

AGE60+

Applicability of ageing related data bases and methodologies for ensuring safe operation of LWR beyond 60 years

OBJECTIVES

The AGE60+ project aims towards the application of ageing related data bases and methodologies to ensuring the safe operation of Light Water Reactors beyond 60 years, and the longer-term safe storage of waste. It aims to achieve its ends by encouraging European researchers to share data in order to maximize its utility. The specific objective is to undertake a preliminary project on the collation of dispersed data in different fields, and on the extrapolation of selected ageing related data, to assess the applicability of methodologies to cover plant and material behaviour during 60+ years' operation. The fields considered in this preliminary project include the safety relevant components which are either irreplaceable or extremely difficult to replace, such as the steel reactor pressure vessel (RPV) and vessel internal structures, and concrete containment. Where data bases and methodologies for prediction of aging effects in nuclear power plant currently exist, these will be reviewed and expanded. In addition, new data bases initiated, with a focus on the advantages in predictability that can be achieved with the proper use of databases, regardless of the level of development of the database. Considering reasonable cross-cutting, five databases are involved in the scope of work covering MnMoNi RPV steel irradiation embrittlement, VVER RPV steel irradiation embrittlement, low alloy steel thermal ageing, irradiation-assisted stress corrosion cracking, and concrete ageing.

To expand currently-available databases on the embrittlement of MnMoNi LWR reactor pressure vessel steels, and to utilise the data to investigate ways to improve the prediction of embrittlement. To collate data on WWER RPV steel embrittlement into an accessible database and utilise it for embrittlement prediction. To initiate a database on thermal ageing of low alloy steel components to improve the understanding and predictability of thermal ageing effects. To assess the requirements and possibilities of setting up databases to assist in the collaborative understanding of stress corrosion cracking of LWR internal structures and the degradation of concrete structures

DESCRIPTION OF WORK

The consortium intends, progressively:

- to encourage European researchers to share data in order to maximise its utility;
- to consolidate available data in readily-accessible formats;
- to utilise selected, accessible data to assess the applicability of current methodologies to cover 60+ years of nuclear power plant operation
- to utilise accessible data more generally to improve the prediction of material and component behaviour during extended operation of both current and prospective nuclear power plant, and during the storage and ultimate disposal of waste arising from power generation; since an accurate prediction is the necessary basis for maintaining the safe and economical operation of plant and disposal of waste.

MAIN RESULTS / HIGHLIGHTS

Data collected and preliminary analyses shown at Workshop on « Surveillance Program Extensions For Long Term Operation In WWER-440 Reactors » November 2015. Presentations made at International Group On Radiation Damage Mechanisms April 2016..

DURATION

1 April 2015 – 30 September 2016
18 months

PARTNERS

NNL / AR-G / CIEMAT / UJV / MTA EK

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