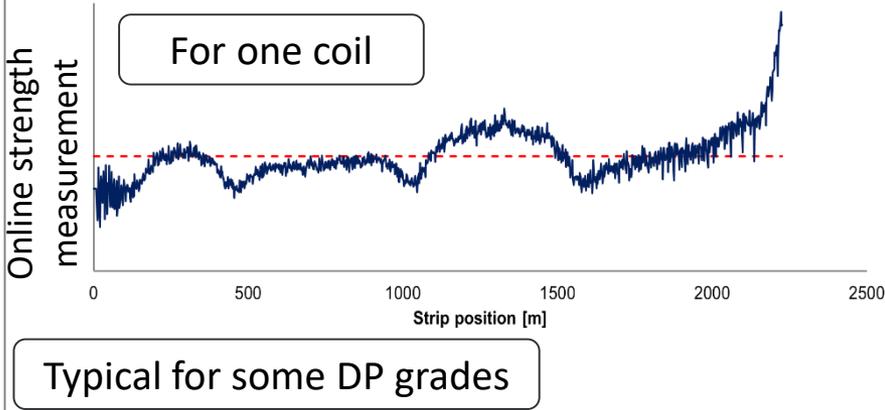
Practical challenges due to deviations in upstream processes

Examples

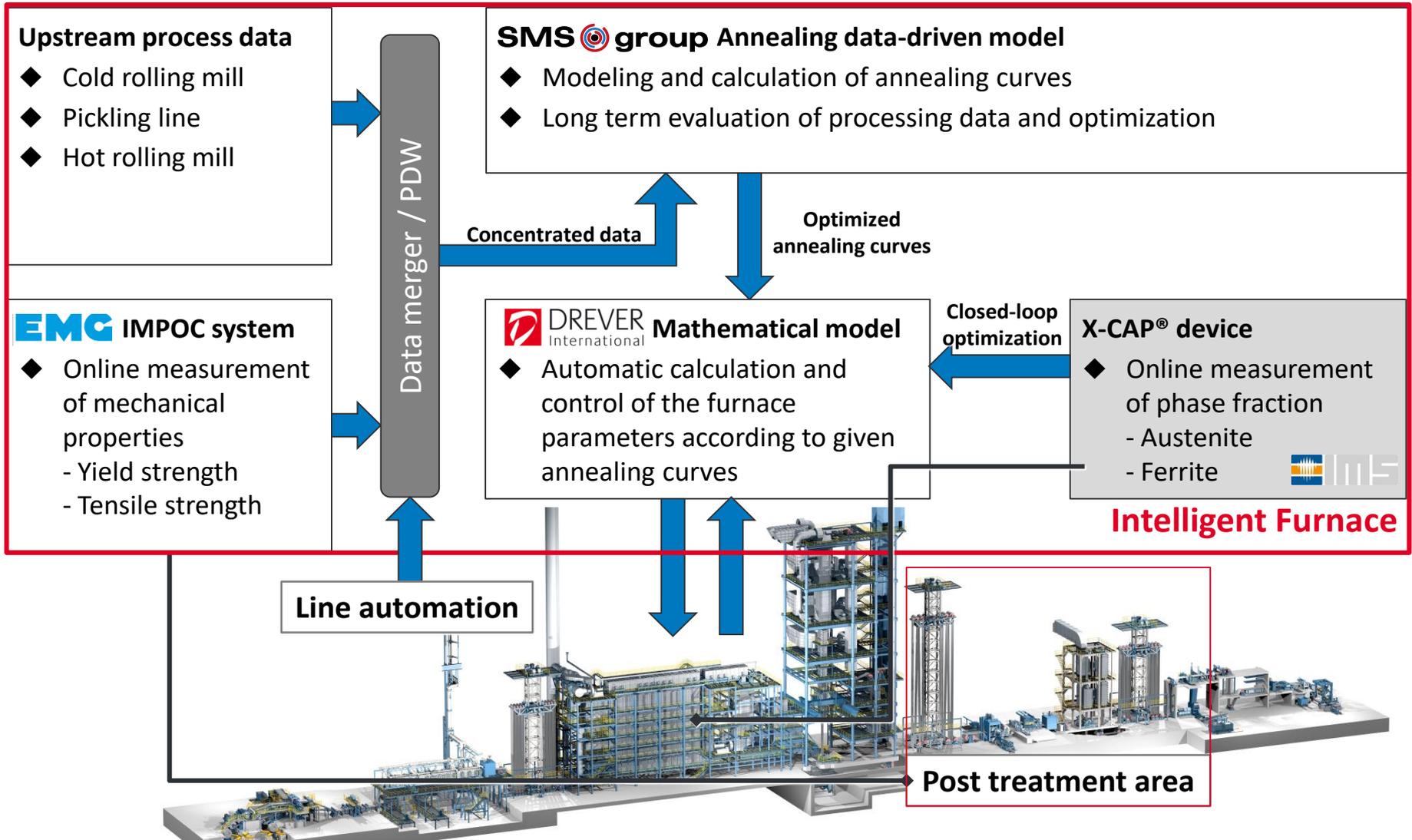
Chemistry related and hot-rolling related deviations



Hot-rolling related deviations

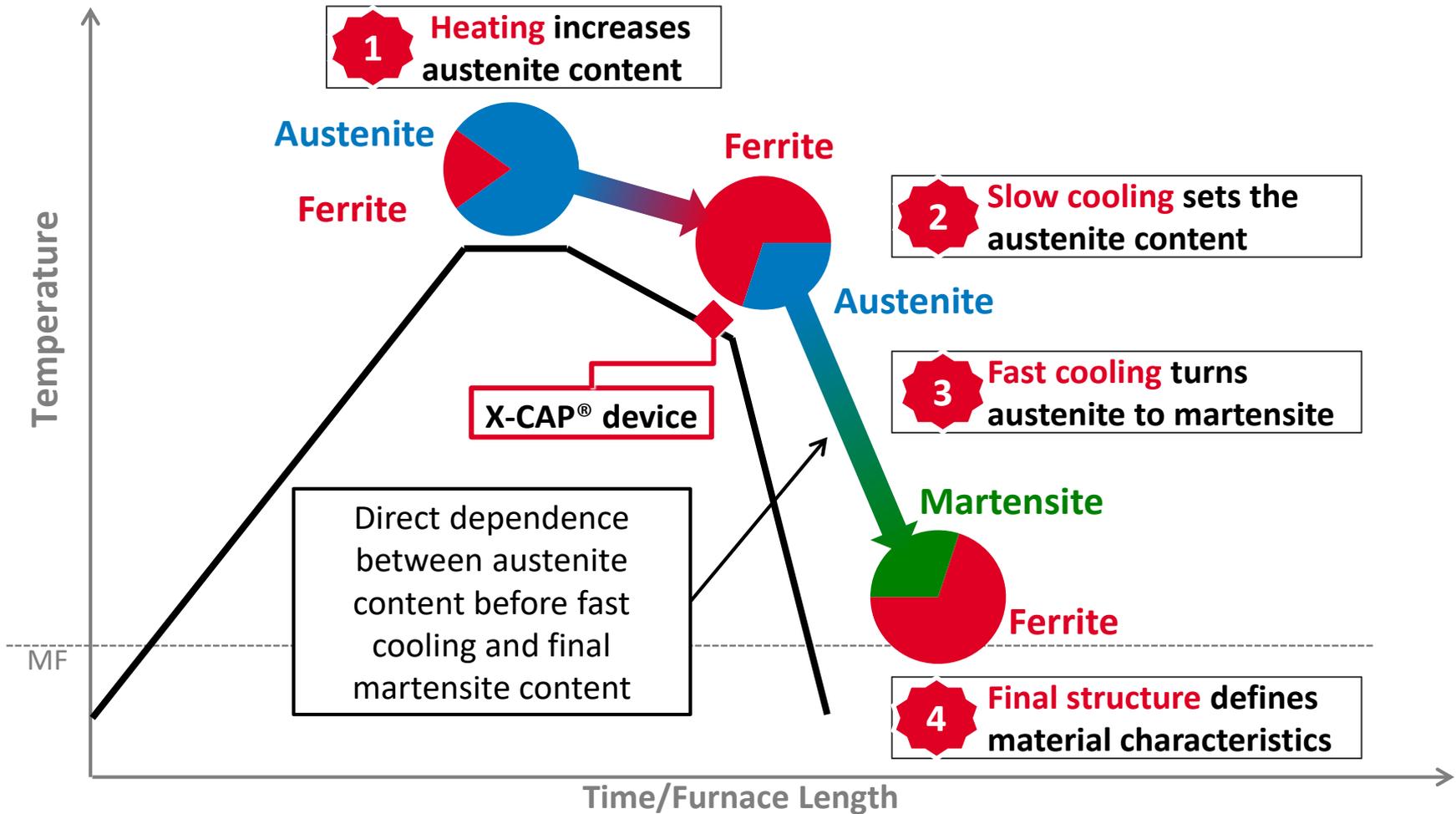


Intelligent Furnace concept with X-CAP® (X-ray Controlled Annealing Process)

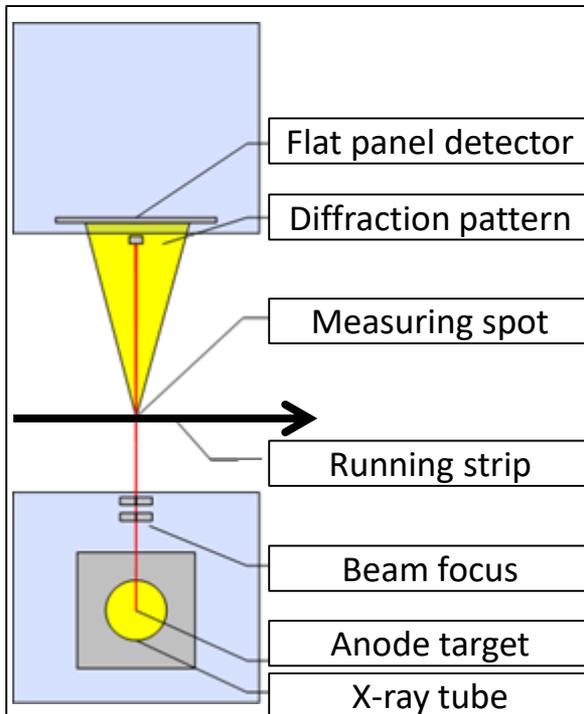
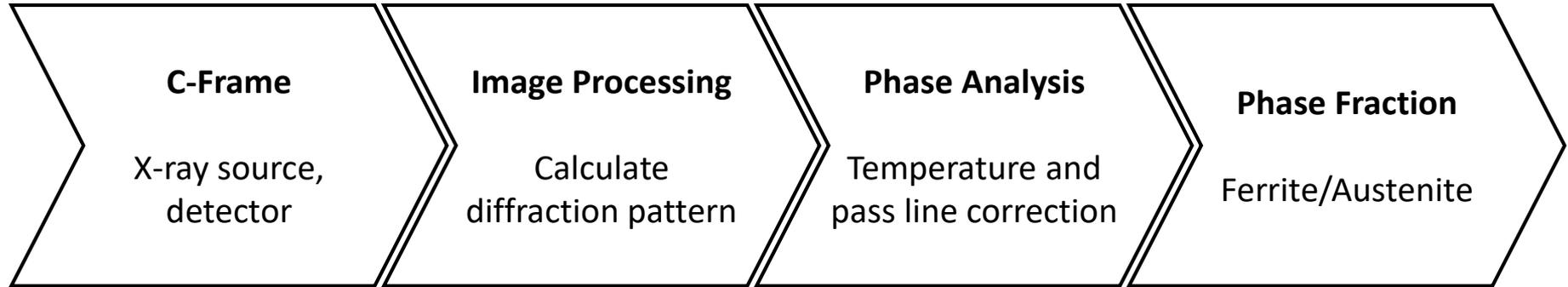


Exemplary and simplified development of the DP microstructure **SMS** **group**

Theoretical background: X-CAP[®] (X-ray Controlled Annealing Process)

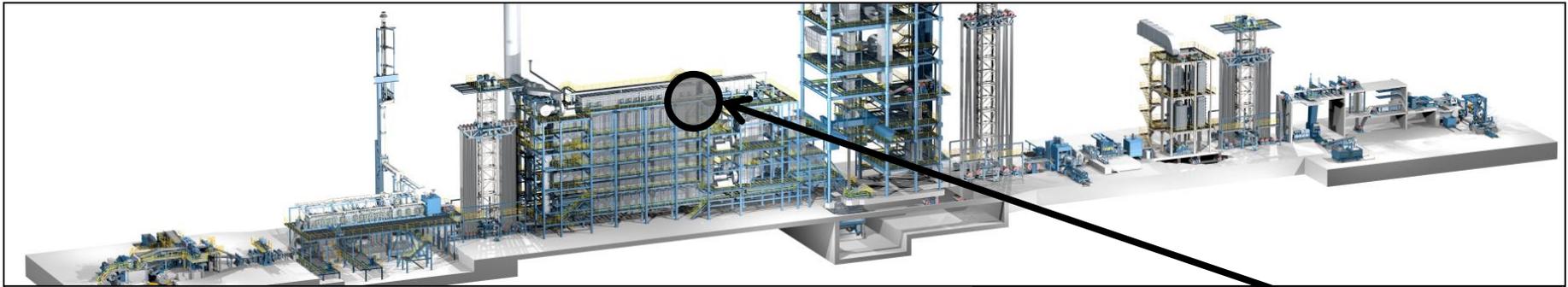


Measure and control, where the mechanical properties are made



Implementation of a laboratory device into an industrial environment

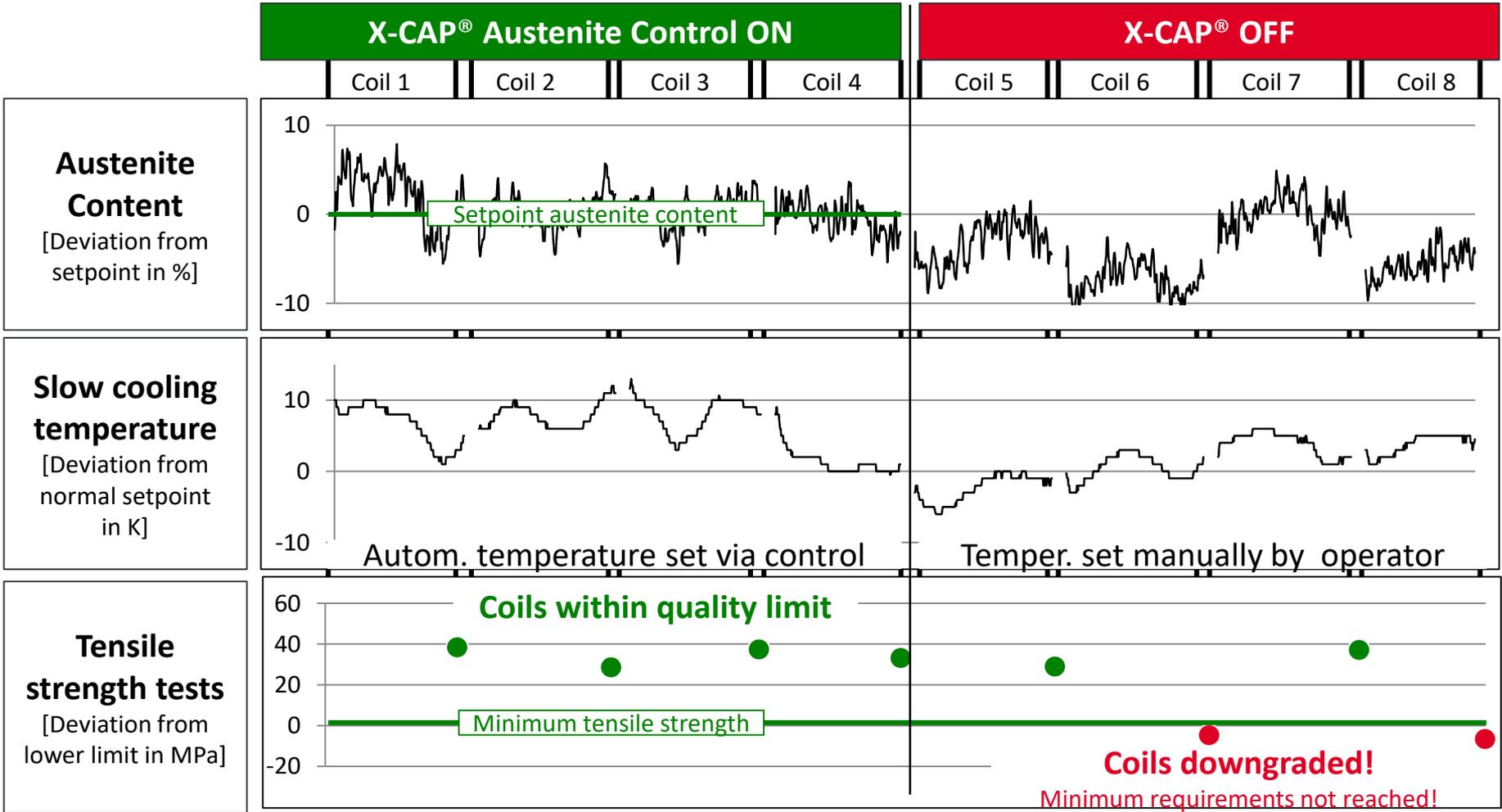
- ◆ Protection of the furnace atmosphere – no air intake
- ◆ Heat protection
- ◆ Protection against strip movement



Drever know-how ensures continuous operation of X-CAP®

- ◆ Use of special window material with low X-ray attenuation
- ◆ Cooled housing keeps the gauge on 40 °C
- ◆ A movement system for adjustment and fast removing
- ◆ Protected housing to prevent damage in case of strip breakage

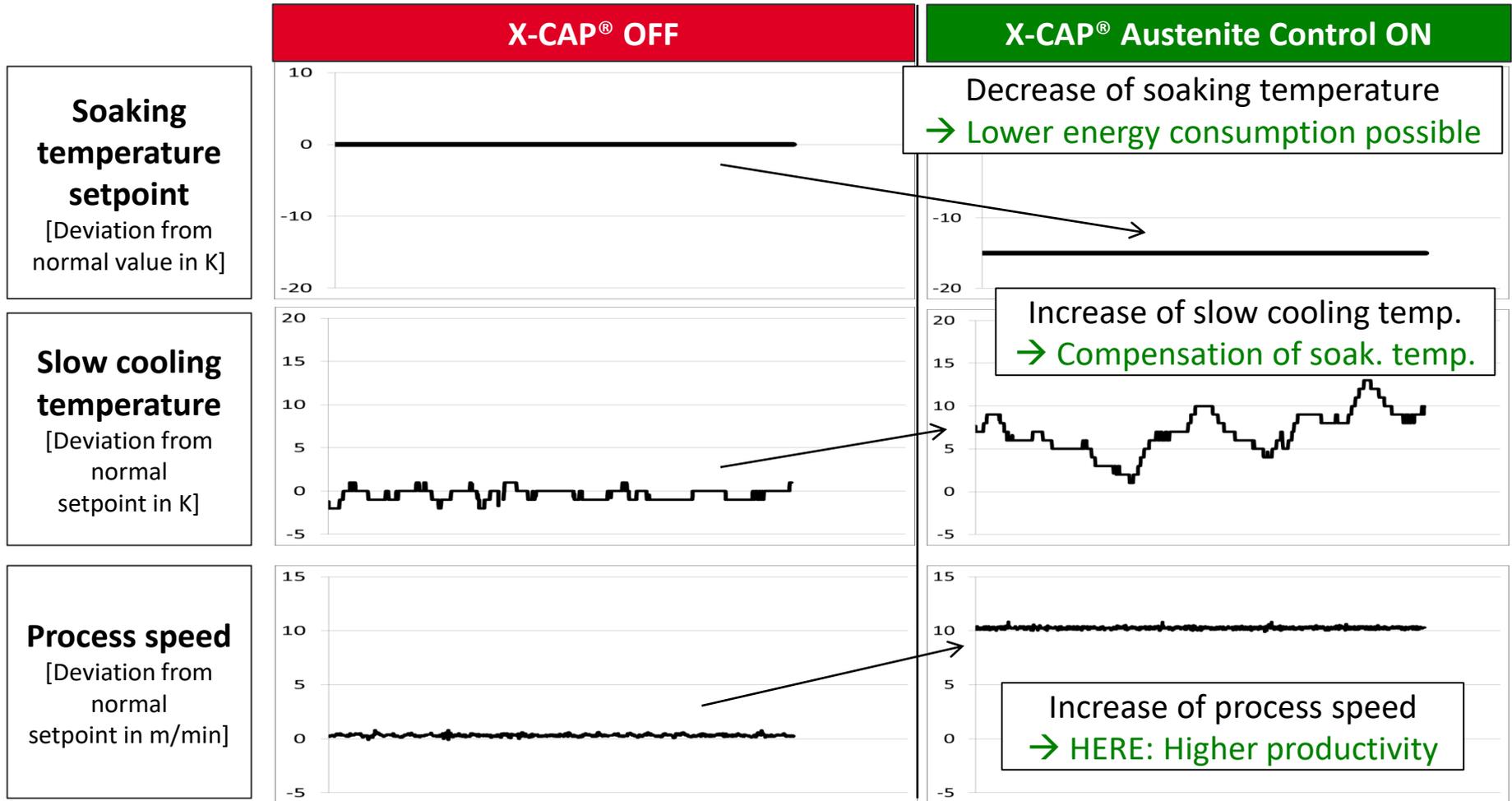




Austenite control saves coils, which operators cannot save just by experience

Process optimization

Increase of speed and decrease of soaking temp. possible

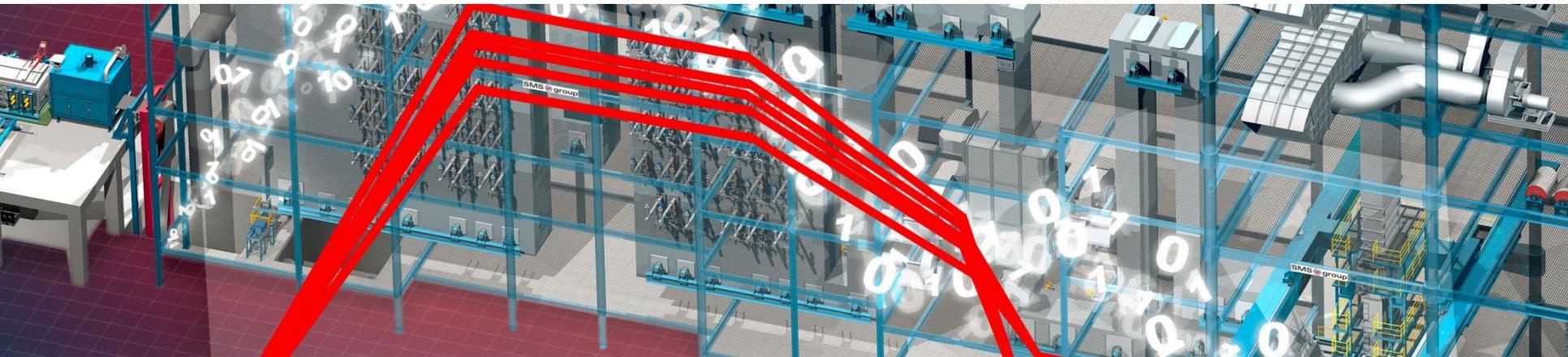


For all tested coils, the strength was within the limits, since the austenite content was controlled

Conclusion: Main benefits and further applications

Main benefits

- ◆ Increase yield by lower rejection rates
- ◆ Increase speed or decrease energy consumption by lower annealing temperature
- ◆ Optimize upstream processes by deeper process understanding



Further applications

- ◆ Use X-CAP® for other steel grades
 - ◆ Measure and control recrystallization and texture for Non-AHSS-grades
 - ◆ Use the X-CAP® at a different location for Q&P grades
- ◆ Use X-ray device in other processes for hot strip mills for instance

Röntgengeregelter Glühprozess X-CAP® (X-ray Controlled Annealing Process)

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