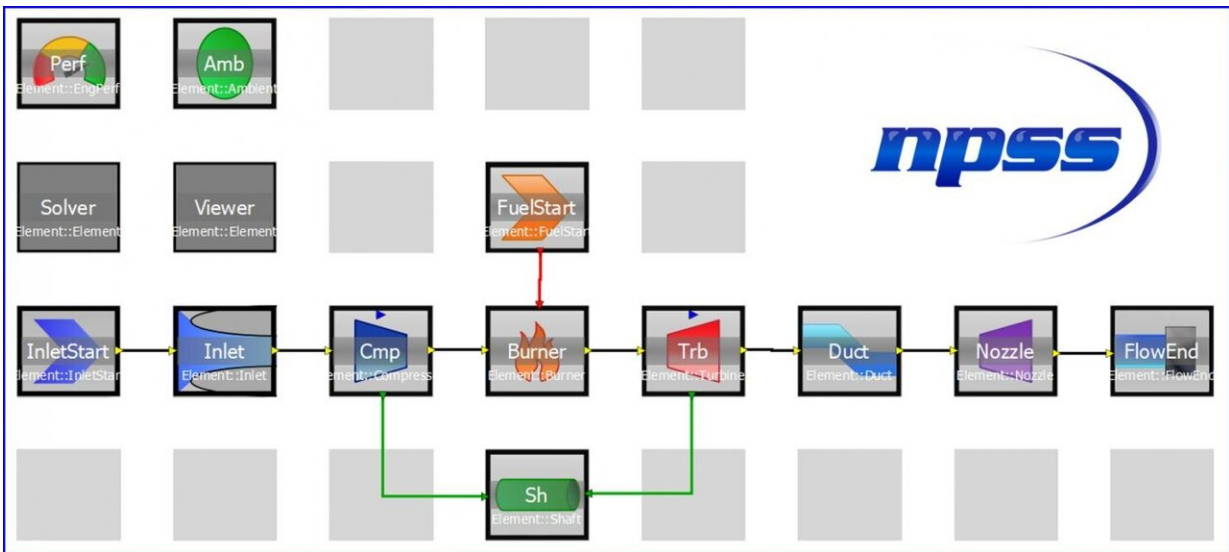


Major updates to Numerical Propulsion System Simulation (NPSS) software released

September 29 2020



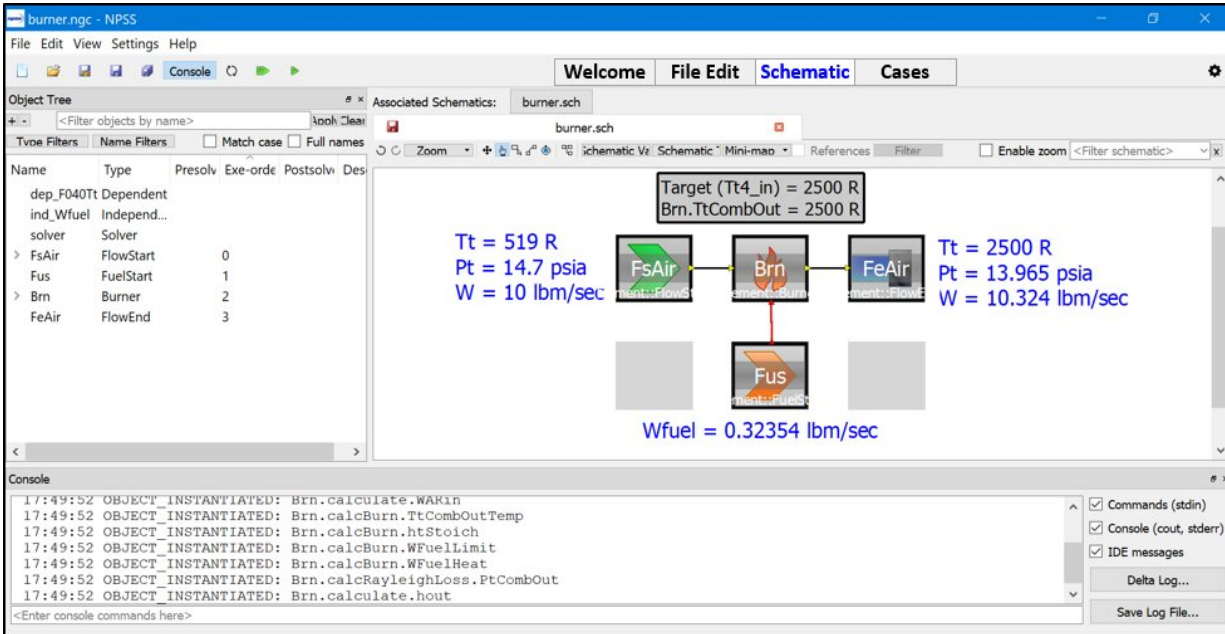
Southwest Research Institute is releasing a new, updated version of the Numerical Propulsion System Simulation (NPSS®) software. The new user-friendly interface reduces the amount of time needed to learn the software, and new functions streamline the design process. Credit: SwRI

Southwest Research Institute (SwRI) is releasing a new, updated version of the Numerical Propulsion System Simulation (NPSS) software. NPSS has a new user-friendly interface that reduces the amount of time needed to learn the software, and new functions streamline the design process.

Engineers use this design and simulation tool to model [rocket engines](#), [jet engines](#), turbomachinery, environmental control systems, advanced power cycles including super-critical carbon dioxide (sCO₂) cycles and other technologies beneficial to the aerospace and energy industries. The updated software is licensed through SwRI and available on SwRI's NPSS webpage.

"NPSS has always been an excellent tool for engineers and developers," said Charles Krouse, an SwRI research engineer. "This new version is even more intuitive and user-friendly than the previous. It introduces several new features that improve usability, including an integrated development environment, updated user guides and new ex-ample models."

Developed in the 1990s by the NASA Glenn Research Center, NPSS has become the leading aerospace software package for simulating and designing propulsion systems. Applications range from creating new [engine](#) models to integrating experimental engine test data into digital twin models. Beyond aerospace applications, some organizations also use NPSS to simulate solar power systems, industrial gas turbines and hybrid electric systems.



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SwRI has managed the NPSS Consortium since 2013, supporting the NPSS user community with new software capabilities, improved usability and technical support. Key features of NPSS include a standard library of thermodynamic databases, standard elements for engine cycle models, example engine models, interfacing examples, completely customizable elements and a robust solver.

"We also updated the NPSS library of element, [model](#) and interface examples," Krouse said. "The library offers several new elements and examples that provide the user with even more flexibility and customization options."

The new NPSS release also introduces an integrated development environment, NPSS IDE, which provides an intuitive modeling environment without sacrificing the versatility of NPSS. IDE is intended to help users develop, interrogate and run models, as well as view results. This is accomplished via customizable file explorer windows, interactive schematics, error-highlighting and NPSS-specific autocompletion.

Provided by Southwest Research Institute

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