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Damage mechanism: Brittle Fracture. Damage mode: Failure mode: Rupture. CC Caroline Phoenix



Damage Mechanism: Sulfolane corrosion in a pipe reducer. Damage mode: general thinning. ©  
CEphoto, Uwe Aranas



Corrosion and erosion at a steam nozzle © CEphoto, Uwe Aranas



Scaling and Cracking of a 12CrMo19-5 tube © CEphoto, Uwe Aranas



A float gauge of a separation vessel, destroyed by a Joukowski Pressure Shock from an interconnected fluid pipeline. The pressure shock squeezed the symmetric float gauge until it burst as consequence of the external overpressure © **CEphoto, Uwe Aranas**



Damage mechanism: Stress corrosion cracking, caused by tension in an unsuitable welded reinforcement collar. No failure present © CEphoto, Uwe Aranas



36 bar steam pipeline of a soot blowing system, the pipe bend burst as a consequence of internal erosion. Material: 15 Mo 3 (steel) © **CEphoto, Uwe Aranas**



Damage mechanism: High-temperature sulfur corrosion of a 12 CrMo 19.5 pipe stub (used for insertion of a pressure indicator) © CEphoto, Uwe Aranas





Fatigue fracture of a PI nozzle © CEphoto, Uwe Aranas



Different types of degradation of thermowells with considerable material loss due to erosion and corrosion attacks © **CEphoto, Uwe Aranas**



Damage Mechanism: Stress corrosion cracking of a quench pipe. Material: 1.4541 © CEphoto, Uwe Aranas



Damage Mechanism: Hydrogen Embrittlement, also known as Hydrogen Induced Cracking (HIC) ©  
**CEphoto, Uwe Aranas**



Damage mechanism: Acid corrosion in a flue gas duct as a result of condensation of flue gas. The acid accumulated behind the chamotte layer and caused the depicted corrosion. This photo: gas side of the duct © **CEphoto, Uwe Aranas**



Damage mechanism: Acid corrosion in a flue gas duct as a result of condensation of flue gas. The acid accumulated behind the chamotte layer and caused the depicted corrosion. This photo:  
Atmosphere side of the duct © **CEphoto, Uwe Aranas**

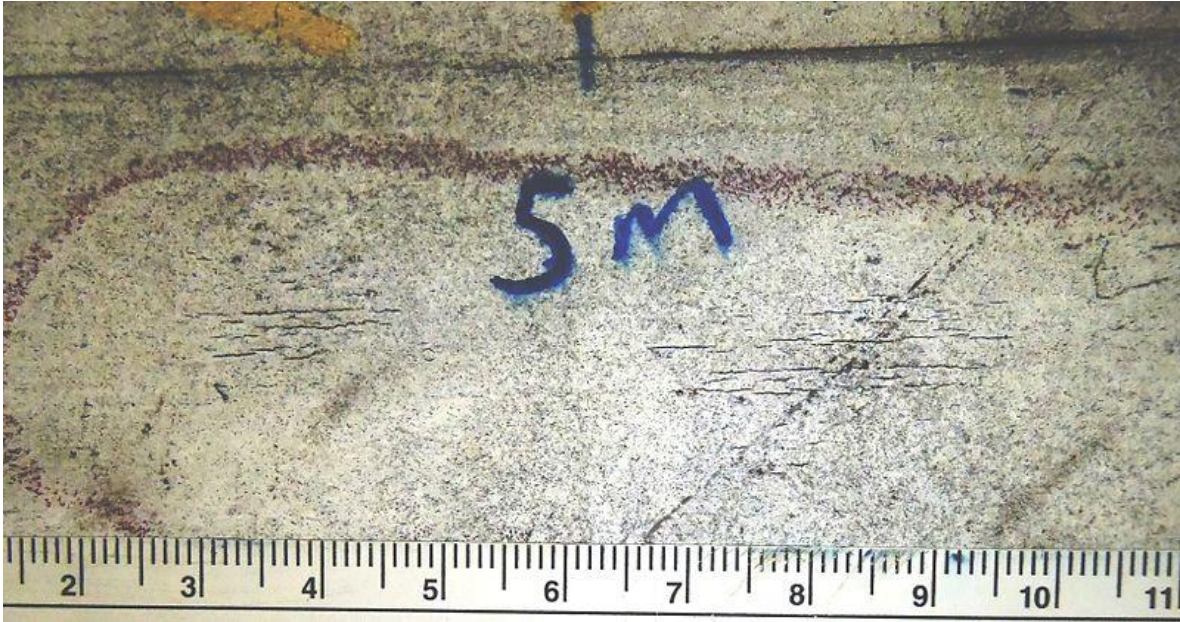


Damage mode: Pitting corrosion in a piece of aluminium. The holes caused by pitting which can be observed in this image are about 1 mm in diameter © **CEphoto, Carlos Delgado**



© CEphoto, Carlos Delgado





A close-up view of the surface of a pipeline showing indications of DM [stress corrosion cracking](#) (two clusters of small black lines), as revealed by [magnetic particle inspection \(MPI\)](#). The surface was prepared with white contrast paint, and magnetic particles in a liquid suspension were sprayed onto the surface while it was magnetized. Cracks which would normally have been invisible are detectable due to the magnetic particles clustering at the crack openings. The scale at the bottom of the picture is in millimeters. Markings on the pipe were made by a technician for position reference.



Corrosión por exfoliación en una pieza de aluminio. La pieza mide unos 14 mm de ancho. La corrosión por exfoliación es un tipo de corrosión intergranular que avanza a lo largo de los planos de cristalización, lo que da lugar a la separación del material con un aspecto de capas. ©

**CEphoto, Carlos Delgado**



Filiform corrosion spreading from scribe on painted aluminum after complete accelerated corrosion testing (ACT version 2) CC by Matador



A tube damaged by DM caustic embrittlement. White caustic deposits can be seen inside. CC 1e4cMET

[https://en.wikipedia.org/wiki/Caustic\\_embrittlement#/media/File:Boiler\\_scale\\_5.JPG](https://en.wikipedia.org/wiki/Caustic_embrittlement#/media/File:Boiler_scale_5.JPG)