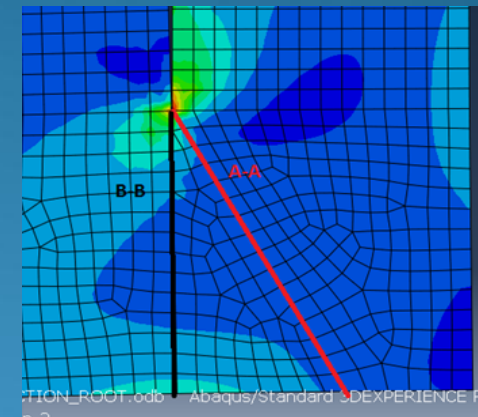
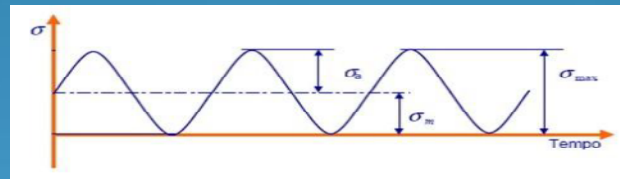
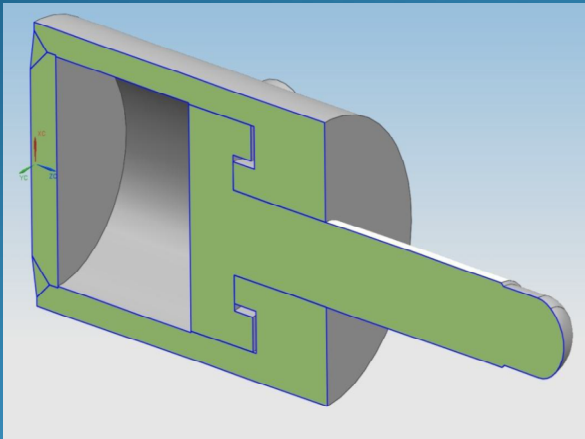


ASSESSMENT OF THE WELD ROOT FATIGUE OF A HYDRAULIC CYLINDER



LIFT-TEK
ELECAR MASTS
Lift Technologies

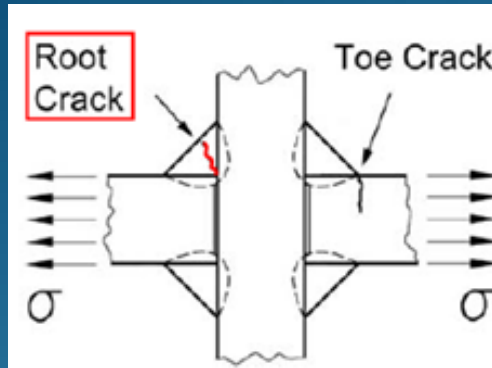
CALVI HOLDING S.p.A.

LIFT-TEK ELECAR S.p.A.

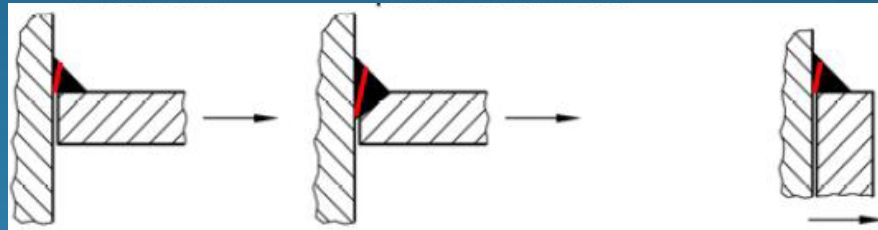
Via G. Galilei - 29015 Castel S. Giovanni (PC)

Tel. 0523 843241 – Fax. 0523 881346

What is the weld root fatigue?



Is an internal crack due to fatigue stress



Why it is so important?

- Doesn't show any sign on the surface, is "eyes invisible"
- The crack-path is not visible
- Is hard to define: classic design theories ignores the stress along the structures thickness

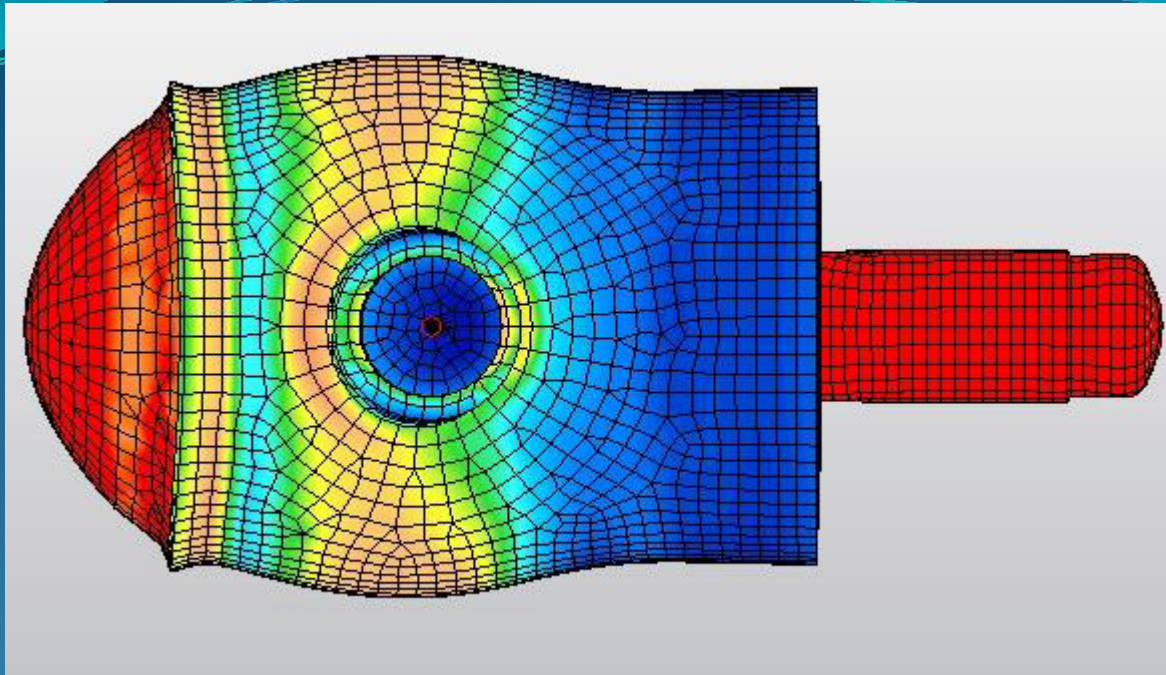


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Hot-spot classic method



Hot-spot stress=104MPa

Using the hot-spot classical method is not possible to study the behaviour of the stress in the path crack along the thickness of the structures



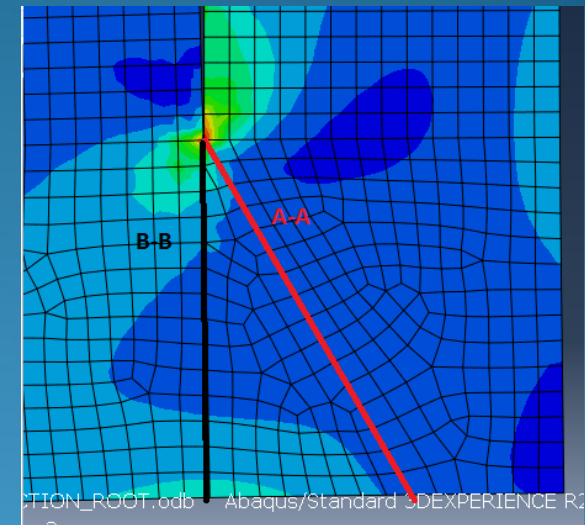
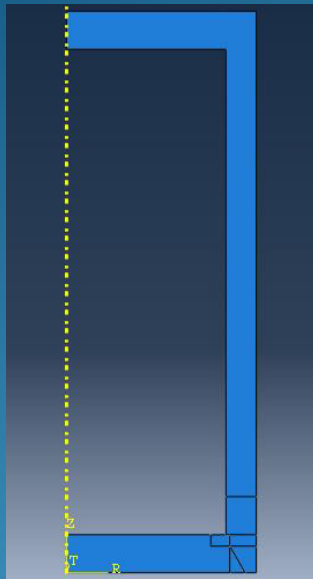
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Analisis of the same cylinder with the weld root fatigue approach

Study of the fatigue stress using the linearization of the stress long the crack path in the weld toe

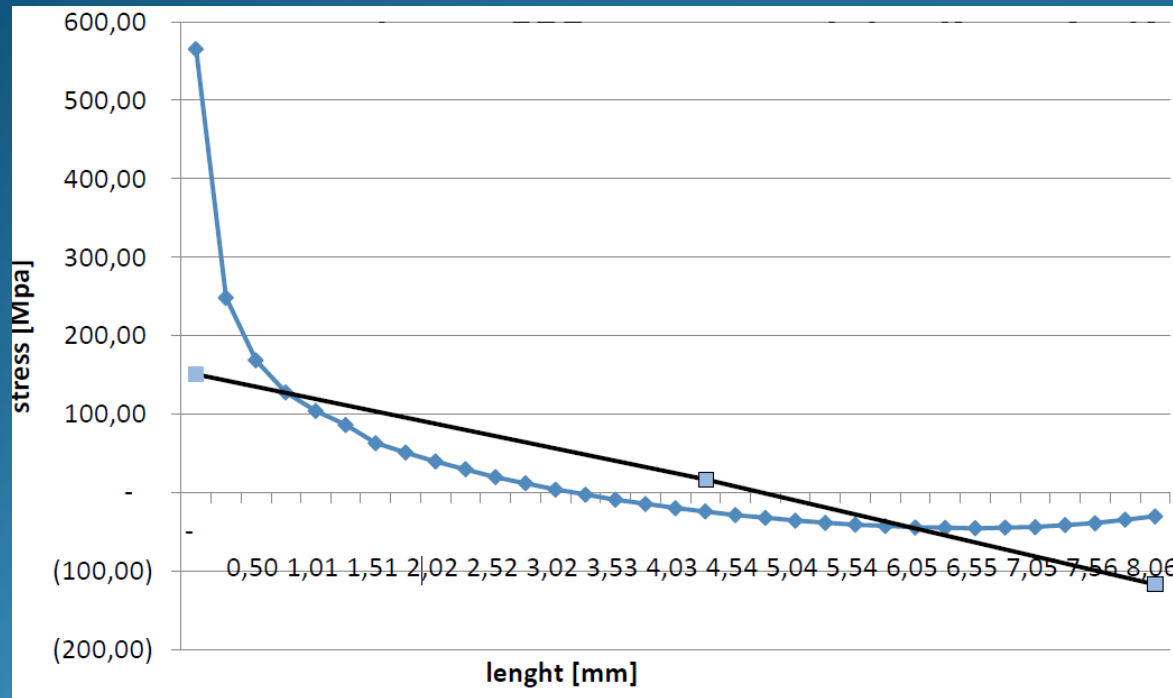


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Results stress: 150MPa



Linearizaon of the stress long the crack path

-Results stress linearization 50% more accurate than hot spot method

-Possibility of **avoid unexpected failure due to weld root fatigue**

-Possibility to know the stress behaviour inside the crack path