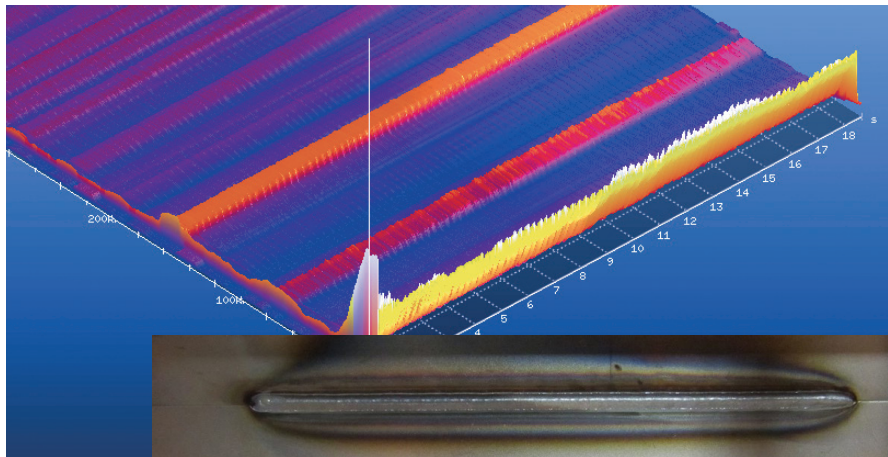
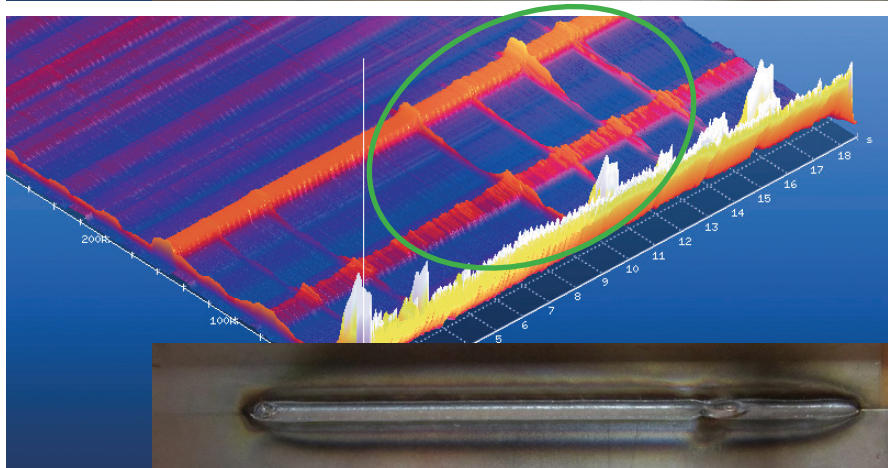


Quality Monitoring During Welding



This depiction shows High-Frequency-Impulse-Measurement (HFIM) signals of a **flawless welding seam**. The signals are smooth and without a flaw, just as the seam itself.



This image depicts a **faulty welding seam**. The signals show deviations from the ideal case (upper depiction): short, broad band signals (marked with a green oval). These signals go across the time axes - typical HFIM-signals that originate from welding pores.

Detection of incomplete fusion, cracks and welding pores

Optimizer4D is able to detect and document faults in a welding seam in the moment the flaws occur. This includes detection of flawless seams.

Detectable welding faults: cracks (cold cracks), welding pores, incomplete fusion and burn-through.

Under certain circumstances, the following faults are detectable: weld seam position and fusion penetration. Optimizer4D is able to evaluate the quality of welding seams. By this, the measuring system contributes to **render security welding seams superfluous** - up to a certain percentage.

Additionally, in an ideal case, Optimizer4D can **reduce rework**. Automated detection of faults and emitting a signal via signal light or PLC is possible.



Process Optimization
Optimizer4D

Cognitive Signal Analysis
100% In-Process

Detection of tool wear
Quality Assurance
High Frequency Impulse Measurement

Tool Monitoring
Documenting Process Quality
Real-Time

Technology Leap

Reduction of reject rate

HIFIM
Crack Detection

Product Quality
Process Evaluation
Increasing production speed

