



H2020 project

INCEFA-PLUS & INCEFA-SCALE

INcreasing Safety in NPPs by Covering
gaps in Environmental Fatigue Assessment
- focusing on gaps between laboratory data
and component SCALE
(07/2015 – 10/2020 – 09/2025)

Kevin Mottershead

Do you think that the **major results** achieved/expected are correctly **disseminated**?

Why and how? (website, reports, papers,)

- Project websites
- ResearchGate presence
- Twitter
- Linked-In (introduced for INCEFA-SCALE and already proving highly effective)
- Workshops (2 per project). The two for INCEFA+ were very well attended (69 & 59 registered attendees). Even though the October 2020 event was virtual, the audience engagement was excellent.
- Conference participations, 10 conferences and many more papers, especially ASME PVP, NUGENIA/SNETP events, special sessions at PVP2018, PVP2020 and the ICMFM18 conferences)
- Journal papers: 5 papers to be published in 2021 in the Open Access METAL2020 proceedings
- Final reference book, 169 page comprehensive report on INCEFA+ now available for download from the INCEFA+ website. Records details of the protocols used to design test programmes, perform tests reliably, and for assigning quality and completeness rankings to data. Also documents the data analysis details and how the data has been used to underpin emergent EAF assessment methodologies in Europe and the USA.
- OpenAire is being used to facilitate Open Access when it is appropriate.
- THE PROOF OF SUCCESS IS THE HUGE INTEREST IN THE PROJECTS FROM THE USA AND JAPAN

Were/are the **infrastructures** available in Europe adequate for the realisation of your project? Which/how they were/are/will be used ?

- INCEFA+ made use of the leading European test laboratories.
- Combining testing capabilities under common protocols, and using common materials, environments and specimen preparations, has maximised statistical reliability for the results, and hence their usefulness for supporting developing EAF assessment methods.
- MatDB has been hugely successful for combining data in common formats. Success has attracted significant interest from USNRC, EPRI and NRA.
- INCEFA-SCALE moves towards more specialised test methods and also introduces emphasis on mechanistic understanding.
 - Capitalises on emergent unique test capabilities for multiaxial testing.
 - Maximises use of already established capabilities for pursuing advances in understanding obtainable through uniaxial testing.
 - Detailed material & specimen analysis will inform mechanistic understanding. Leading European material examination labs are making this possible.
 - EPRI & KAERI have joined us, demonstrating the value of what we are doing.

What were/are the modelling **codes** used in the project?

- list specifying if home-made (by whom) or industrial
- precise if the codes could be shared/validated or not

There are no unique modelling codes used in either project.

Some supporting FEA using commercial software has proved useful during INCEFA+ to understand specimen performance. During INCEFA-SCALE more of this is inevitable to help understand the behaviour of complex specimens. Several participants have this capability, meaning that cross validation of findings is possible.

Also JMP® commercial software has been used for data analysis.

FINALLY.....

None of the questions asked allow the success of Consortium behaviour to be celebrated. The enthusiasm of all participants to work together and consistently, and for helping each other, has been a major factor in the success so far of these projects.