

ATLAS+

Advanced Structural Integrity Assessment Tools for Safe Long-Term Operation

OBJECTIVES

The main objective and mission of the ATLAS+ project is to develop advanced structural assessment tools to address the remaining technology gaps for the safe and long-term operation of nuclear reactor pressure coolant boundary systems. This is achieved through the development and validation of:

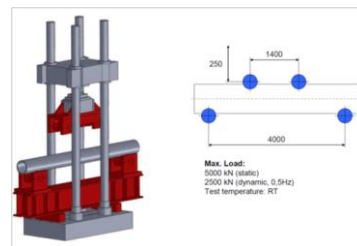
- innovative quantitative methodologies to transfer laboratory material properties to assess the structural integrity of large components
- enhanced treatment of weld residual stresses when subjected to long-term operation
- advanced simulation tools based on fracture mechanics methods using physically-based mechanistic models
- improved engineering methods to assess components under long-term operation taking into account specific operational demands
- integrated probabilistic assessment methods to reveal uncertainties and justify safety margins

Additionally, the objective is to disseminate the findings of the work through dedicated training sessions and links with the NUGENIA Association.

DESCRIPTION OF WORK

The project's scope of work focuses on piping systems of the reactor coolant pressure boundary components (RCPB) excluding the reactor pressure vessel (RPV). The project focuses on an experimental proof of concept and validation of the developed methodology both at the laboratory scale and the full scale level.

The ATLAS+ project contains 4 main technical work packages and one training and dissemination package.



MAIN RESULTS / HIGHLIGHTS

ATLAS+ will have a significant impact on the safety of operational Generation II and III nuclear power plants. The project will demonstrate and quantify inherent safety margins introduced by the conservative approaches used during design and dictated by codes and standards employed throughout the plant's lifetime. The outcomes of ATLAS+ will therefore support the long-term operation of nuclear power plants. This will be achieved by using more advanced and realistic scientific methods to assess the integrity of piping. The project will provide evidence to support the methods by carrying out large scale tests using original piping materials.

DURATION

1 June 2017 – 31 May 2021
4 years

CONTACTS

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PARTNERS

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