

## HEDRad - High Energy Digital Radiography

HEDRad is a collaboration between EU companies and research organisations with the objective to develop digital computed radiography technology for the volumetric examination of large scale safety critical pressure components (e.g. pump bowls, valve bodies, thick section vessel and pipe welds) for the detection of in-service defects, corrosion and malfunctions, the presence of which could result in catastrophic component failure.

Energy sector businesses (e.g. oil and gas, petrochemical and power generation - civil nuclear and fossil fuel) use processes that operate at high pressure and often high temperature.



The engineering components used in such processes include, for example, pipes, valves, turbine casings, pump bowls, catalytic crackers/reformers, etc., all of which can be made of large section thick materials to withstand the severe pressure/temperature conditions under which they operate. All these components can be prone to in-service failure resulting from material degradation mechanisms such as metal fatigue, creep and corrosion.

Failure of such components could easily be catastrophic in terms of local and district fatalities/injuries and environmental/economic impact. There are approximately 700 refineries, 5000+ chemical plants, 450 nuclear power stations

and in excess of 3000 fossil fuelled power stations globally. The trend is for the number of these plants to increase as the world's developing countries consume ever increasing amounts of energy.

### Project objective

Capital assets such as power stations, refineries and petrochemical plants usually generate revenues of typically €1m/day. However, despite their strategic and critical applications and the dire consequences of component failure (local and district safety hazard, environmental and economic), there are generally no economic, reliable non-destructive testing (NDT) techniques to volumetrically in-service examine critical thick section pressure retaining components, which are vital to a plant's continued safe operation.

HEDRad will produce a novel, mobile high energy digital computed radiography system that will allow new applications by extending the range of energy levels that can be currently applied to phosphor screen computed radiation detectors in site applications. The technological advances that will be made as a result of HEDRad will enable the internal condition of valves and other thick wall components to be assessed without the need to open it, thus reducing what is currently a three day cycle to only half a day.

For further information, please visit the project website at [www.hedrad.com](http://www.hedrad.com).

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