

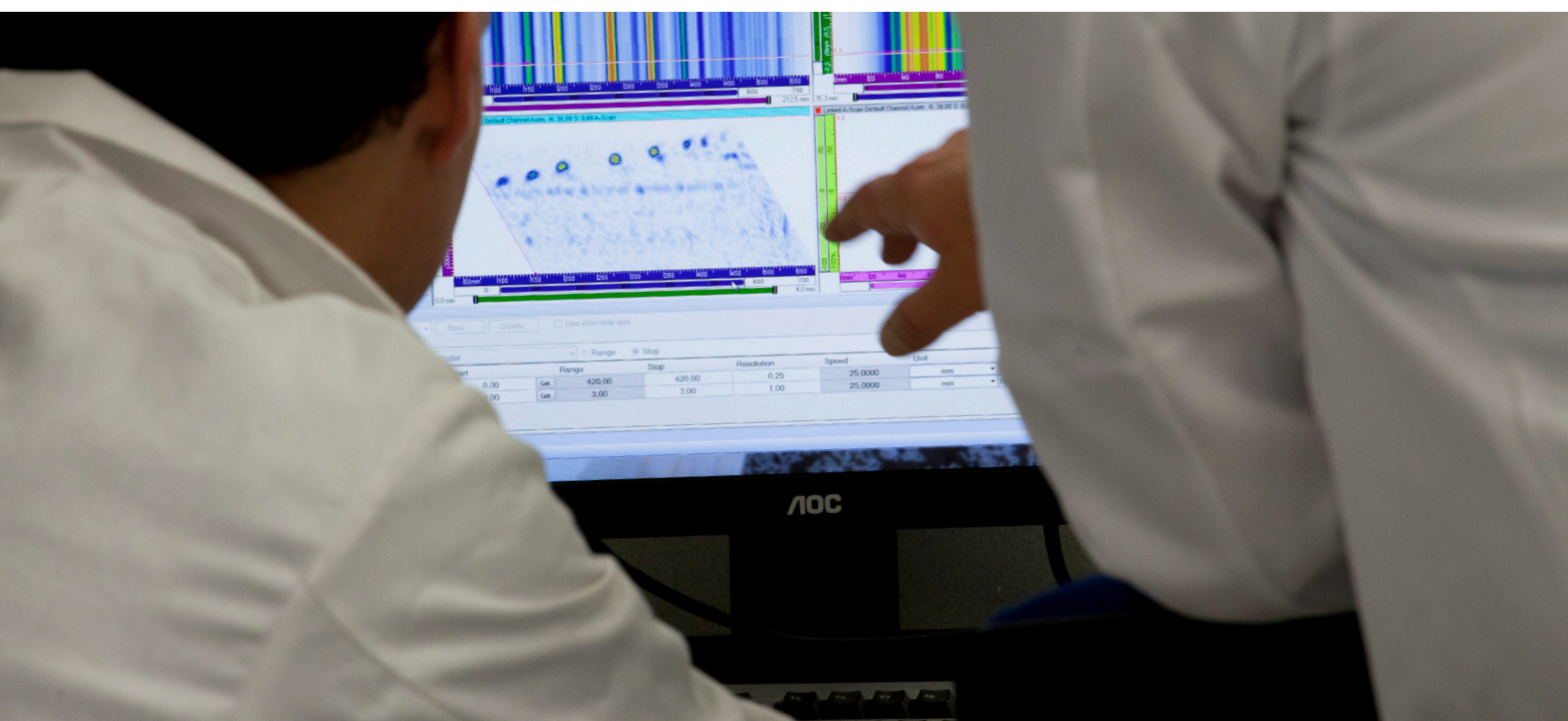
# SAFETY OF GENERATION II & III REACTORS

## ULTRASONIC INSPECTION OF COMPLEX STRUCTURED MATERIALS

### PROJECT OBJECTIVES

ADVISE aims to advance the ultrasonic inspection of corrosion resistant alloys, in particular austenitic welds and cast austenitic steel, for which conventional ultrasonic techniques suffer from severe performance limitations due to the microstructure.

- Increase the comprehension and modelling of complex structures for accurate prediction
- Develop new tools for material characterisation and input data
- Provide defect evaluation methods and assisted diagnostics



### ADVISE STRATEGY

The project relies on a multi-pronged strategy:

Model-assisted inspection enhancement tools allow the iterative optimisation of customised transducers and associated excitation signals, to specify the most appropriate inspection approach.

Novel in-situ characterisation techniques acquire specific information about the structure to be inspected; then model-assisted optimisation tools fine-tune the inspection parameters in the field.

Model-assisted diagnostic tools take a-priori, model-predicted and in-situ obtained information into account to fully exploit the information contained in full matrix capture (FMC) acquisitions, using adaptive imaging methods, backscatter filtering and inversion strategies.

### ADVISE AT A GLANCE

- H2020 Euratom research project
- Coordinated by EDF (Andreas SCHUMM)
- 13 partners from 6 European countries
- 4,55 M€ budget with 4,17 M€ EU funding
- Started on 1 Sep 2017, lasting 48 months

### EXPECTED RESULTS

ADVISE will deliver:

1. Methods to:
  - Measure the properties of NPP materials that cause difficulties for their inspection by ultrasound, including grain size, wave speed and attenuation and their spatial variations
  - Simulate ultrasound propagation, attenuation, scattering and interactions with defects in the materials under concern; these methods will be vital tools for the evaluation and optimisation of any target inspections.
  - Optimise the performance of ultrasound inspection. This will include the parameters of ultrasound arrays, data acquisition, signal/image processing, and interpretation. Performance will include both detection and characterisation.
2. Simulation tools, imaging tools and diagnostic tools (software and hardware) dedicated to complex materials
3. Physical demonstration examples using real materials and representative target defects, showcasing the new methods and optimised NDE capabilities
4. Public workshops, training sessions and publications for broad dissemination

### PARTNERS



### CONTACTS

**Technical Project Coordinator**  
Andreas SCHUMM  
EDF – R&D  
advise-coordination@eurtd.com

**ADVISE Project Office**  
Andrea KUPERBERG  
ARTIC France  
advise-arttic@eurtd.com



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