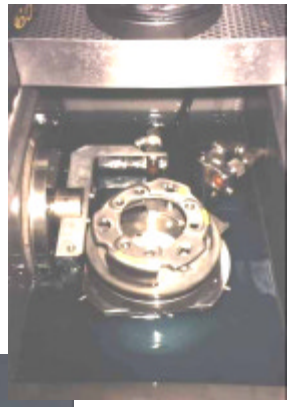
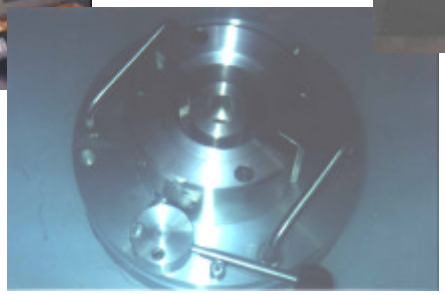
ULTRASONIC IMMERSION SCANNER





Good materials control is a vital requirement for efficient continuous finishing lines. The resultant improvement in quality control and associated cost savings in production allows manufacturers to extend their competitive edge.

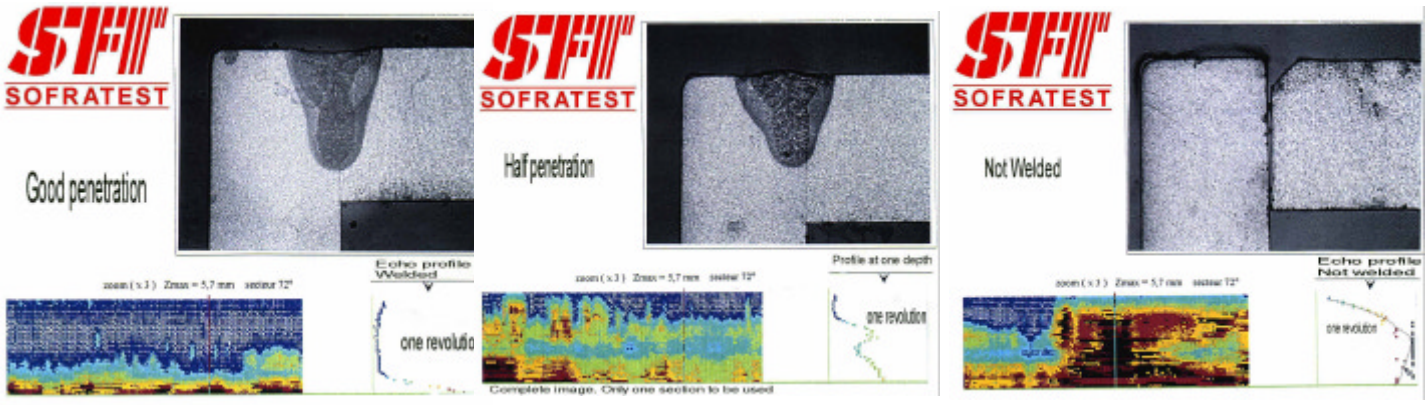
- High quality control
- Short test cycle time
- Statistical reports for quality and process control
- Automated process
- High throughput
- Computer interface for machines and plant optimization

WELDING INSPECTION IN AUTOMOBILE INDUSTRY

For several years, Sofratest systems are in use in many plants throughout the world. Every days many automobile items are controlled by our ultrasonic immersion scanners.

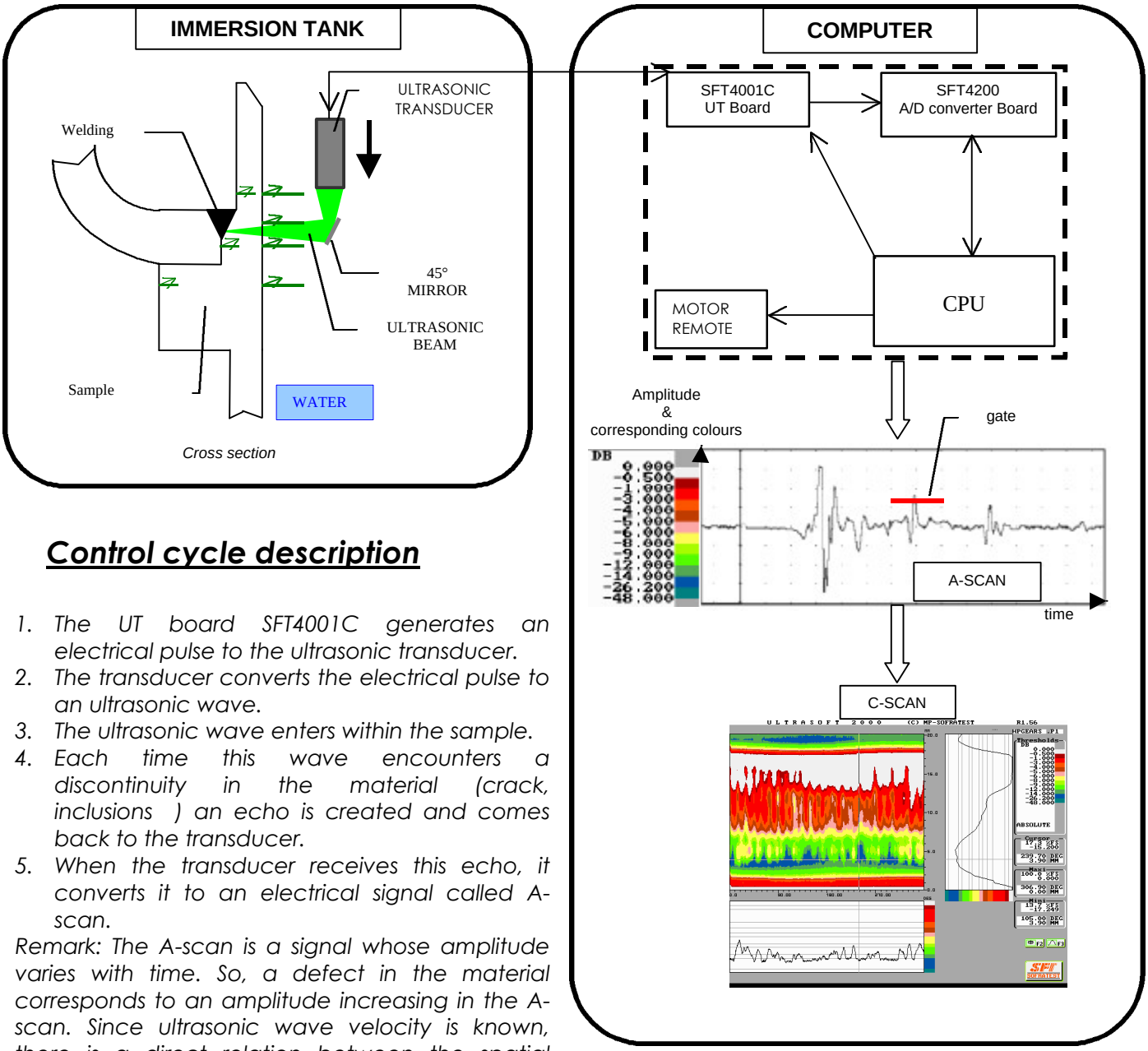
Controlled items examples

Thanks to Ultrasonic Testing, it is possible to appreciate a welding quality with reliability and speedily.



Evaluation example

GO BACK TO FIRST PRINCIPLES



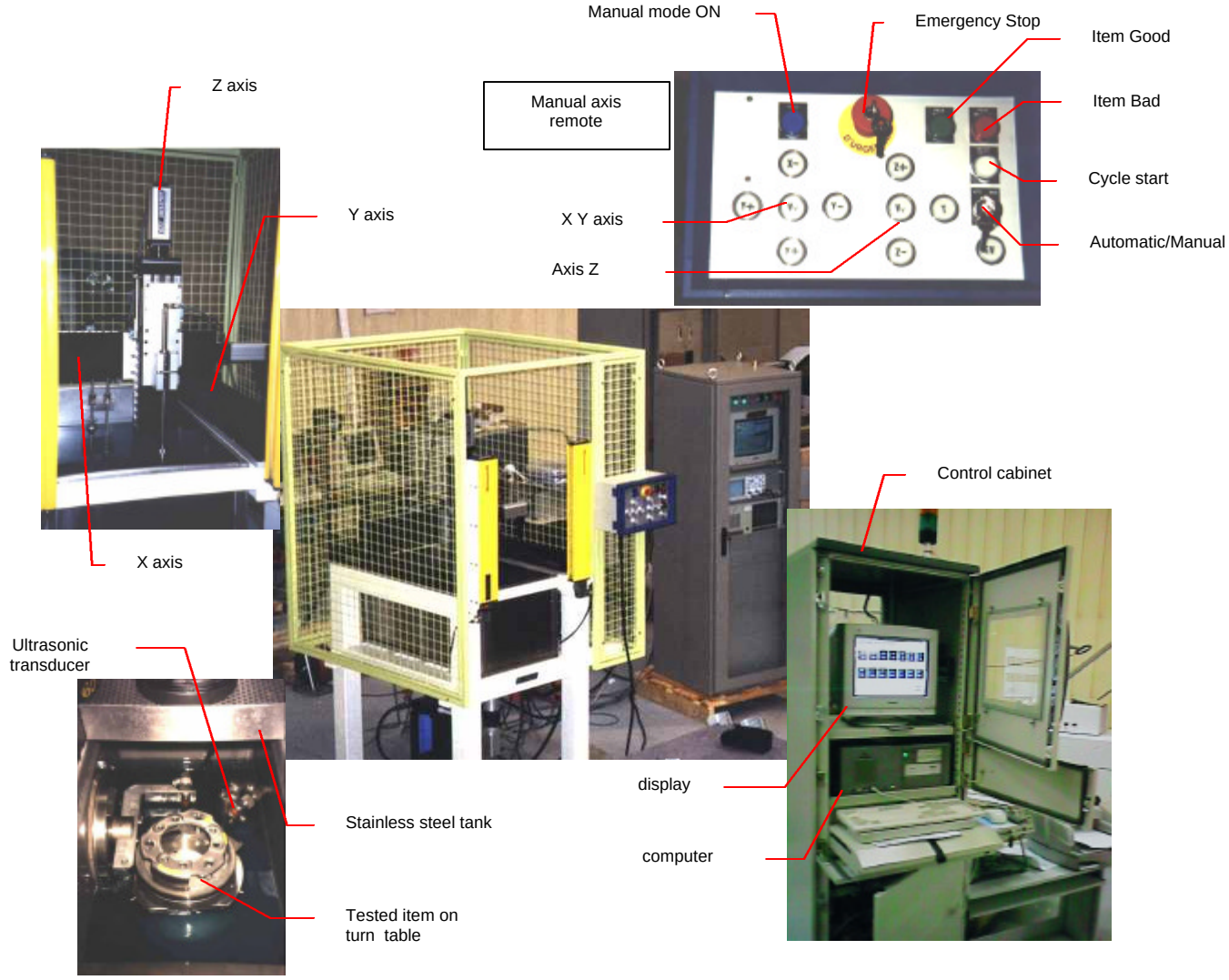
Control cycle description

1. *The UT board SFT4001C generates an electrical pulse to the ultrasonic transducer.*
2. *The transducer converts the electrical pulse to an ultrasonic wave.*
3. *The ultrasonic wave enters within the sample.*
4. *Each time this wave encounters a discontinuity in the material (crack, inclusions) an echo is created and comes back to the transducer.*
5. *When the transducer receives this echo, it converts it to an electrical signal called A-scan.*

Remark: The A-scan is a signal whose amplitude varies with time. So, a defect in the material corresponds to an amplitude increasing in the A-scan. Since ultrasonic wave velocity is known, there is a direct relation between the spatial position of the defect into the material and its corresponding position in the A-scan.

6. *This A-scan is received by the board SFT4001C and then is sampled at high frequency.*
7. *A process is operated on the digitized A-scan. The maximum amplitude included into a gate is noted and associated to a colour in order to form a pixel. For each amplitude level, a corresponding colour is defined.*
8. *This pixel is put into a map.*
9. *The transducer is moved and for each position, the previous cycle is made. Finally a map called C-scan is formed and we can observe the defects into the weld.*

IMMERSION TANK DESCRIPTION



Tank and mechanics

✓ *X Y Z axis*

	X	***Y***	***Z***
Internal tank dimensions (mm)	*800*	*600*	*400*
Maximal Axis length (mm)	*415*	*315*	*200*
Resolution (mm)	*0.0125*	*0.0125*	*0.0125*
Maximal speed (mm/s)	*80*	*80*	*40*

All mechanical parts are protected

✓ *Turn table*
Stainless steel
Diameter 200mm
3 slots on radius for centering of samples
can support easily centering tools for various samples
resolution 0.036°
speed : 1 revolution in 3 seconds according weight of sample

✓ *Power controller SFT 5005 with 4 axis low electromagnetic interference modules specially designed for ultrasonic applications model SFT5004*

PC unit for motors control and storage

Includes:
- ✓ *4 axis controller card for C-scan operation model PCIDX4*
- ✓ *manual operation by controlbox 4 axis*
- ✓ *ultrasonic pulser receiver card specially designed to interface mode function for immersion applications SFT4001C*
- ✓ *A/D 100MHz card SFT4200 flash converter for A-scan display and discussion.*
- ✓ *Data acquisition and storage: Ultrasoft 2000 package.*

Software

Full Ultrasoft 2000 including:
A-scan
C-scan
B-scan
Helicoidal acquisition
Defect analysis on recorded map

Ultrasonic transducers

Ultrasonic transducers and mirror are removable.
Sofratest defines and recommends them according to tested items.

Integration

This system can easily be associated to robot and/or PLC in order to make a full automatic control system.