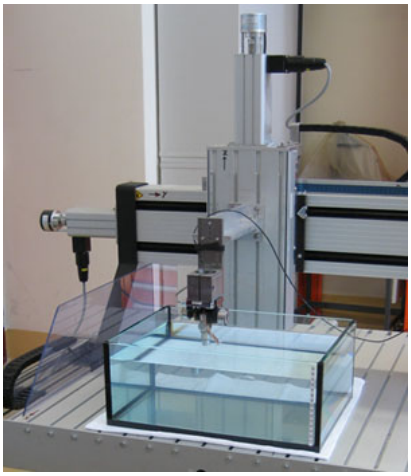
# Ultrasonic Imaging

## Introduction

An ultrasonic probe is mechanically scanned over the object to be inspected. Ultrasonic pulses are transmitted to the object via a couplant. The interaction of the ultrasonic waves with the object and flaws therein (e.g. delaminations) can be studied in reflection or transmission.

## Mechanical Scanner

- Scanner with five linear axes x, y, z, A, B
- Maximum scan range 500 mm x 500 mm x 170 mm
- Billet roller and rotating table for cylindrical objects
- Ultrasonic probe adjustable with goniometer



## Immersion Technique in Water

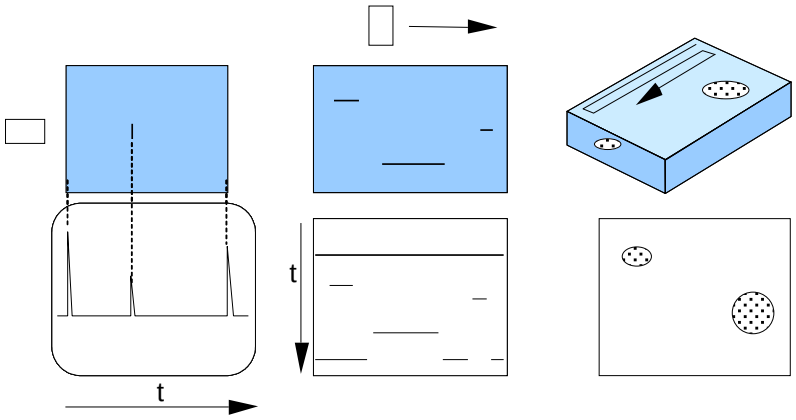
- Probe and object are immersed in water
- Range of ultrasonic frequencies:
  - Single-element probes: 1-125 MHz
  - Hydrophone: 1-20 MHz
  - Phased array system: 6-17 MHz

## Air-coupled Ultrasound

- Transmission technique with two probes (transmitter and receiver)
- Coupling via air
- Range of ultrasonic frequencies: 30-200 kHz (single-element probes)

## Data Evaluation

- Presentation of the information as A-, B- C- und D-scans




A-scan B-scan C-/D-scan