



PROCESS SIMULATORS

PSL solves industrial problems using numerical modeling and analysis. We offer comprehensive consulting services and simulation tools to help customers reduce costs and eliminate unscheduled down time associated with operating large capital-intensive equipment. Improved operational efficiencies mean our clients stay globally competitive.

Our vision is to be leaders in real-time process simulation products that interactively visualize complex industrial processes. The focus of our current services is Pulp and Paper processes and equipment including: recovery boilers, bark boilers, digesters, headboxes, and lime kilns. Our services extend to other equipment in primary industries: utility boilers, heaters, precipitators. A sample result showing fuel carryover in a recovery boiler is shown in Figure 1. Some of our clients include Weyerhaeuser, Canadian Forest Products, Tasman Pulp, Weldwood, Ahlstrom, Sandwell.

PROCESSCAM TECHNOLOGY

PSL is currently developing visual simulator products for:

- Operator training
- Industrial process optimization
- A new generation of smart controllers

At the core of these products is the development of a ProcessCam, a tool that can interactively visualize the complex fields and relationships of process variables produced from modeling simulations. Using this tool, engineers and operators will significantly increase their understanding of the equipment processes.

These new simulator products rely on merging the following technologies:

- Numerical process modeling.
- Large dataset compression and interpolation (neural network) algorithms.
- Interactive three-dimensional graphical display technologies.

ProcessCam is the natural evolution of numerical modeling and computer graphics. This tool presents a wealth of significant information about a process, traditionally available only through expensive and time-consuming methods, or not at all. Information is presented to clients in an intuitive and user-friendly package. ProcessCam enables clients to interactively visualize and manipulate three-dimensional virtual-reality models of the equipment, displaying all relevant physical processes such as air and gas flows, temperature fields, chemical reactions, emissions, and fuel combustion. The development cycle of ProcessCam technology is illustrated in Figure 2. Information about the process is presented in real-time on a standard computer equipped with advanced graphic hardware.

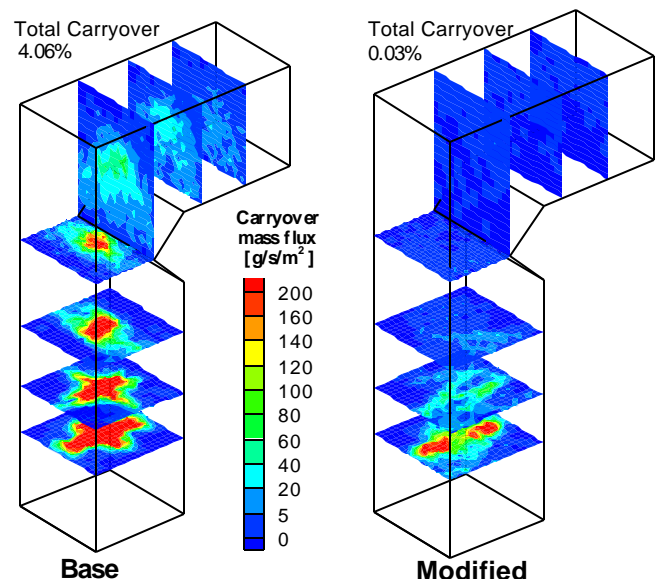


Figure 1: Carryover Reduction in a Recovery Boiler

The simulator includes display of the process variables in areas for which:

- Safe equipment operation may be compromised
- Environmental emissions are exceeded
- Alternative methods to increase production rates must be explored

- Advanced numerical process modeling will be delivered to the clients in a package that they can use autonomously and effectively

Installation of ProcessCam products onsite (Figure 3) provides a direct transfer of significant technological capability to client personnel. ProcessCam is highly scalable and modular, and easily adaptable to a broad range of industrial equipment.

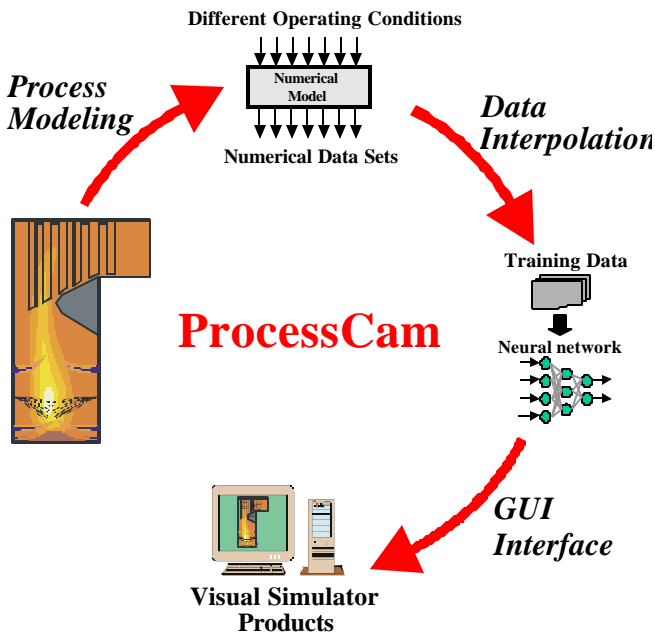


Figure 2: ProcessCam Technology

ADVANTAGES OF PROCESSCAM

- Displays detailed results of a process in real-time, an advantage once only the prerogative of simple one-dimensional algebraic models providing much less detail
- Advanced visual representation of industrial processes in a format that is adapted to each client's needs
- Provide engineers and operators with significantly more information for analyzing equipment operations than is currently available

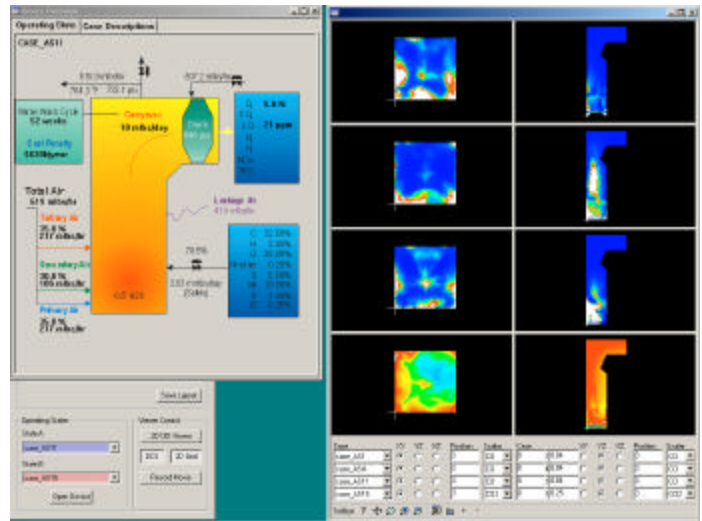
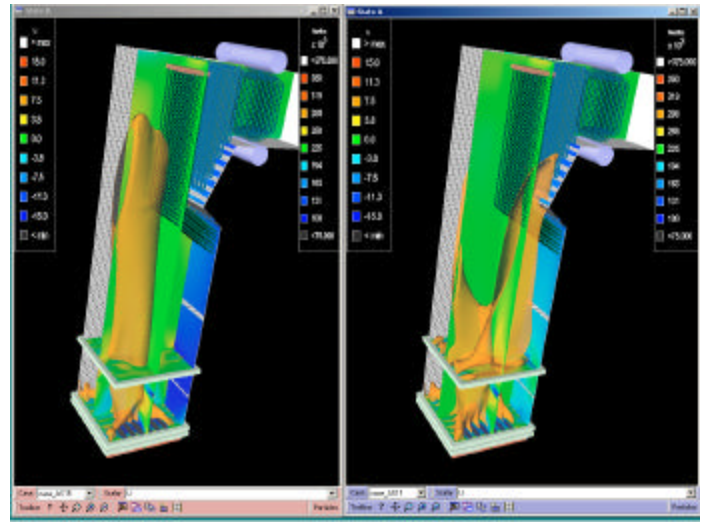


Figure 3: Simulator Example

PROCESS SIMULATIONS LIMITED

Consulting engineers specializing in the modeling and analysis of industrial process equipment including:

- Recovery Boilers
- Headboxes
- Lime Kilns
- Hydrocyclones
- Bark Boilers
- Digesters
- Wood Kilns
- Air Ports, Nozzles, Ducts



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