



## Industrial Systems Optimization Group

### Systems Analysis Software

To allow effective technology transfer to industry, CanmetENERGY is developing innovative software solutions that include the most recent advancements from our research activities.



**INTEGRATION** uses a systems approach to optimize heat recovery and reduce thermal energy use in industrial processes. **INTEGRATION** has unique capabilities to quickly identify sources of thermal inefficiency; evaluate operational and design improvement projects to improve the performance of plant's heat exchanger networks and utility systems; assess the viability of various heat recovery, heat pumping and waste-to-energy technologies; and reduce water usage in complex industrial facilities.



**COGEN** is used to build accurate models and to optimize industrial combined heat and power systems. The complex interactions between steam production, power generation, process steam usage, and condensate return are all analyzed in the same environment. Powerful modeling and optimization capabilities in **COGEN** allow an existing industrial CHP plant to be optimized while taking into account various operational constraints and complex electricity contracts.



**EXPLORE** uses advanced data analysis techniques to understand and reduce process variability. **EXPLORE** includes several tools to format, pre-process and analyze large and complex data sets; identify the most critical variables affecting process operations; monitor process performance and KPIs; detect, diagnose and fix operational faults in common industrial processes and equipment.



**I-BIOREF** allows the assessment of the economic viability as well as the energy and environmental impacts of integrating various biorefinery technologies into existing pulp and paper mills. **I-BIOREF** includes capabilities to quickly evaluate the benefits of integrating commercially available processes for pretreatment, lignin, sugar and thermochemical platforms; perform sensitivity analyses on various parameters; analyze the potential for increasing pulp production and yields of biochemicals and biofuels produced; and evaluate environmental impacts using LCA-based metrics.

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## Training Offer



- ✓ **Webinars**
- ✓ **Series of courses (0.5 to 3-day)**
- ✓ **Post-training technical support**
- ✓ **University courses**



### PROCESS INTEGRATION



- Learn the Process Integration concepts for a more efficient use of energy in industrial facilities
- Understand, identify and evaluate heat recovery opportunities
- Optimize heat exchanger networks

### COGENERATION (CHP)



- Modeling and optimization of CHP systems
- Understand production, equipment, environmental and contractual constraints
- Produce heat and power cost effectively

### MULTIVARIATE DATA ANALYSIS



- Learn advanced data analysis to understand process and reduce process variability
- Uncover the most critical variables affecting process operations
- Identify low-cost improvement measures

### BIOREFINERY



- Understand biorefinery technologies
- Evaluate the economic viability and environmental benefits of a biorefinery (integrated into existing pulp and paper operations or standalone)

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