Krautkramer Testing Machines
VIS - modular test electronics

The name VIS stands for new modular test electronics for use in ultrasonic test systems. Set up on VME bus basis, the electronics is designed as 19" plug-in module. A maximum of twelve channels can be operated per ultrasonic module and a maximum of five modules in a system.

The parallel operation of all channels with 20kHz PRF per channel enables a very fast online inspection.

The electronics is completely operated via the PC; Windows NT is available as a user-friendly operating system. The system provides a fully digital echo display with a high-resolution A-scan, plus a hardware-based compression of the individual A-scans (EchoMax function). This function ensures that even a short-term event (single shot) will not be "overlooked".

The test results (amplitudes, time of flight) are available as 8- or 16-bit information at the interfaces.
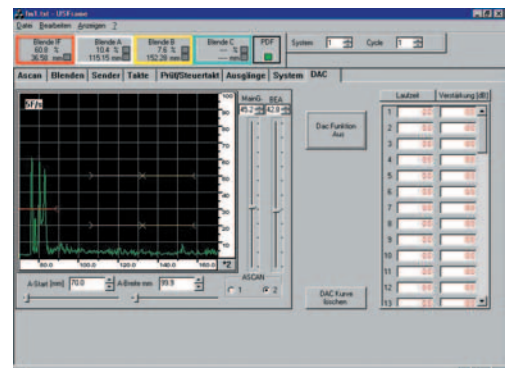
Main fields of application of the VIS system:

- weld inspection
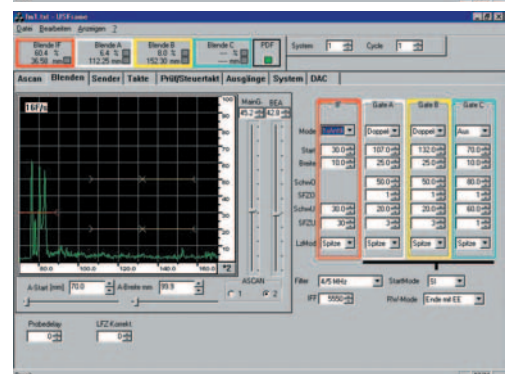- tube testing
- quick online testing
- cleanliness examination
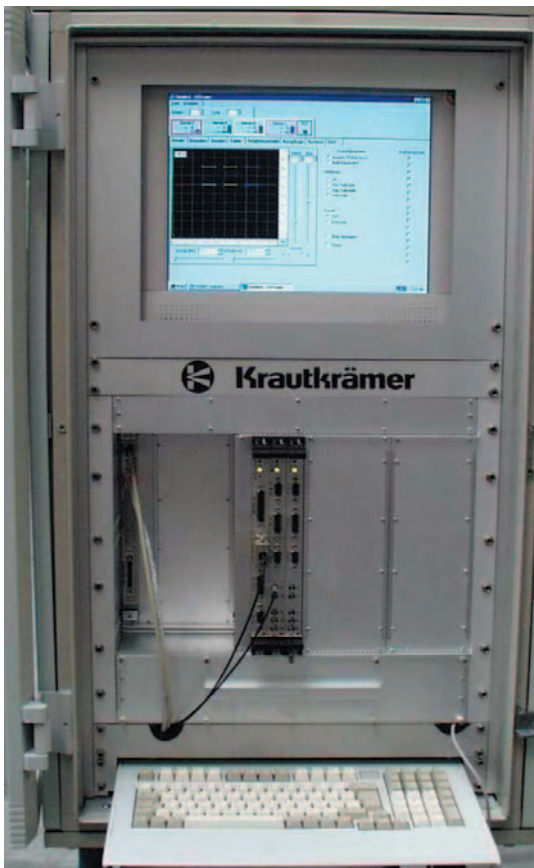
total view of the VIS electronics

user interface - DAC generation

user interface - gates and threshold setting

GE imagination at work

Technical Data

Number of channels:
1 to 12 per ultrasonic module,
extension possible to max.
40 channels

Operating modes:
Parallel: Yes, flexible pulse cycle scheme
is possible
Multiplex: In the planning stage,
prepared in the system

Max. pulse repetition frequency:
20 kHz / channel

Max. cycle number per channel: 16

Test modes:
Dual (TR), through-transmission

Pulser
Pulse width: Spike pulser
Amplitude: 300Vp/50 ohms:
Rise time:< 8 ns

Preamplifier
Gain: 0 to 110dB, variable
Bandwidth: 0.5 to 25 MHz (-3dB), linear
Dynamic range: 110 dB in 0.2dB steps
Rectification: pos. half-wave, neg. half-wave,
full-wave, RF

DAC
Dynamic range: 40 dB
Slope: 6 dB/µs
Backwall echo attenuation: Yes

Test range
Calibration range: 17 mm to 4.3 m
Delay: 0 to 6.4 m

Operating frequency
Narrow band: 1, 2, 5, 10. 15 MHz
Broadband: 1.4-10; 2.5-18;
                     0.5-20 MHz

Gates
Number of gates: per channel 4, of which one
gate can be used as echo-start gate (events,
amplitude/time of flight)
Number of thresholds per gate: 2,
1 with echo-start gate

Echo evaluation
Time-of-flight measurement: 16 bits
Resolution: 4.17 ns
Range: within the entire calibration range
with PRF
Amplitude: 8 bits

Noise suppression: Dual-threshold noise
suppression

Echo display
Digitizing: 90 MHz with 8-bit resolution
upsampling to 360 MHz is possible
(no EchoMax function)
1x A-SCAN module per ultrasonic plug-in
module
EchoMax function: Recording of all
A-scans with PRF and display of the Maxi-
mum scans
Parameter assignment: Individual parameter
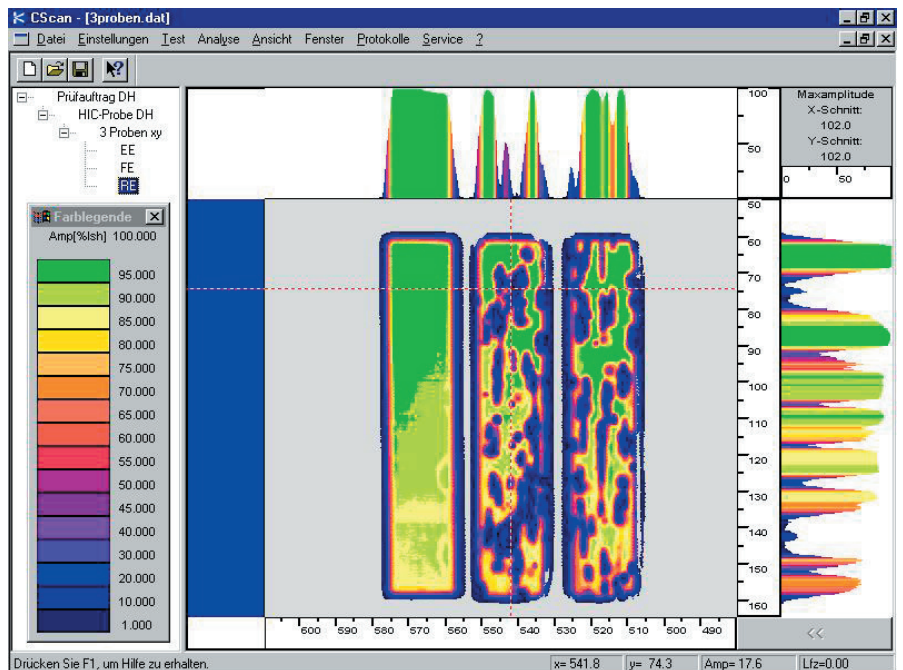assignment for each channel and cycle

Inputs

TDR: 8 per channel and additional 12 per
system
Path pulse: 2 for rotation and translation;
integrated path pulse generator

Interfaces
VME, Ethernet, I²C bus

Application example: cleanliness estimation