



THE CWB INSIDER

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ClearWaterBay Technology (CWB Tech) has stepped into our seventh year. With a mission to be the best technology provider and your process development partner, we have built software packages such as **SLEEK™** (Solid-Liquid Equilibrium Engineering Kit) and **AzeoDESK** (Azeotropic Distillation Entrainer Selection Kit) to help address issues with optimal design of separation systems. To further support development of crystallization-based separation technology, we recently launched the solid-liquid equilibrium data measurement apparatus **SLEEK-EX**, which is also tightly integrated with **SLEEK™**. And now, in response to the need for designing higher energy-efficient processes we are unveiling our two new software tools - **Total Site Energy Management (TSEM)** and **Pinch Analysis**.

TSEM is designed to deal with the problem of how best to supply the steam and electricity needs of an entire plant site. It provides an environment that enables you to simulate, validate, and optimize the energy flows (fuels, steam at various levels, and electricity) in the plant site. There are two main components in the site: the power plant(s) (suppliers) and the process plant(s) (users). These two components are linked through site-wide (as well as local) steam headers and electricity grids. **TSEM** enables the user to build the plant site through a hierarchical and user-friendly interface and then provides the flexibility to create several analysis, simulation, and optimization case-studies. The focus is not just on one optimal cost number; instead through these case-studies the software tool can provide additional insights such as:

- ◇ True Steam & Electricity Cost:
 - What is the bottom-line impact when the demands increase or decrease?
 - How can the true utility costs lead us to improvements over the optimal operation?
- ◇ CO2 Emissions & Co-Generation Efficiency
 - What is the total amount of CO2 emitted, where and how much?
 - What is the co-generation efficiency for the site?
 - How do the CO2 emissions and co-generation efficiency change in relation to operating costs?
- ◇ Operation of Energy Generators
 - How to build models for boilers, steam turbines, etc from historical data

– How do the efficiencies change?

Pinch Analysis is designed to deal with the problem of improving the energy efficiency of individual process plants in a plant site. At the heart of this software are the theoretical principles of Pinch Technology. However, it is not simply a targeting tool built purely upon academic research. Instead it provides an intuitive workflow and a set of tools convenient for dealing with energy use in existing processes. This workflow is a result of several years of hands-on experience of practical applications in the chemical industry. With Pinch Analysis the user can:

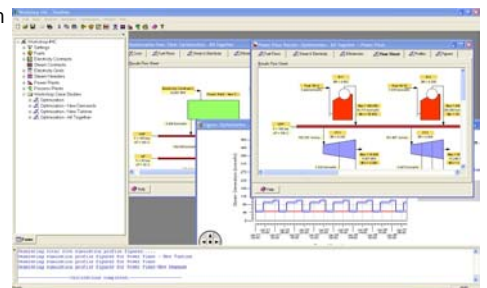
- ◇ Analyze the efficiency of the process
- ◇ Identify the *cross-pinch* exchangers and the *cross-pinch* duties
- ◇ Select the optimum levels of steam for the process

TSEM and **Pinch Analysis** address the two important problems that comprise the Total Site Analysis. There are great benefits to be had through the integrated use of these two software tools as, among others, the user can study:

- ◇ The interaction between the supply and demand of steam
- ◇ The optimum selection of the site-wide and local steam header levels
- ◇ The impact of plant capacity on the total site utility consumptions

CWBTech is very grateful to all our customers for their thoughtful feedback. All comments

and suggestions from the user-perspective have enabled us to create and improve our software tools and provide you with the best technology solutions. We thank our customers for all your support in the past several years and hope to work closely with you all in the future.



SPECIAL POINTS OF INTEREST:

- New Software Tools
- Paper on “Entrainers for Azeotropic Distillation”
- Sales Seminar on Total Site Energy Management

To learn more about the two software tools, their features, and their integrated use, please contact us at sales@cwbttech.com. We recently showcased TSEM at our sales seminar in Yokohama, Japan on May 15. Another sales seminar showcasing both TSEM and Pinch Analysis will be held in the near future. If you are interested in attending this free seminar, please contact Mr. Hideo Iketani at iketani@its-ykh.co.jp

CEP PAPER ON ENTRAINER SELECTION

Read our article on:

“Selecting Entrainers for Azeotropic Distillation” which was published in *Chemical Engineering Progress*, March Issue 2009, Vol. 105, p 47-53.

stances that facilitate distillation by breaking an azeotrope. The paper lists a systematic workflow for screening entrainers. With the help of examples, the paper describes ways of separating azeotropic mixtures using entrainers.

The article describes the use of residue curve map technology to identify and evaluate sub-

<http://www.aiche.org/cep/issues/2009-03/index.aspx>

SALES SEMINAR ON TOTAL SITE ENERGY MANAGEMENT

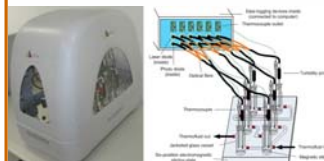
We recently showcased our Total Site Energy Management (TSEM) software tool at our sales seminar in Yokohama, Japan on May 15. This seminar combined use of software features and functions, some theoretical background, and actual practical applications through interactive workshops. Some of the topics covered were:

- Software concepts, functionality, and usage
- Insights from the TSEM software:
 - ◇ True utility costs – meaning and use in decision making
 - ◇ Performance criteria such as CO2 emissions & co-generation efficiency
 - ◇ Use of multiple power plants
- Operation and modeling of power plant unit operations

We are very thankful to all the participants in this event for their time and interest and also for the insightful questions, discussion, and suggestions during the event.



SLEEK-EX: SLE Measurement



Why is Solid-Liquid Equilibrium measurement important?

- Lack of literature data, e.g. new components
- Provide information for modeling
- Gather key information for process design

What does SLEEK EX have to offer?

- Capability of measuring SLE data and incorporating them into a thermodynamic model
- Supports the integrative approach which combines synthesis, analysis, and experimental activities

UPCOMING TRAINING COURSES

Date	Venue	Title	Registration
Nov. 17, 2009	New York, NY (Special AIChE Day at 2009CHEM SHOW)	Integrative Approach to Crystallization Process Development	http://chemshow.com/newpress/newsitems/aicheday.php
Dec. 10-11, 2009	Atlanta, GA	Multi-disciplinary Process Development (ASME Course CH757)	http://catalog.asme.org/Education/ShortCourse/MULTIDISCIPLINARY_PROCESS.cfm

For detailed information on our upcoming training courses, contact us at shortcourse@cwbttech.com, or Hideo Iketani of I.T. Solutions at iketani@its-ykh.co.jp

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