

# 26<sup>th</sup> World Gas Conference

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Triennium Work Report  
Technologies applied in gas transmission  
systems  
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WOC 3 Gas Transmission – Study Group 3.3



# Summary

## **Chapter 6 Technologies applied in gas transmission systems**

6.1 Technologies in the area of Safety and Reliability

6.2 Technologies in the area of Environmental Footprint Reduction

6.3 Technologies in the area of pipelines

## **Chapter 7 Construction of pipelines in areas of high population density**

## **Chapter 8 Alternative utilization of pipelines for CO2 transportation**



**Leonardo da Vinci**  
(1452-1519)

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# Technologies for in-line inspection of gas pipelines

## Electromagnetic acoustic technologies (EMAT)

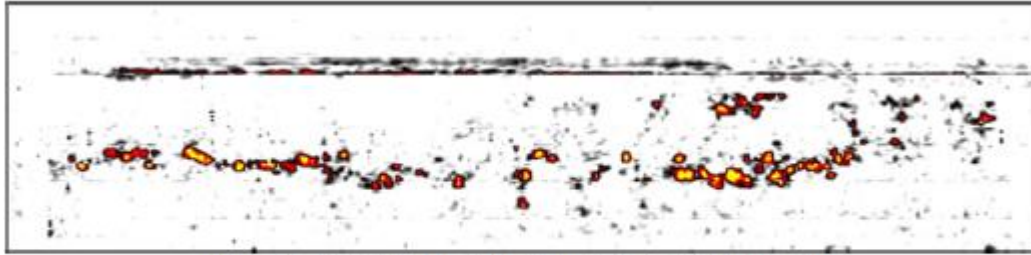
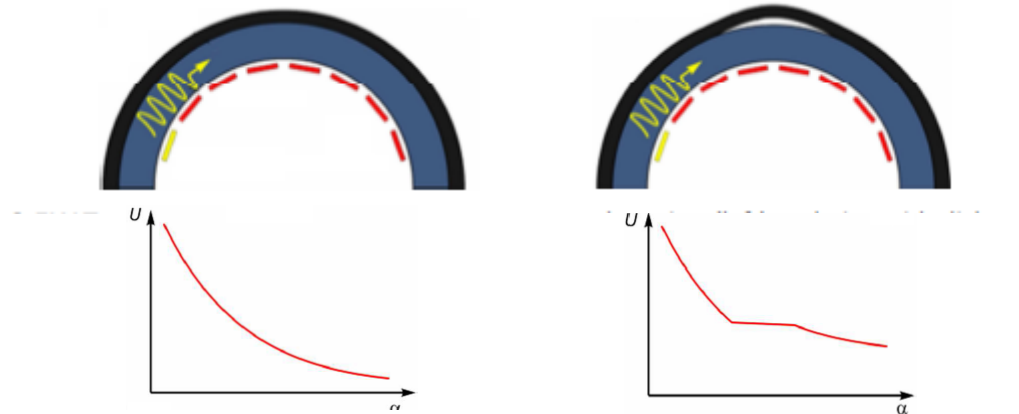
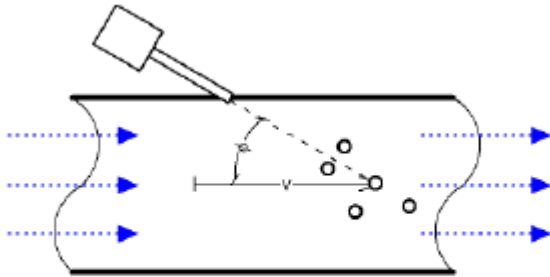


Figure 6.1 Colour reconstruction of EMAT-56" inspection (plot showing multiple shallow, less than 10% pipe wall thickness deep, stress corrosion cracks in Russian gas pipeline)



# Flow meters

- Ultrasonic flow meters
- Conditioning orifice meters
- V-cone flow meters



www.EngineeringToolBox.com

Figure 6.3 Measurement principle of Doppler effect ultrasonic meter



Figure 6.5 Conditioning orifice meter

# Gas treatment plants



Kårstø gas processing plant in Norway

# Repumping of natural gas during maintenance activities



*Figure 6.12 Compressors used by Eustream + booster unit*



# Hot taps/grouted tee & Cold sleeves

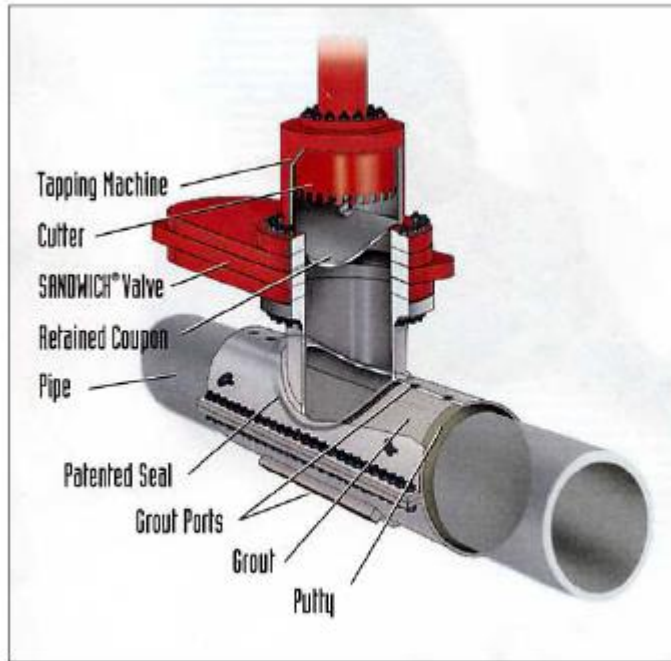
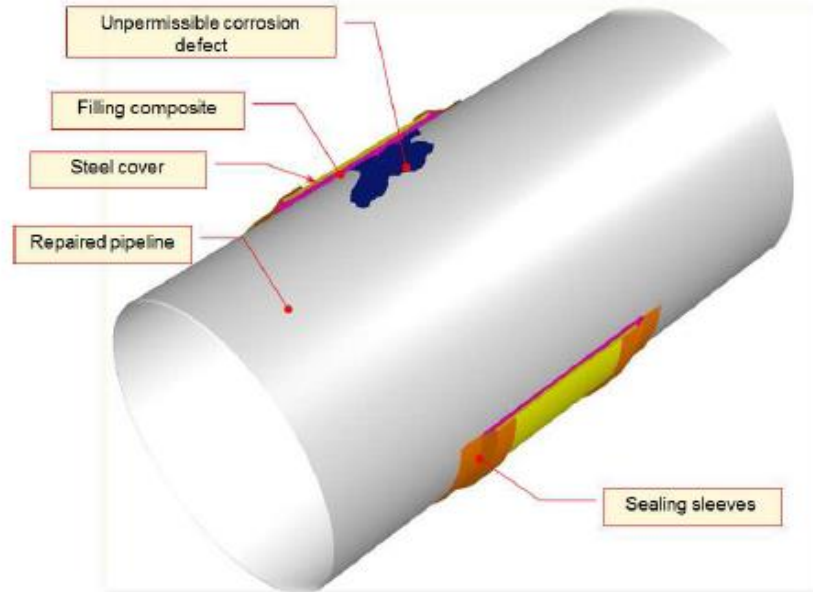


Figure 6.36 Component parts of the grouted tee



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7.1 Case study in Korea: Pipeline construction in areas of heavy road traffic condition

7.2 Case study in Japan: Pipeline construction in long and deep tunnel in urban area

## **Chapter 8 Alternative utilization of pipelines for CO<sub>2</sub> transportation**

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8.1 Technical challenges of the CO<sub>2</sub> transportation

8.2 Hydraulic simulations of the CO<sub>2</sub> transportation

# Technical challenges of the CO<sub>2</sub> transportation

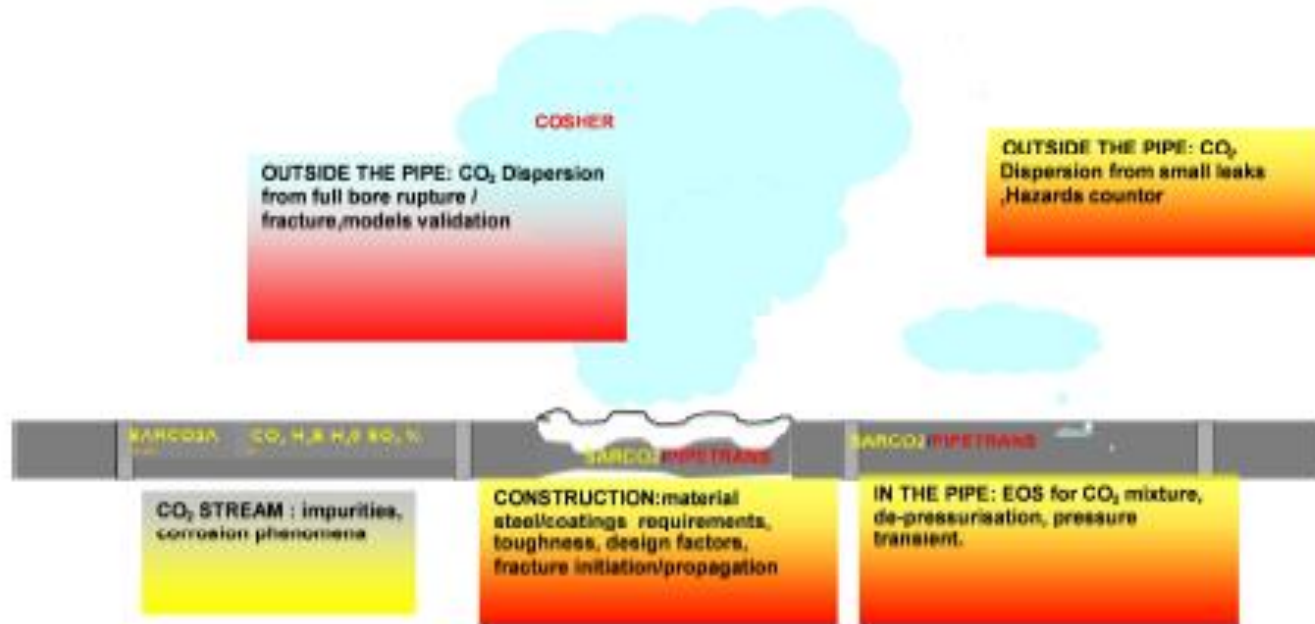


Figure 8.3 Integrated network of carbon dioxide transportation projects in Europe



**Thanks for your attention**