

***The Competitive Edge
for manufacturers and operators of dynamically loaded constructions.***



We are the leading experts in HFMI and Fatigue-Improvement

PIT creates Competitive Advantages

for Operator:

- prevention of fatigue damage, also on preloaded equipment
- reduction of distortion
- prevention of stress corrosion cracking

- ⇒ a significantly increased service life
- ⇒ essentially increased life expectancy of repair seams
- ⇒ high plant availability and reduction of failures
- ⇒ extended continued operation of older equipment

for Manufacturer:

- higher component reliability
- great lightweight potential (sustainability)
- cost and time savings compared to conventional methods

- ⇒ higher FAT classes applicable in design
- ⇒ cheaper production, as faster and more reproducible than all the other methods
- ⇒ less transport and assembly effort

Sustainability:

*Benefits such as higher service life of equipment and the realization of lightweight construction potential through PIT leads to demonstrable savings in manufacturing, transport and assembly.
In this way, we help companies to contribute to sustainability.*

PIT Consulting



PIT System Sale



PIT Operator Training



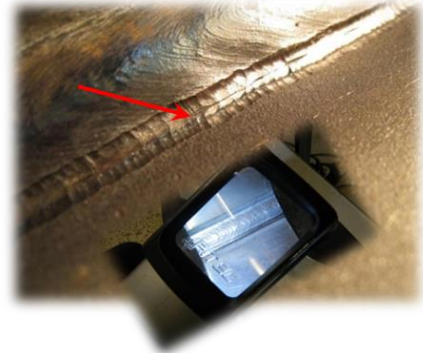
PIT Service



PIT Rental Systems



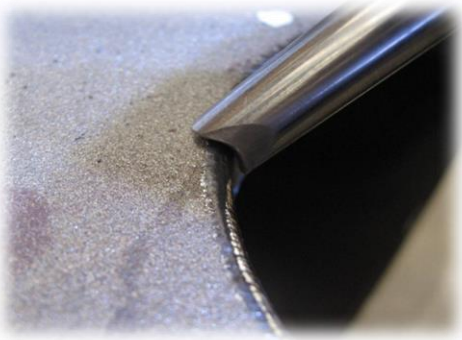
PIT Quality Service



PIT treatment of the weld toe
fatigue prevention



PIT treatment of edges
fatigue prevention



flat PIT treatment of complete weld including HEZ
prevention of fatigue and stress corrosion cracking (SCC)



flat PIT treatment of every layer
to avoid shrinkage and distorsion



by Hand



by Roboter

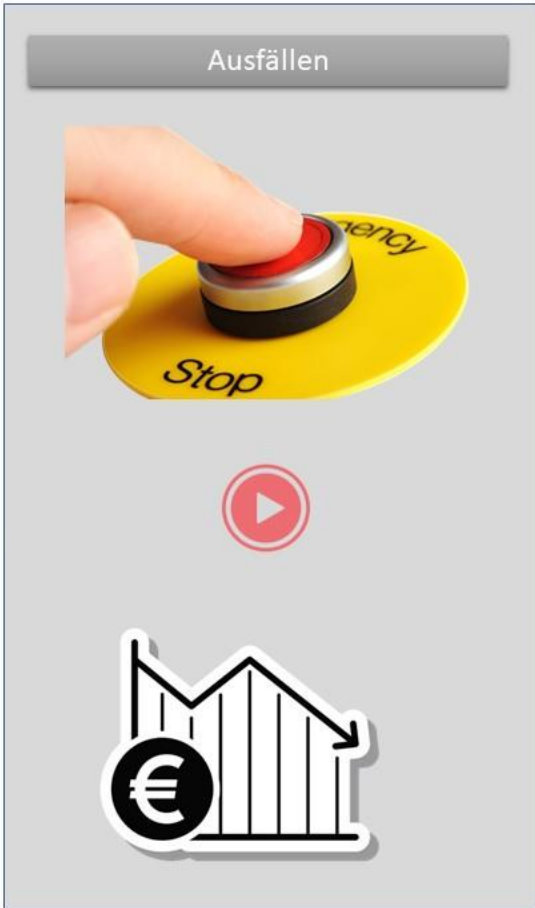


under water



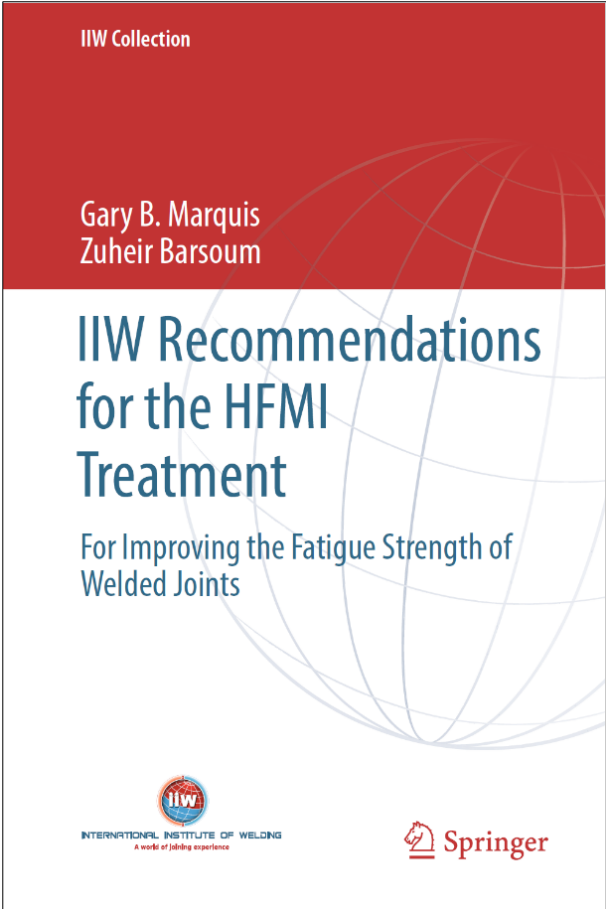
Plant or machine failure due to cracks?

Invest just 100 seconds to learn how you too can avoid such failures and the associated problems such as loss of production, repair costs, delivery difficulties and frustrated customers. ([click here to play](#))

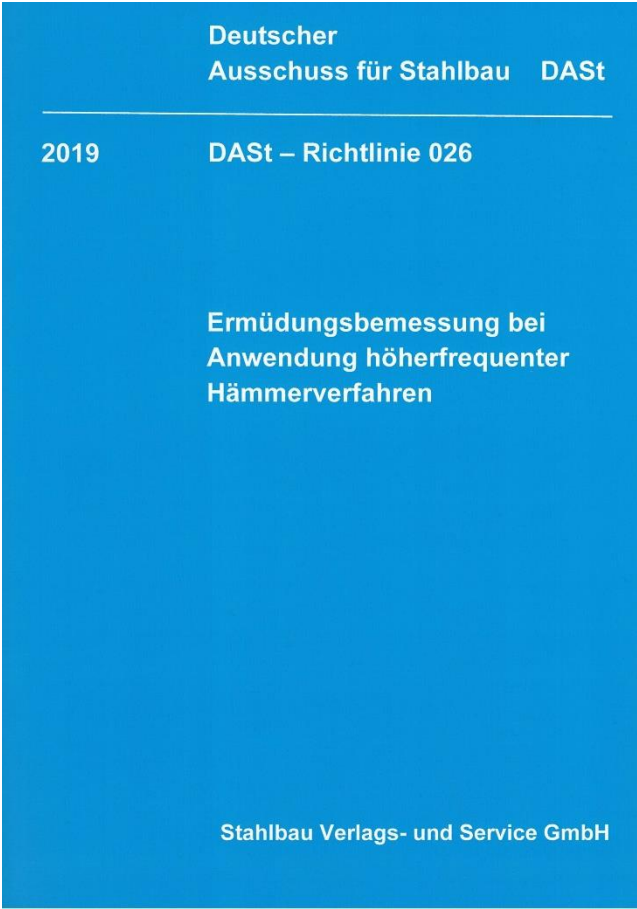




confirms the high effects of HFMI



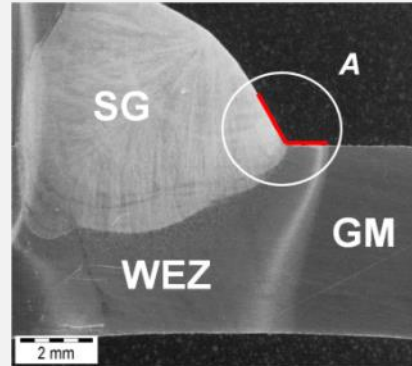
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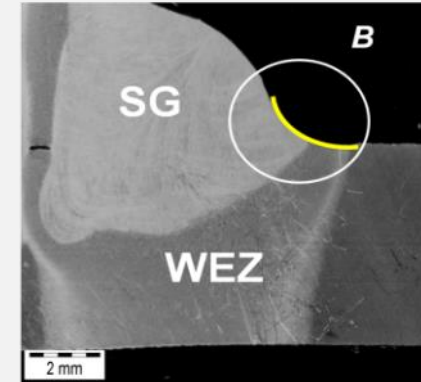
<https://shop.deutscherstahlbau.de/de/dast-richtlinie-026>

e.g. from FAT 80 up to FAT 140 and more

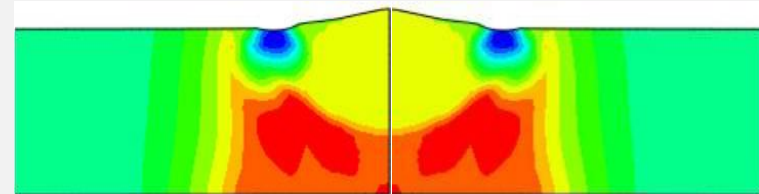
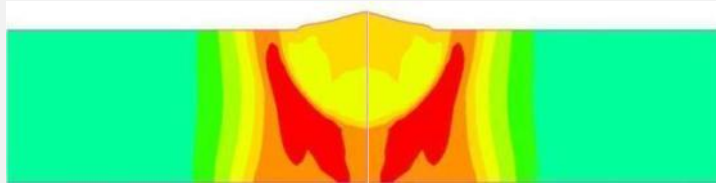
a) ...achieves a geometrical optimization of the notch at the weld toe



=>









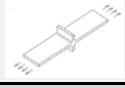
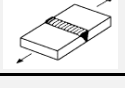
b) ...overlays the tensile stresses at the surface with high compressive stresses



The result is a significant enhancement of the fatigue strength or fatigue life.

A PIT treatment is just needed at the Hot-Spots of a construction.

The comparison with other methods shows the high technical and economical potential of Pneumatic Impact Treatment (PIT) in an impressive way.

FAT classes "as welded" details	yield strength f_y	Grinding		TIG Dressing		Hammer-/Needle Peening		PIT	
		factors	FAT-classes	factors	FAT-classes	factors	FAT-classes	factors	FAT classes
									
		m=3		m=3		m=3		m=5	
Längssteife									
	235 $f_y \leq 355$	1,30	FAT 90	1,30	FAT 90	1,30	FAT 90	1,57	FAT 112
	> 355 $f_y \leq 550$						FAT 100		FAT 125
	> 550 $f_y \leq 750$					FAT 100	FAT 140		
	> 750 $f_y \leq 950$					FAT 100	FAT 160		
Quersteife									
	235 $f_y \leq 355$	1,30	FAT 100	1,30	FAT 100	1,30	FAT 100	1,56	FAT 125
	> 355 $f_y \leq 550$						FAT 112		FAT 140
	> 550 $f_y \leq 750$					FAT 112	FAT 160		
	> 750 $f_y \leq 950$					FAT 112	FAT 180		
Stumpfstoß									
	235 $f_y \leq 355$	1,30	FAT 112	1,30	FAT 112	1,30	FAT 112	1,55	FAT 140
	> 355 $f_y \leq 550$						FAT 125		FAT 160
	> 550 $f_y \leq 750$					FAT 125	FAT 180		
	> 750 $f_y \leq 950$					FAT 125	FAT 180		
		> high potential for bad treatment - cross section reduction - additional notches > time-consuming		> only in horizontal level		> low reproducible > high hand-arm-vibration level		> highest improvement > high reproducibility > sustainable quality-assurance > ~ 20 cm/min.	

Referenzen:
 > Hobbacher A., IIW recommendations for fatigue design of welded joints and components, WRC bulletin 520, New York: The Welding Research Council, 2009
 > Marquis et al., Fatigue strength improvement of steel structures by high-frequency mechanical impact: proposed fatigue assessment guidelines, Weld World 57, pp. 803-822, 2013
 > IIW Recommendations on High Frequency Mechanical Impact (HFMI) Treatment for Improving the Fatigue Strength of Welded Joints





- high expenditure of time ~ 60 min/m
- partly a re-welding is necessary
- high potential for errors
- (undercut, grinding burn, notches)
- high risk of injury
- lots of dust emissions
- low increase factor to FAT class (e.g. from FAT 80 to FAT 100 for S355)

- high time saving ~90 % (~5 min/meter)
- almost no error potential
- nearly no risk of injury
- no dust emissions
- highest increase factor to FAT class (e.g. from FAT 80 to FAT 140 for S355)



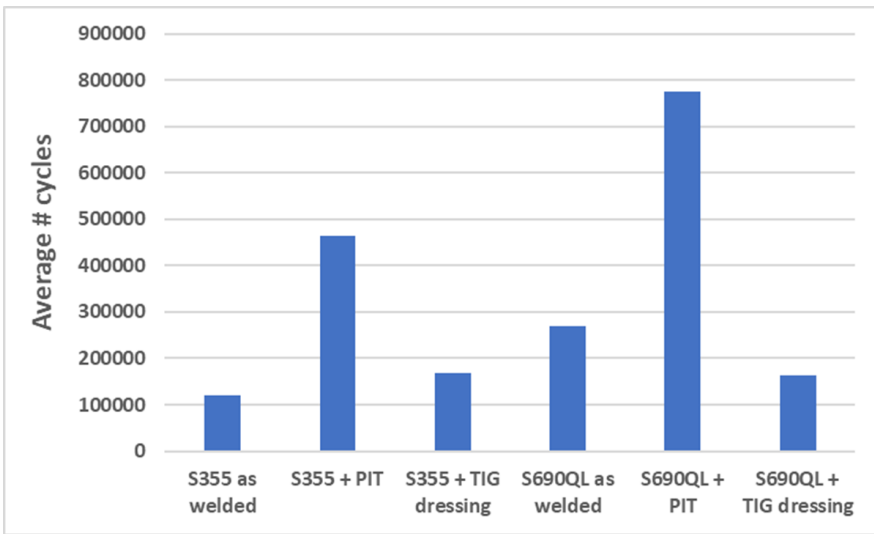
This project clearly shows the better effect of a PIT treatment compared to WIG post-treatment (TIG dressing)

Normally, the crack occurs directly at the weld toe.



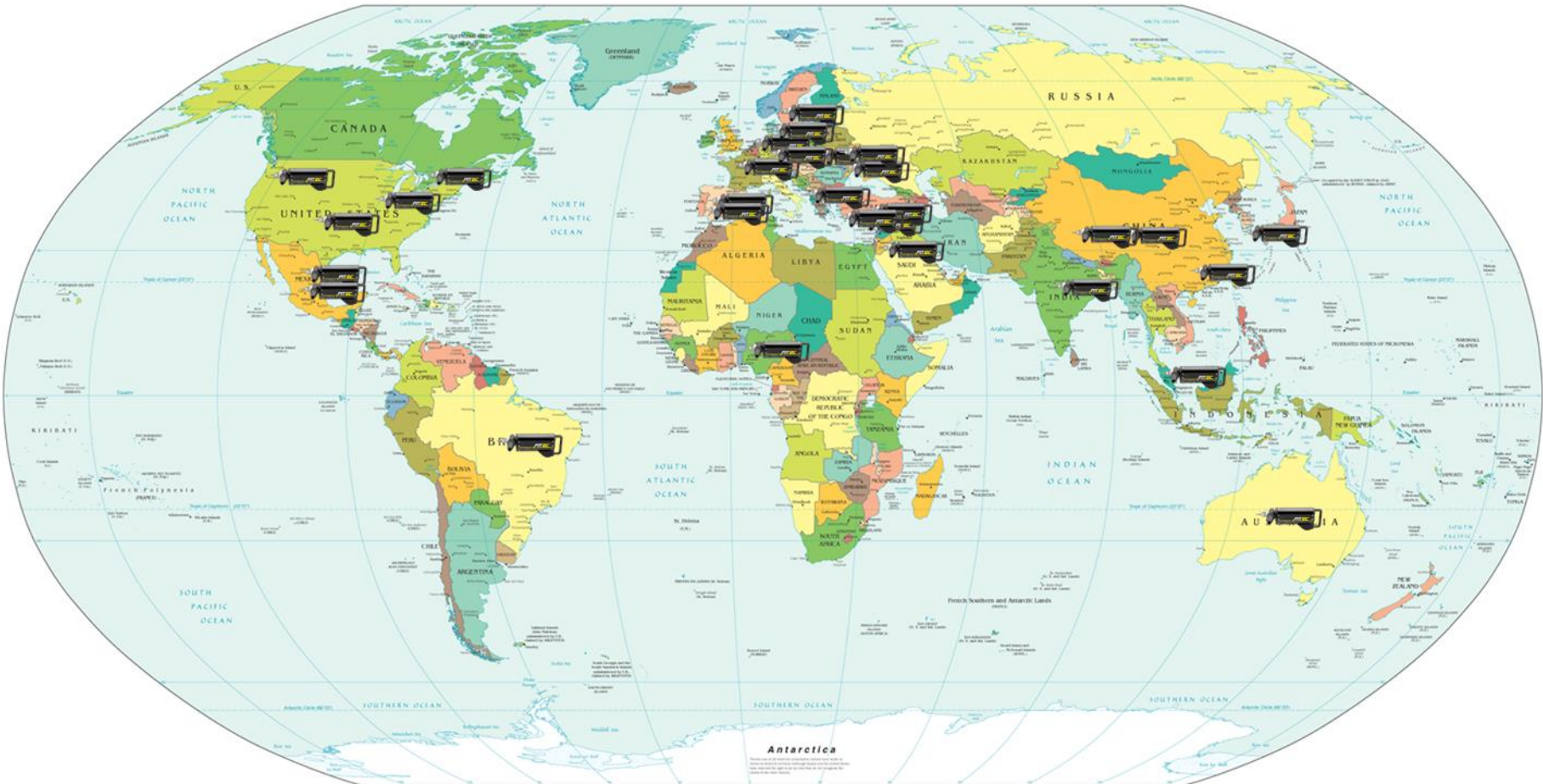
R&D Projekt Durimprove

... after the PIT treatment, a significantly later transition of WEZ

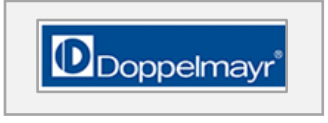
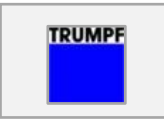
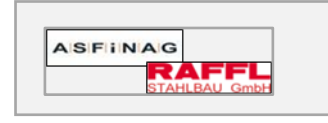


Condition	Average # cycles
S355 as welded	120.104
S355 + PIT	464.844
S355 + TIG dressing	169.276
S690QL as welded	270.663
S690QL + PIT	776.133
S690QL + TIG dressing	163.648

Our long time experience and the high efficiency of our PIT Systems allows us to be the leading supplier of HFMI technology in this moment.



...let us convince you too!





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