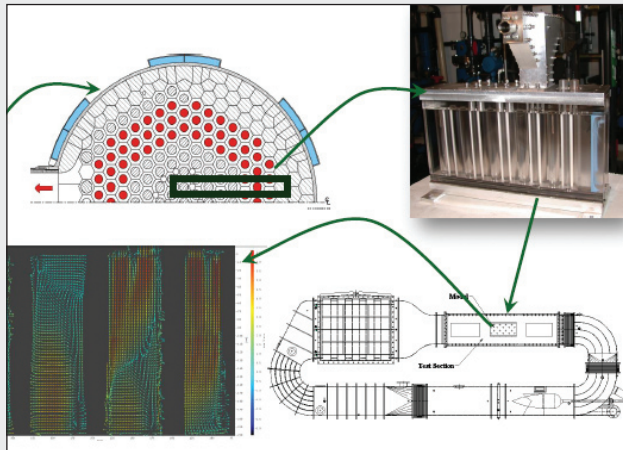


AnalysisLibrary® Helps Improve Collaboration for Next-Generation Nuclear Plant Design

Challenge: Enable Scientists in Diverse Locations to Easily Share and Process Analysis Data



The Idaho National Lab (INL), in collaboration with corporate partners, is designing the Next Generation Nuclear Plant (NGNP), a high-temperature gas-cooled reactor to provide electricity generation and waste heat for process plants that would otherwise use fossil fuels. NGNP also provides new safety features such as walk-away shutdown. NGNP design involves many scientists who must collaborate and share results while working from diverse locations. Both computational data and experimental data must be compared and verified—such as CFD and thermal analyses of the VHTR (Very High Temperature Reactor) lower plenum, which are performed in StarCCM+. Much of the data requires statistical post-processing, so the information sharing must include an automated solution for that as well.

Solution: NGNP Data Management & Analysis System (NDMAS)

The solution created by INL uses PHX AnalysisLibrary with SAS Business Intelligence and Microsoft SharePoint. AnalysisLibrary provides the front-end to the system for scientists to conveniently input their data as they perform thermal fluid analyses for reactor design. As a data repository residing on a central server, AnalysisLibrary provides an easily-accessible, user-friendly, Windows Explorer-type client for entering, manipulating, and viewing analysis files. Capabilities with AnalysisLibrary include metadata tagging and notes attached to files, full data searches, data traceability, version control, and access control of users and groups. AnalysisLibrary automatically indexes files upon receipt, performs the metadata tagging, and enables specialized viewing capabilities. CFD results files, for example, are rendered in a web view as vector or contour plots showing analysis results without the need for the computational software that created them. This is made possible by AnalysisLibrary's use of VCollab, a neutral rendering engine for many CAE formats. Specialized indexers in AnalysisLibrary also push data requiring

statistical analysis to SAS's Business Intelligence environment for further processing. A SAS portal allows users to see graphs and charts, customize reports, create web content and link it to a SharePoint server. AnalysisLibrary data that don't require SAS are linked directly to SharePoint where scientists and regulatory officials can monitor design results.

Benefit: More Automated Processes, Reduced Workloads, and Easier NRC Design Audits

The NDMAS solution with AnalysisLibrary allows scientists to archive their computational work and deliver it to a website with minimal, if any, intermediary technical assistance. Prior to this solution, the process of publishing data was manual and would involve the writing of specialized programs to extract relevant data from specialized file formats. The process of publishing analysis results to a website was also manual. NDMAS simplifies NRC audit approval of new designs by providing a standardized and traceable reporting mechanism. Ultimately, the system enables a much reduced configuration and data management workload than traditional approaches to data sharing, data management and design audits.