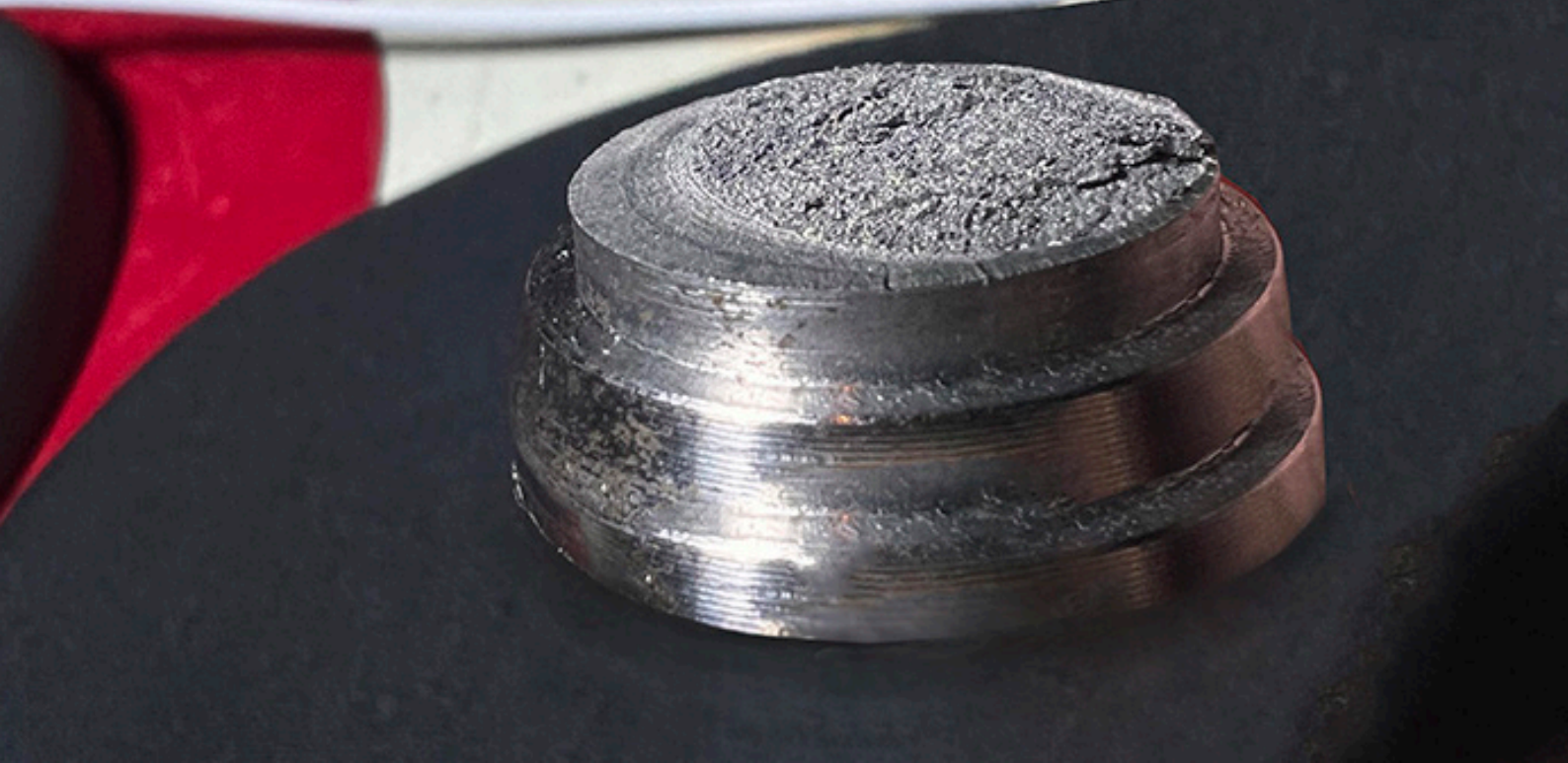


Fatigue Test



What is materials fatigue?

Fatigue is a localized and progressive structural damage process, which occurs when a material faces stress or fluctuating deformations. This phenomenon could result on a crack or in a complete fracture, even when stress levels are below the material yield strength. (Definition based on ASTM E1823).

How important is the Fatigue phenomenon in the industry?

Unlike the instant failures, the fatigue behavior is cumulative, which means that any component could be working in an apparently normal way for a long time, while generating internal and invisible microcracks which will be a future critical fracture.

Fatigue generates a localized microstructural damage in critical areas under cyclic loading. Solco specializes in identify and analyze these areas, foreseeing catastrophic failures.



Design for fluctuant loadings

In almost static conditions, the design tends to consider the admissible stress derived from the yield (S_y) and tensile strength (UTS). However, when loadings are cyclic or alternating, these criteria must be complemented focused on the component remaining life.

The design due to fatigue requires to consider not just the resistance, but also the system capacity for supporting a high level of cycles with no failure.



Fatigue Tests Services

In SolCo SPA® and SolCo Lab LLC® we perform fatigue tests for critical industrial components, using advanced techniques as follow:

- Axial or rotational fatigue test.
- S-N curves and characterization of life cycles.
- Crack origin detection through microscopy (SEM / optical)
- Fractographic analysis and propagation evaluation.
- Predictive models with statistic and fractomechanics focus.

Our service is based on international regulations as ASTM E466, ASTM E739, ASTM E647, API 579 FFS, between others, and we adapt protocols according to the service real conditions.

SolCo Lab[®] | Materials & Failure Engineering

Fatigue Test

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