Process engineering is evolving into a collaborative and integrated effort among owner-operators, EPCs, vendors, service providers, and consultants. Critical decisions can cut across departmental, corporate, and national boundaries. Aspen Engineering Suite™ (AES) Integrated Engineering enables enterprise and project teams to manage, deploy and build on existing knowledge and securely share consistent, current information anywhere in the world.

The Challenge: Managing Complex Business Relationships

Process industry projects have become global races to deliver faster, cheaper facilities with superior as-built performance. To keep pace, engineers have embraced such options as concurrent engineering, global work sharing, and expanded international alliances. Integrated collaborative approaches promise substantial savings, but come with a price: To achieve the full benefits of collaboration, all participants must use consistent knowledge and best practices, and base decisions on the same physical properties data, process models, design rules, cost drivers, and financial assumptions. Yet as project teams expand, managing this information grows vastly more complex. Organizations need a new set of tools to manage security, data handoffs, revisions and intellectual property.

The Opportunity: Tools for Integrated Collaborative Engineering

For integrated collaborative engineering to succeed, project teams must have access to a common knowledge base and a single repository for engineering data and models. For these types of tools to serve a dispersed project team, they must provide access to a standard knowledge base and automatically manage how each individual stores, shares, publishes, and deploys this information. These tools must also permit everyone on the project team to evaluate, manipulate, and share engineering information.

A set of tools that do this enable truly integrated collaborative engineering, serving as the central nervous system of any project. They enable everyone working on a project to share the same standardized knowledge, data, documents, engineering tools, and simulation models. They extend access throughout the enterprise and outwards to partners dispersed around the globe.

Integrated collaborative tools can also improve productivity. The use of knowledge and engineering databases reduce the likelihood of using different information or manual data entry errors. They ensure that all engineers can access the information and project documents they need as well as historical information that can help them build upon past knowledge. Moreover, these tools can automate workflow supports the use of standardized best practices throughout the project team.

As a result, the entire project team is always on the same page. There is far less likelihood of costly construction mistakes due to inconsistent or out-of-date engineering information. Projects come in on time, on budget, and on plan.
The Solution: AES Integrated Engineering Products

As part of the Aspen Engineering Suite, the AES Integrated Engineering family of products combines a central data repository, powerful automated document revision and workflow management capabilities, and a standardized set of engineering tools. It enables project teams to base decisions consistent data and models and leverage existing knowledge, no matter where they are based. AES Integrated Engineering benefits include:

Just-in-time data access. No matter where or what time they work, engineers in offices around the globe always access the latest data, documents, models, and simulations. This ensures enterprise-wide consistency.

Access to extensive process knowledge. Access a knowledge base on separation processes derived from over 25 years of industrial problem solving and research.

Capture in-house knowledge. Incorporate in-house or proprietary best practices or knowledge in a standard system to provide common information to the entire company.

Standardized engineering tools. Engineering organizations can cost-effectively use AES Integrated Engineering to establish, deploy, and manage a standard set of engineering tools, models, data, and best practices worldwide.

Integrated work processes. Tools that enable companies to unite applications and work processes, thus enhancing engineering efficiency and reducing project execution time.

Management of change. Establishing a centralized integrated collaborative engineering environment lets companies implement and manage change more effectively. It also enables them to reconfigure their workflow to rapidly embrace new project team members.

Optimized plant operations. The same process models used to develop engineering projects can be used after startup to boost throughput, enhance quality, and lower cost. AES Integrated Engineering lets plant operators use secure models deployed over the Internet to run ‘what-if’ models in order to optimize profitability as operating constraints and business goals change.

AES Integrated Engineering Products

The AES Integrated Engineering products provide a complete toolkit for integrated collaborative engineering. Components include:

**Aspen Zynqad™** helps companies and project teams store, manage, reconcile, specify, and share process information throughout the engineering lifecycle. Its object-oriented database provides concurrent multiuser access to simulation, design, physical property, equipment and other engineering data. It generates consistent, up-to-date process flow diagrams (PFDs), equipment datasheets and process, heat and mass balance tables, and other front end engineering design (FEED) deliverables.

In addition, Aspen Zynqad also supports dissemination of engineering standards, design rules, and best practices throughout the enterprise. It populates data to CAD and detailed plant design modeling software, such as Intergraph smartPlant Suite™. Its graphic user interface, preformatted templates, and full configuration utilities make it easy to both customize and use.

**AXSYS.Integrity™** is a risk-based inspection (RBI) planning system. Engineers can use it to calculate the likelihood and consequences of plant failure. This enables engineers to modify designs to minimize risk and implement the most effective plant testing and inspection strategies.
Aspen PEP Process Library™ consists of pre-built Aspen Plus® or Polymers Plus® models that are based on SRI Consulting’s Process Economics Program (PEP). These models represent the various industrial process technologies used for a particular chemical or polymer product and are the industry standard for process information and economic data derived from public sources.

Process Manual™ provides access to in-depth specialized information on process selection, design, optimization and troubleshooting of solids and separation unit operations not easily described by first principles thermodynamics. They can be used to improve productivity by accessing a web-based on-line library on bulk solids and slurry handling, crystallization, drying, gas cleaning, solid-liquid separation (including filtration and centrifugation), solvent extraction, and wastewater treatment. Other sections include instrumentation, property measurement, adsorption, comminution, granulation, and overall process design.

AspenTech: A Tradition of Innovation

Aspen Technology Inc.’s proven, integrated software and rapid implementation services improve process company efficiency and profitability. AspenTech’s engineering software optimizes process designs to maximize lifecycle returns. Our manufacturing/supply chain software harmonizes production, inventory, demand, and delivery to improve operating margins. Together, these offerings create integrated enterprise operations management (EOM) solutions that dramatically enhance enterprise-wide operating performance.

AspenTech has a long tradition of innovation in integrated engineering software:

- Delivered a truly integrated environment for integrated collaborative engineering
- Created a web-based knowledge management tool for the process industries
- More than 25 years of industrial problem solving and research
- Leveraged the Internet to deliver secure plant models to the fingertips of plant operations and business decision-makers
- Provided expert system guidance and unique ease-of-use software designs that enable engineers to quickly generate results
- Implemented open interfaces and data models that support the integration of in-house and third-party software and automated data exchange
Aspen Engineering Suite (AES)

The Aspen Engineering Suite (AES) is AspenTech’s Process Lifecycle Management™ (PLM) solution for the process industries. It integrates rigorous engineering models with data throughout the process asset lifecycle, from conceptual engineering through operational performance. By basing decisions on consistent assumptions, information, models, and work processes, businesses can reach informed decisions faster and with greater confidence. AES consists of six integrated product families:

**AES Simulation and Optimization** optimizes plant designs and operations. It enables engineers to assess plant operability, heat and material budgets, safety, and environmental performance. Its steady state, dynamic, and batch simulation capabilities enable companies to optimize both capital costs and plant operations and its applied physical properties helps to ensure accurate simulation.

**AES Conceptual Engineering** helps create, identify, and select optimal process designs for heat exchanger networks, separation trains, and utilities.

**AES Equipment Design & Rating** aids the design and rating of heat exchangers to maximize performance, minimize capital costs and operating expenses, and improve process controllability.

**AES Economic Evaluation** links the industry’s largest cost database with engineering models to automatically generate accurate project cost estimates from conceptual definition through detailed engineering.

**AES Integrated Engineering** creates a powerful, secure platform for engineering collaboration on Front-End Engineering Design (FEED) packages, data and model creation, and design and operations analysis.

More than 1500 leading companies rely on AES, including Aventis, Bayer, BASF, BP, ChevronTexaco, Dow Chemical, DuPont, ExxonMobil, Fluor, Foster Wheeler, GlaxoSmithKline, Shell, and Total. For more information, please visit www.aspentech.com.