

## Members in Korea Establish CC

The September 1998 HTRI meeting held in Seoul, Korea, included discussion of a Communication Committee and resulted in the formation of CC-Korea, the sixth such committee. The initial meeting of CC-Korea was held on November 26, 1998. Hosted by Samsung Engineering Co., Ltd., it was attended by eleven representatives from the following companies:

- Daewoo Engineering Company
- Hyundai Heavy Industry Co., Ltd.
- Korea Heat Exchanger Ind. Co., Ltd.
- LG Engineering Co., Ltd.
- Samsung Engineering Co., Ltd.
- Shinwha Engineering & Construction Co., Ltd.
- TMS Engineering Corporation



CC-Korea

The agenda included election of officers, explanation of CC guidelines and committee objectives, as well as discussion of various technical issues. Jong Chan Choi, Samsung Engineering Co., Ltd., and Daniel Kim, LG Engineering Co., Ltd., were elected as Chair and Vice Chair respectively.

The next meeting will be hosted by LG Engineering Co., Ltd. on April 15, 1999.

### **CC-Korea Chair** — *Jong Chan Choi*

The newly elected chair of CC-Korea, Jong Chan Choi, graduated with a M.S. and Ph.D. in chemical engineering from the Korea Advanced Institute of Science and Technology. He specializes in the thermal design of heat exchangers and has worked for various companies in Korea, Saudi Arabia, Indonesia, Thailand, and China. In 1989, he joined Samsung Engineering Co., Ltd., where he is currently Manager of the Mechanical Engineering Department.



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# Corporate News

## Communication Committees

The Communication Committees (CCs) provide an official forum for members in geographic proximity. These member-initiated committees formalize and facilitate input from members, helping them to communicate their ideas and concerns to HTRI. Minutes of CC meetings are forwarded to HTRI. The president and technical directors respond to specific questions and proposals. The minutes and staff responses are sent to the Board of Directors, Technical Committee, as well as Task Force and Communication Committee chairs. These documents are available to HTRI members from CC chairs or HTRI. CCs are listed in the *Membership Roster*.

The concept of this member-driven committee was approved in August 1993. CCs have been established as follows:

CC-Holland	October 12, 1994
CC-UK	January 26, 1998
CC-Singapore	March 31, 1998
CC-Tulsa, OK (USA)	April 17, 1998
CC-Japan	September 11, 1998
CC-Korea	November 26, 1998

## ANNUAL MEETING OF STOCKHOLDERS

**JULY 26-30, 1999**

Vail Cascade Hotel and Club  
Vail, Colorado, USA

**Corporate Update**

**Technical Program**

**Workshops: EHT and IST**

First-time and multiple attendee discounts available.

Registration information will be mailed soon.

## IST 1.2 Released

HTRI has released version 1.2 of the popular three-dimensional IST program. All IST licensees receive this new release, which includes many new enhancements. A complete list of what's new is available from the "About This Version" item on the Help menu. IST 1.2 is the latest version of our high quality tool for designing all types of shell-and-tube heat exchangers.

Significant enhancements in IST 1.2 include those presented below.

Property worksheet in Design spreadsheet	Addition of a physical property worksheet to the Design Excel spreadsheet allowing for a complete case to be specified and run from Excel
Heat transfer in multicomponent tubeside condensation	Improvement to heat transfer methods for condensation with high concentration of inerts (up to 85 mole percent at inlet) and low condensate Reynolds numbers (down to 500), based on an expanded databank with 500 new data points (documented in Report CT-10)
Shellside condensation pressure drop	Improvement to methods for plain and finned tubes based on HTRI research data (documented in Report CS-10)
Critical heat flux	Improvement to prediction of critical heat flux, eliminating the need for a default safety factor that used a film boiling coefficient when the local heat flux exceeded 70% of the estimated critical heat flux
Kettle reboilers	Handling of a subcooled feed stream
Impingement devices	Addition of impingement device options including impingement rods and rectangular plates
Liquid outlet nozzle for kettle reboilers	Automatic addition and sizing of a liquid outlet nozzle for the bottom drawoff, if appropriate
Mean tube metal temperatures	Calculation of mean tube metal temperatures in each tubepass
DLL interface	Extension of DLL interface to consider virtually all input and output items, allowing specification of complete cases via the DLL interface

### 1999 Training Schedule

#### **ACE Workshops**

September 23, 1999  
Como, Italy

October 29, 1999  
Chiba, Japan

November 5, 1999  
Singapore

#### **EHT Workshops**

July 26, 1999  
Vail, Colorado, USA

September 24, 1999  
Como, Italy

#### **IST Workshops**

July 29-30, 1999  
Vail, Colorado, USA

September 22, 1999  
Como, Italy

October 27-28, 1999  
Chiba, Japan

November 3-4, 1999  
Singapore

**See page 8 for more detailed information**

## New Version of EHT Available

HTRI has recently released EHT 1.1. Developed by Dr. John R. Thome and distributed exclusively by HTRI, EHT continues to be the tool of choice for enhanced heat exchanger design. Version 1.1 features the following improvements:

- new methods for tubeside condensation of pure fluids in plain tubes and tubes with internal helical microfins:
  - ❖ general method
  - ❖ flow regime-based method
  - ❖ method that considers effect of microfin apex angle (microfinned tubes)
- option for tubeside condensation of mixtures in plain and microfinned tubes
- enhanced input screens and reports

All versions of EHT are Y2K compliant.

EHT software was designed to evaluate pressure drop and heat transfer performance of various enhanced surfaces and tube inserts.

The software handles many process conditions and can be used to quickly and accurately determine the optimum enhanced surface for any application. More than

thirty companies in ten countries have already licensed EHT. For additional details, contact HTRI Marketing at fax 1-409-260-6249 or e-mail [EHT@HTRI.net](mailto:EHT@HTRI.net).



***If you are interested in hosting an HTRI workshop at your company, please contact HTRI.***

# HTC Software

Developed by HTC Ltd.

## brings smart models within everyone's reach!

HTRI has an alliance with HTC Ltd. (Jerusalem, Israel) and Performance Systems (Houston, Texas, USA) to market and license HTC software, providing a discount for HTRI members. This software models heat transfer in jacketed vessels.



### Any:

- Jacket
- Vessel
- Insulation Type
- Heating Agent
- Cooling Agent
- Mixing
- Process



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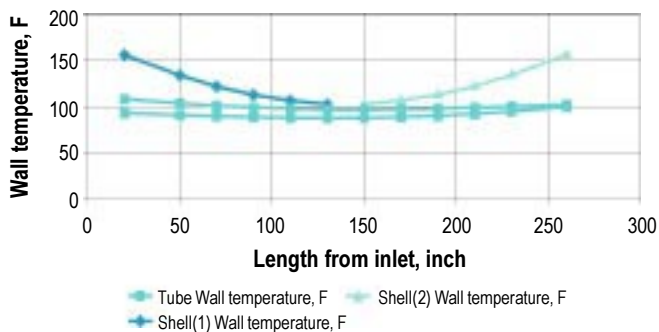
E-mail: [HTCsoftware@HTRI.net](mailto:HTCsoftware@HTRI.net)



## Wall Temperatures in IST

HTRI Technical Support often receives questions about the meaning of “wall” or “skin” temperatures on the IST printout. The IST Final Results and Incremental Monitor printouts follow the same convention as the CST/ST Final Results, the CST Incremental Area Monitor, and the ST Tubeside Stepwise printout when reporting “wall” or “skin” temperatures. The following points will answer the most common questions about these values on the HTRI printouts:

- “Wall” or “skin” temperatures on the HTRI printouts all use the same definitions with respect to tube metal, fouling (if any), and fluid. (See shellside and tubeside definitions below.) You may plot local “wall” temperatures in IST using the Incremental Graph option. The figure shows such a plot for a TEMA J shell with condensation on the shell side and cooling water on the tube side.
- Tubeside “wall” or “skin” temperature is reported **inside** any fouling layer, at the point where the fouling layer (or the clean tube wall in a case with no fouling resistance) contacts the tubeside fluid.
- For cases with multiple tubepasses, the Tubeside Incremental Monitor follows each tubepass discretely within each baffle space, reporting local “wall” temperatures as defined above.



- Shellside “wall” or “skin” temperature is reported **outside** any fouling layer, at the point where the fouling layer (or the clean tube wall in a case with no fouling resistance) contacts the shellside fluid.
- For cases with multiple tubepasses, the IST Shellside Incremental Monitor displays an average shellside “wall” temperature for each baffle space. This average is obtained from at least 16 local increments used within each baffle space to model crossflow and window flow (more with multiple tubepasses). A future IST release will allow you to examine each unique internal shellside “increment”, including discrete shellside “wall” temperatures for each tubepass in each baffle space.

- Engineers who must perform tubesheet stress calculations commonly ask about mean tube metal temperatures in a case with specified fouling resistances. IST 1.2 includes a new printout of mean tube metal temperature by tubepass, determined by rigorous numerical integration of all local IST increments in each tubepass. An example printout is shown here.

```
HTRI IST Ver. 1.20 Problem-HORIZONTAL MIXED HYDROCARBON J SHELL CONDENSER
Case-CASE 1
Rating-Horizontal Multipass Flow TEMA AJ21L Shell with Segmental Baffles
---Supplementary Results-----US Units-----
```

```
01 Mean tube metal temperature in each tube pass
02
03 Tube pass Mean metal temperature
04 -----
05 1 112.05
06 2 112.43
07 3 115.33
08 4 122.50
```



## Membership Update

Information current as of February 28, 1999

### New Members:

**Gulf Engineering Company for  
Heat Exchangers Limited**  
*Al-Jubail, Kingdom of Saudi Arabia*

**KH-AMEC Engineering b.v.**  
*Schiedam, The Netherlands*

**Thermal Technologies International**  
*Pryor, Oklahoma, USA*

**Valero Refining Company - New Jersey**  
*Paulsboro, New Jersey, USA*

**Worley Limited (Brisbane)**  
*Brisbane, Queensland, Australia*

### New Participating Affiliates:

**Alfa Laval Inc.**  
*Scarborough, Ontario, Canada*

**HVAC Portable Systems, Inc.**  
*Houston, Texas, USA*

**Linde Process Technologies India Limited**  
*Vadodara, India*

**JMK, Inc.**  
*Tulsa, Oklahoma, USA*

**P.T. Pertafenikki Engineering**  
*Jakarta, Selatan, Indonesia*

**ThermoFluid International**  
*Mansfield, Texas, USA*

**Wieland S.A. Pty. Ltd.**  
*Eastleigh, Edenvale, South Africa*

### Member Renewals:

**Alloy Fab Ltd.**  
*Sarnia, Ontario, Canada*

**Ambassador Heat Transfer Company**  
*Cincinnati, Ohio, USA*

**Brown Fintube France S.A.**  
*Thonon-les-Bains, France*

**D.C. Fabricators, Inc.**  
*Florence, New Jersey, USA*

**High Performance Tube, Inc.**  
*Warren, New Jersey, USA*

**Idemitsu Engineering Co., Ltd.**  
*Tokyo, Japan*

**Industrial Design Consultants s.n.c.**  
*Florence, Italy*

**Intercambiadores y Serpentes Especiales, S.A. de C.V.**  
*San Nicolás de los Garza, Nuevo León, Mexico*

**Koch Industrial Coolers Inc.**  
*Tulsa, Oklahoma, USA*

**Salzgitter Anlagenbau GmbH**  
*Salzgitter, Germany*

**SK Engineering & Construction Limited (SKEC)**  
*Seoul, Korea*

**STF Salvatore Trifone & Figli S.p.A.**  
*Magenta (MI), Italy*

**Tranter, Inc.**  
*Wichita Falls, Texas, USA*

**Zellweger Luwa AG**  
*Uster, Switzerland*

## Current Software

ACE	2.21
CST	3.3
FH-0	
IST	1.2
PHE	1.1
RKH	3.2a
RTF-2	7.21-1.30
ST	5.3
ST Educational	1.0
TWALL	0.12
VIB-0	

### Software distributed by HTRI

EHT	1.1
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To order an update for any HTRI computer program, contact Product Distribution.

## Upcoming Events

### **1999 Annual Meeting of Stockholders**

July 26-30, 1999  
Vail Cascade Hotel and Club  
Vail, Colorado, USA

#### Workshops:

- EHT
- IST

### **1999 European Meeting**

September 20-24, 1999  
Grand Hotel de Como  
Como, Italy

#### Workshops:

- ACE
- EHT
- IST

### **1999 Asian Meeting**

October 25-29, 1999  
Hosted by Toyo Engineering  
Corporation  
Chiba, Japan

#### Workshops:

- ACE
- IST

### **1999 Asian Meeting**

November 1-5, 1999  
Royal Crowne Plaza Singapore  
Singapore

#### Workshops:

- ACE
- IST

### **2000 Annual Meeting of Stockholders**

July 31-August 4, 2000  
The Ritz-Carlton® Huntington  
Pasadena, California, USA

### **2001 Annual Meeting of Stockholders**

July 30-August 3, 2001  
The Ritz-Carlton® Pentagon City  
Arlington, Virginia, USA

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