

PARTNERS

Industrially driven consortium with significant expertise in field inspection services and non-destructive testing (NDT) product development:

- INETEC – Institute for Nuclear Technology Ltd.
- Testing, Research & Standards Centre (TRSC) Public Power Corporation (PPC)
- Kaunas University of Technology
- TWI Ltd.



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An ultrasonic non-destructive testing system for detection and quantification of early stage subsurface creep damage in the thermal power generation industry



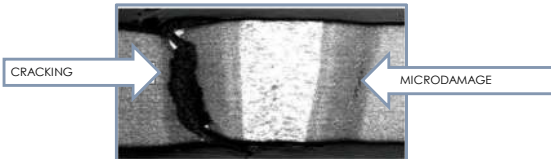
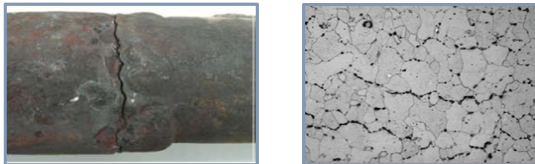
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ABSTRACT

Creep is the time-dependent, thermally assisted deformation of a component operating under stress. It is often a key factor not only in the design of components used in the power generation industry, particularly in fossil fuel and nuclear plant, but also in the assessment of their remaining life. Pressurised components such as boiler tubing, headers, and steam piping in fossil-fuel power plants operate at temperatures of 530°C up to about 650°C and this is conducive to causing creep damage over the operating life of the component. Although creep in this material has been known about for some time it has only become a pressing issue over the past few years because of two reasons:

- Failure is occurring at a much earlier stage than previously anticipated, i.e. in some cases about half to three quarters the number of years that were first anticipated, and
- Large fossil fueled power plants are now being expected to work beyond their original design life (plant life extension programme) and therefore creep damage is becoming more likely during the extension period.

Hence the early detection of creep damage in components which are in-service stands to aid in the better management of the power plant and to prevent often catastrophic failures which can lead to severely adverse human, environmental and economic consequences to society.



KEY FACTS ABOUT THE CreepUT SYSTEM



PRODUCT	A highly sensitive ultrasonic testing system for in-situ detection of early stage creep damage and quantitative assessment of service induced microstructure degradation in components exposed to elevated operating conditions within thermal power generation industry.
OFFERING	<ul style="list-style-type: none">• Provision of NDT inspection services (on case-by-case basis inspection)• Sales of CreepUT products to NDT inspection service providers and power plant operators
BENEFITS	<ul style="list-style-type: none">• Early stage detection and categorization of subsurface creep damage as per standard classification norms with potential to detect microstructural changes over a period of operation• Automated method providing increased confidence over inspection results• Delivering of cost reductions on operational downtime and inspection by a minimum of 20%• Reduction of plant outage frequency by 50% when combined with appropriate risk based inspection methodology• Improvement of confidence level of the plant operator in the integrity of components, resulting in economic and safe operation
MARKET	<ul style="list-style-type: none">• Fossil-fueled power plants• Nuclear power plants• Power generating and high temperature units within oil & gas and petrochemical industries• NDT service providers and agencies supporting end-users with plant life extension technologies