



# TULA™

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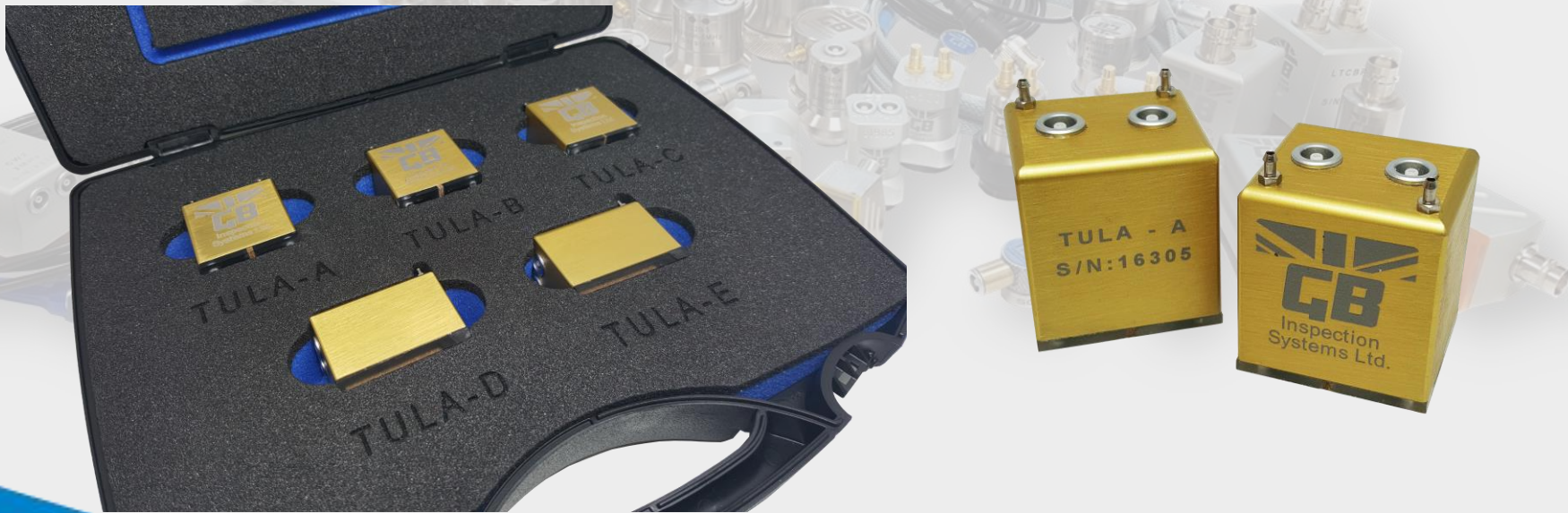
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# TULA™

## TOFD Ultra Low Angle

TULA™ is our patent pending probe which is used for early HTHA (High Temperature Hydrogen Attack) detection in industries such as oil refineries and power plants. Patent numbers 1808654.6, 1808665.2



Inspired by Tim Armitt of Lavender International

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# TULA™

A development inspired by Tim Armitt after the catastrophic failure of a heat exchanger at Tesoro Anacortes Refinery in 2010 **resulting in 7 fatalities.**



Failure caused by the incidence of HTHA (High Temperature Hydrogen Attack).

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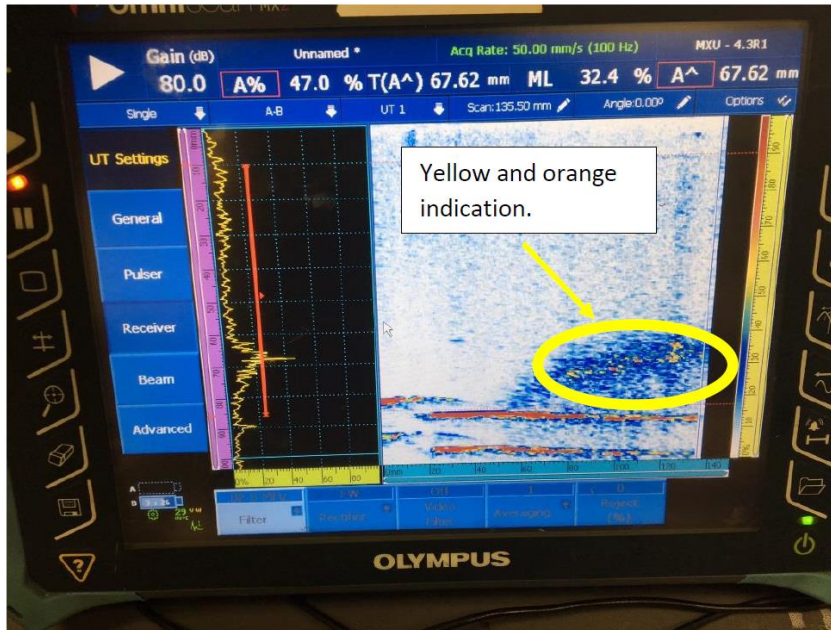
HTHA is a defect mechanism that is difficult to detect especially at its early stage because the individual reflectors may be as small as 0.005mm.

TOFD is a very effective method of detecting HTHA but it is often impractical to use especially on thick materials (100mm) because of attenuation and also requiring a very wide PCS.

TULA™ overcomes this problem as the two elements are positioned in one housing so there is no PCS and they are very sensitive to small reflectors.

Another benefit is scanning speeds of 300mm per second which is much faster than other suitable methods.

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The screen shot above shows High Temperature Hydrogen Attack (yellow and orange indication) detected by the TULA technique.





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