

## **PIT News**



### **Content of this issue of PIT News:**

- **PIT vs. Burr Grinding**  
more and more customers are switching from grinding to PIT to save time and money
- **PIT-Reference ArcelorMittal in Gent**  
a very positive feedback after 5 years
- **PIT-Effect despite a high operating temperature**  
even here a perfect feedback after 9 years
- **A summary of the PIT benefits**  
the PIT effects as well as the economic benefits
- **PIT for shipbuilding**  
a reference of our dutch Partner
- **An extract from our references**  
let PIT convince you too





- working process ~ 60 min/m
- sometimes is second welding needed
- a big potential for mistakes (undercut, grinding burn, notches...)
- high risk of injury
- lot of dust
- low enhancement factor of FAT classes (e.g. from FAT 80 to FAT 100 with S355)

- reduction of working process ~ 5 min/m (-90 % vs. burr grinding)
- nearly no potential for mistakes
- low risk of injury
- no dust
- highest enhancement factor of FAT classes (e.g. from FAT 80 auf FAT 140 bei S355)





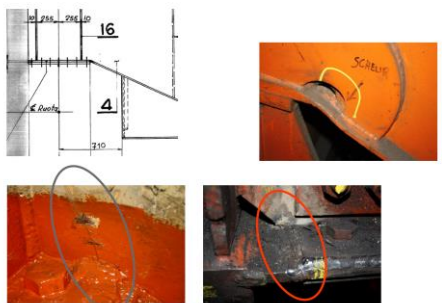


**2012:**  
Based on around 8,000 cracks detected in the area of the crane systems, ArcelorMittal Gent and the Belgian welding institute BIL were looking for an effective method for sustainable repair or for preventing fatigue cracks. Through an R&D project in their own OCAS institute, they recognized PIT as the most promising solution.

**2014:**  
ArcelorMittel trained their employees and introduced PIT. From this time, crack-free hot spots were treated preventively, as well as repair welds were PIT treated.

**2019:**  
The number of cracks currently detected is only around 700. That is a reduction of more than 90%.

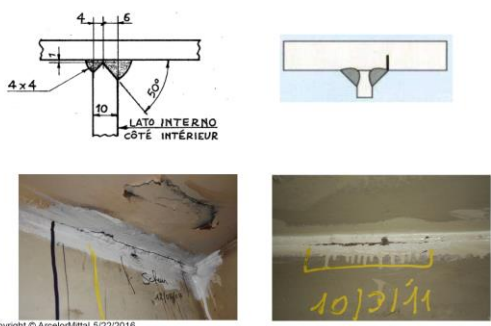
Examples of fatigue in cranes



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Examples of fatigue in cranes



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# Reference – repair of steam-vessels

The inner welds of 2 steam-vessels in the Power plant of "Stadtwerke München" has shown repeatedly cracks despite a professional repair. Together with TÜV they decided for a flat PIT treatment of the complete weld surface including the heat-affected zone. Because of the high operating temperature of more than 500 °C, we from PITEC were very skeptical regarding the effect because we expected a reduction of the induced residual compressive stresses.



In February of 2020, the PIT-Team received the unexpected feedback that there weren't any new cracks till today.

# The leading HFMI experts:

(HFMI = High Frequency Mechanical Impact)



## The PIT effects

- Substantially increased vibration resistance
- Prevention and/or avoidance of fatigue damage
- Also effective with retroactive use
- Substantially more efficient than conventional methods
- Reduction of shrinking stress
- Specific introduction of high residual compressive stress

## Your benefits

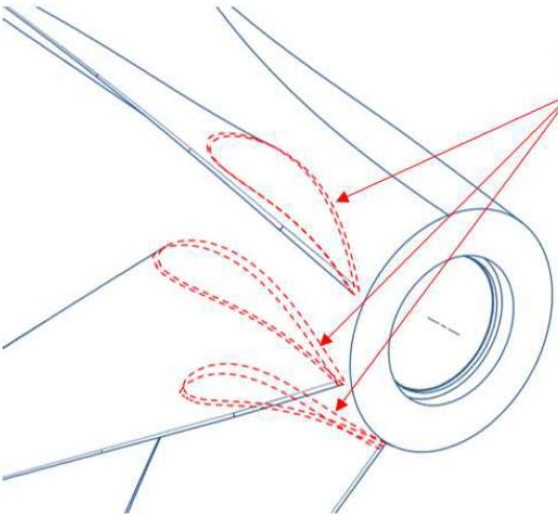
- Higher & more sustainable quality
- Great lightweight construction potential
- Substantial cost and time savings
- Better system availability, including on existing systems
- Reduction and/or avoidance of warping
- Prevention of stress corrosion
- Increased safety



Energoflow is a new invention of Wärtsillä which adjusts the water flow direction in order to increase engines efficiency up to 10%. Energoflow structure will be welded to the ship's Stern Boss just before the ship's propeller.



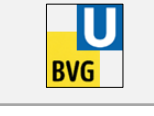
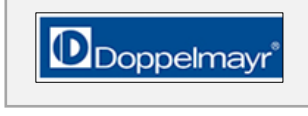
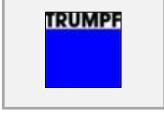
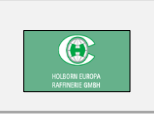
Length of the separate blades is approximately 4000 mm. Due to the dynamic load caused by the water flow, welds will be sensitive to fatigue. HFMI treatment procedure has been drawn up in order to enhance fatigue strength of the critical weld connections. Procedure will be used World Wide for treatment of EnergoFlow systems during installation. (pictures Bulk Carrier MV Cancun treated in Dry-dock Shanghai - China)



HFMI treatment of welds all around the circumference of the EnergoFlow blade connections. Both weld toes to be treated



...let PIT convince you too!







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