

StiRoLight project Update

AG-52 meeting
SKB Oskarshamn

Jeroen De Backer - PhD student

StiRoLight project

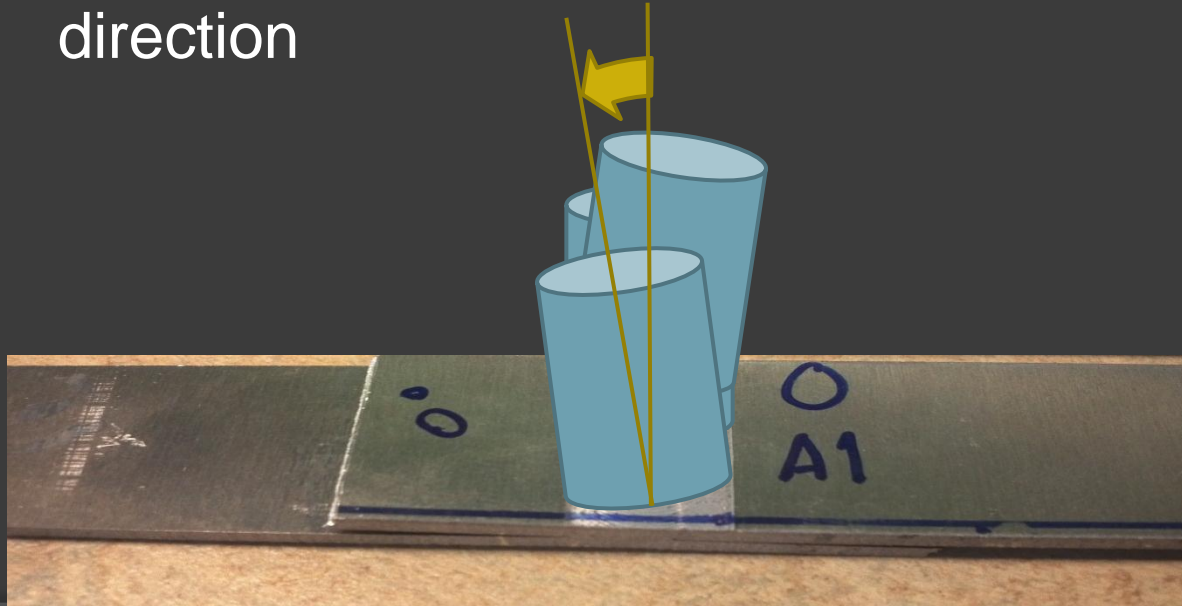


OVERVIEW

- Research activities
- Publications and conferences
- StiRoFlex application

RESEARCH

- ◎ Roll angle study
 - Tilting tool in plane perpendicular to welding direction

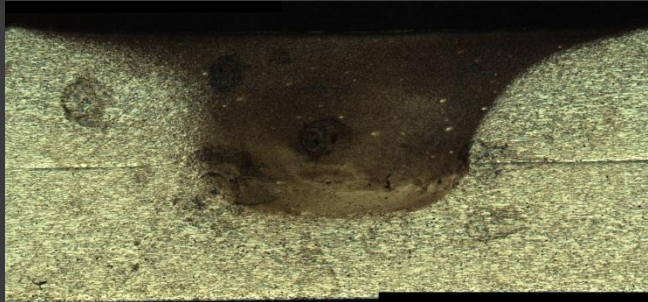


● Roll angle study

Roll
 0.8°



Roll
 3.2°

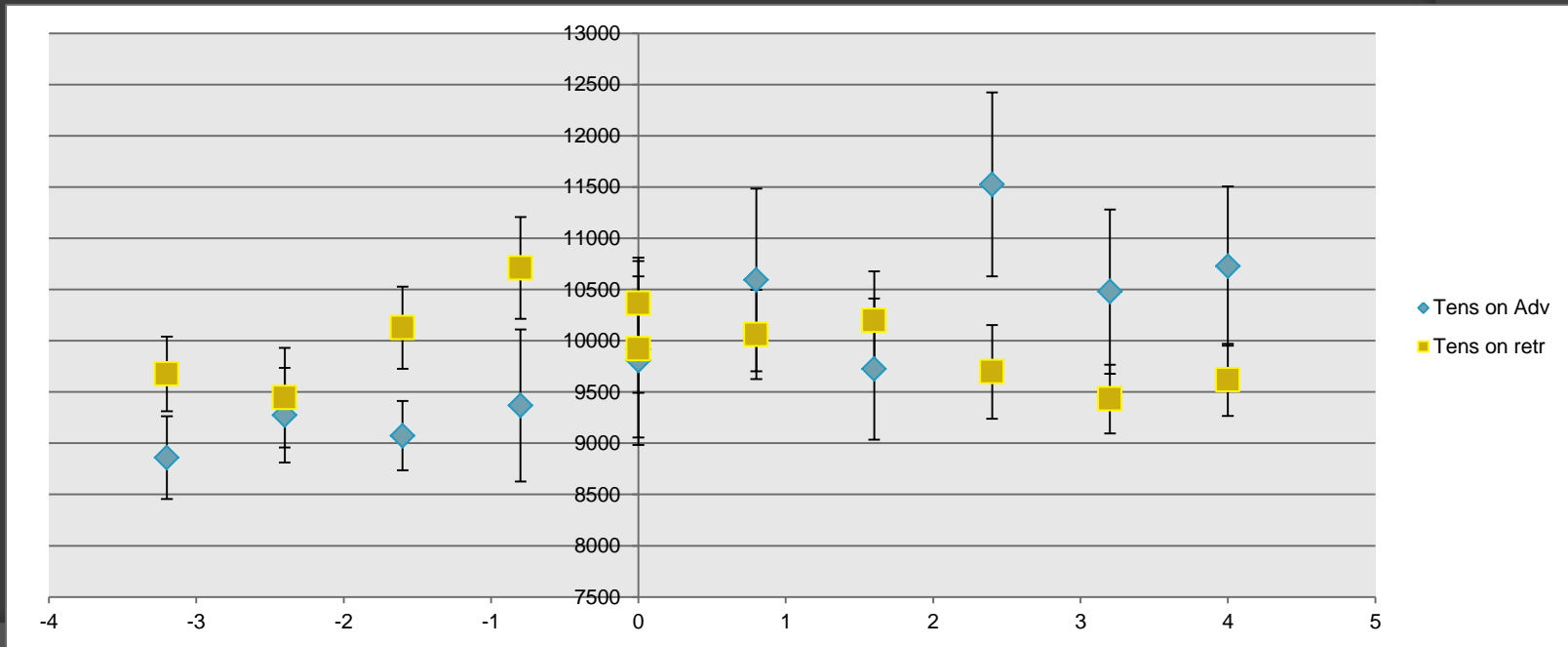


To advancing
side

To retreating
side

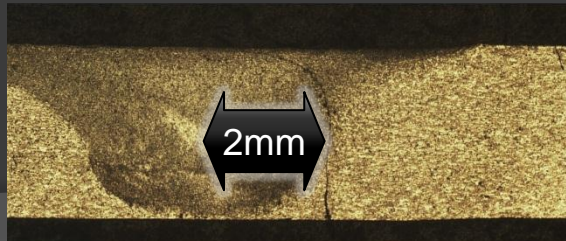
◎ Roll angle study

- Very limited influence between -4° and $+4^\circ$ tilt
- Proof of robustness for 3D welding



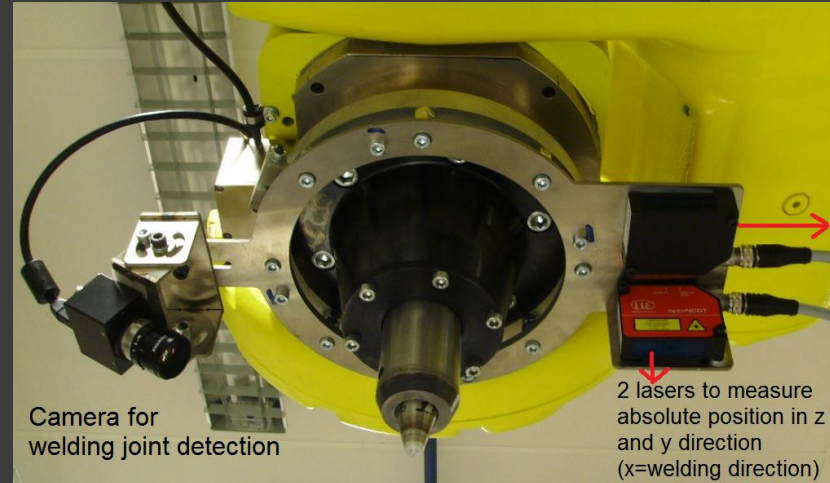
ROBOT COMPLIANCE

- Path Deviations (last meeting)



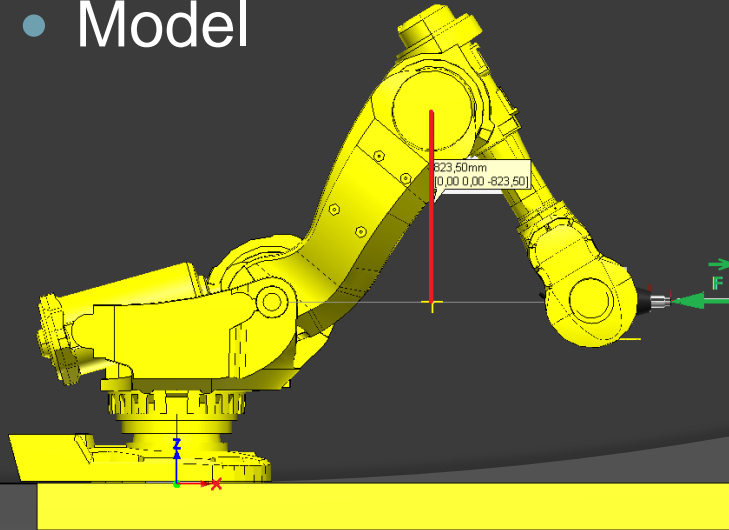
ROBOT COMPLIANCE

- Last meeting: Towards online path compensation by:
 - Laser
 - Camera
- Repeatable
→ Model

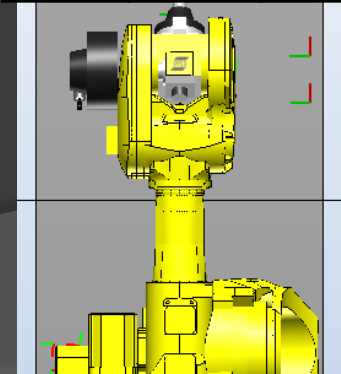


RESEARCH

- ◉ Robot compliance model
 - deviation in mm
 - Applied force = 3000N
 - Model



3,058	3,154	3,379
2,519	2,622	2,645
2,247	2,182	2,317



PUBLICATIONS

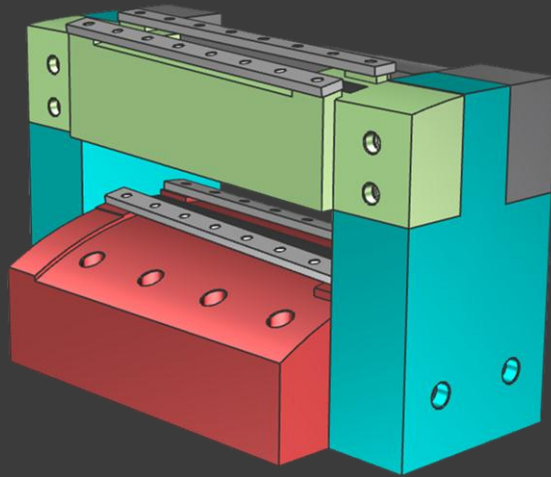
- ◉ Submitted journal papers
 - Welding Journal
 - Surface quality (Roughness & Waviness - Ra)
 - Robustness & Tensile Strength AA-6016 alloy
 - Industrial Robot
 - Laser and camera based path compensation method
 - Recommended for publication after revision

CONFERENCES

- Joining in car body engineering
 - Optimizing vehicle design for FSW
 - Program highlight (1hr interactive workshop)
 - New automotive partners
- Trends in welding
 - Inconel tests
- FSW Symposium
 - Roll-angle (with Lars C. and Mikael S.)

VOLVO DEMONSTRATOR

- Jet engine turbine structure



FUTURE WORK

- ◎ Licentiate thesis on Robotic FSW
 - April - May 2012
- ◎ Robot compliance study
 - Global deflection model for Rosio robot
- ◎ StiRoFlex
 - Prof. Gunnar Bolmsjö



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www.youtube.com/FrictionStirWelding