



# H/COMET

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*[www.haverly.com](http://www.haverly.com)*



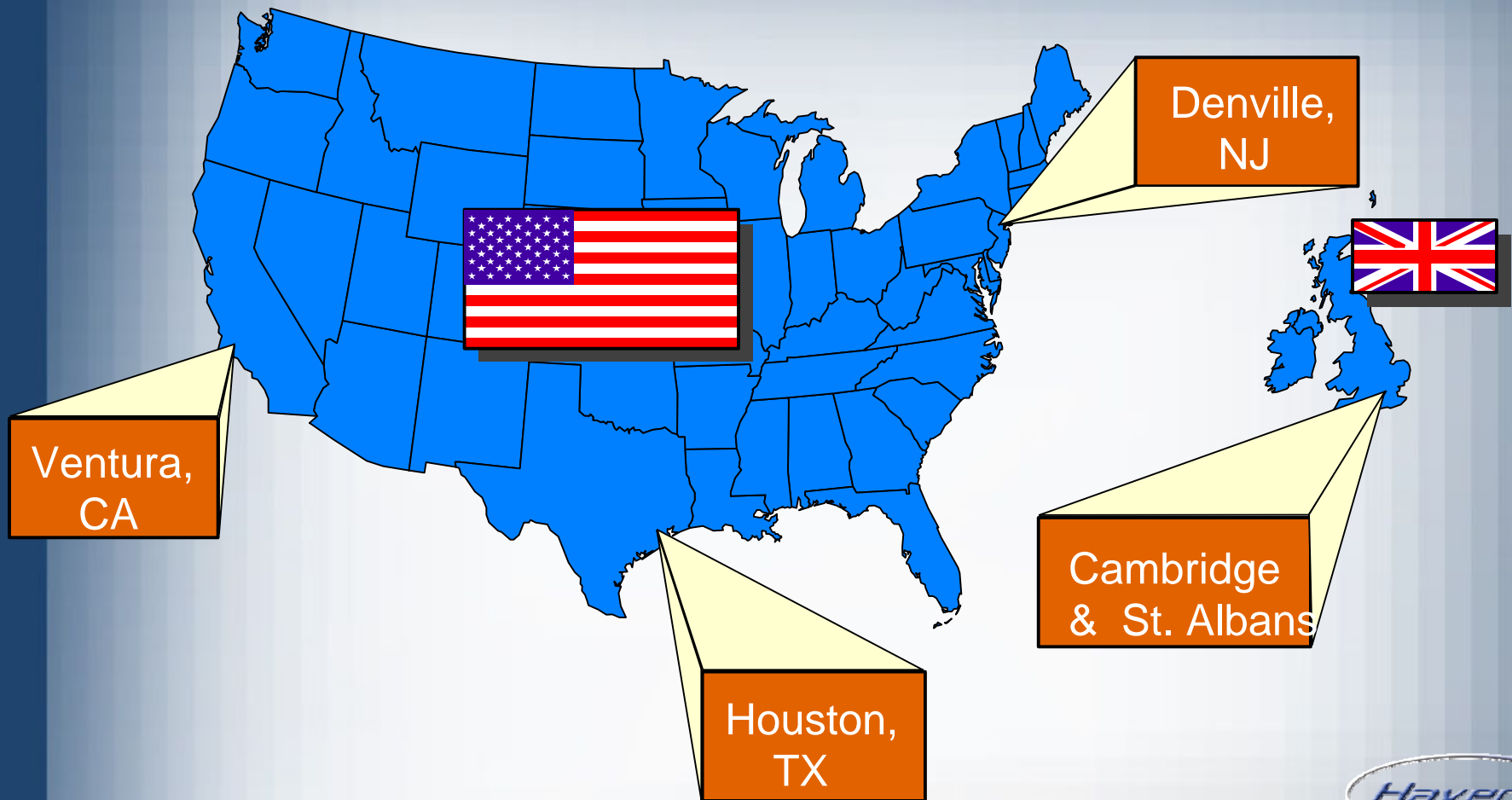
*Decision Software Innovations since 1962*

# Haverly Systems Inc.

- Provider of Refining & Petrochemical modeling Solutions Since 1962
- Have been profitable every one of the 40+ years
- All Software 100% Developed by Haverly
  - Not Acquired From Other Vendors
  - Staff has considerable oil industry experience
- World leader in Crude Assay Management
- Pioneered a number of modeling techniques



# USA & UK Offices



# Pacific Rim



# Central & South America



# H/COMET

## Crude Oil Management EvaluaTor

- Revolutionary Web based application for viewing and analyzing assay information
- Two types of access;
  - Corporate Server Installation
  - Live on HSI/PTI server

[www.assayviewer.com](http://www.assayviewer.com)



# H/COMET

## Crude Oil Management EvaluaTor

- Revolutionary Web based application for viewing and analyzing assay information
- Two types of access;
  - Corporate Server Installation
    - users have login account
    - full range of access security available from low to high
    - client assays used in database
  - Live on HSI/PTI server
    - users subscribe annually and obtain a login account
    - includes set of approx 270+ current crude assays
    - access to commercial assay libraries possible
    - can add own assay data by drag and drop of iCDM data file



# H/COMET

## - Some things it will do...

- quickly view an assay
- advanced search routines for finding crudes
- export assay report to Excel, Word
- compares quality data of crudes side by side
- re-cut single or blends of crudes to any desired set of cut-points





# H/COMET

## - **Some things it will do...**

- optimizes blend recipes, targeting bulk or fraction quality specs
- calcs Netback for Simple, Semi-complex and Complex refinery for Platts regions
  - Refineries are configurable by region
  - allows comparison of regions and refineries
- Links directly to PetroTechIntel (PTI) CIMS system



# H/COMET

## **Viewer**

- displays assays
- advanced filtering for finding crudes

## **Evaluator**

- re-cut selected assays
- blend and re-cut
- optimize blends  
(uses H/CAMS ActiveX)

## **ASSAY Database**

- created by H/CAMS
- MS SQL (or MDB)
- on corporate server

## **Reports**

- multiple assay types
- compare cuts
- property graphs
- XLS or DOC download
- CRU file download

## **CIMS**

- owned by PTI
- links directly thru 'GRADEID'
- optional

## **Netback tool**

- refinery LP
- 3 types of refineries
- reports product make
- compares \$ value of crudes or blends



# H/COMET

## Who is using it currently

- 'Local' Corporate Installs
  - Many Oil corporations and some large trading companies
- 'Live' H/COMET  
([www.assayviewer.com](http://www.assayviewer.com))
  - A good number of the **major** Independent Oil trading companies worldwide
  - several consulting companies
  - Oil Producers



# H/COMET

## - What users have done.....

- Provided detailed assays of blends of crudes for cuts defined by the refining customer.
- Used blend Optimizer to find mix of crudes that look similar quality to commercial grade
- Determined market value of new grades coming on stream using the Netback models
- Determined market values for crudes by modeling specific refineries with known crude slate
- Determined the economic impact of increasing a specific refineries unit capacity
- Used as a crude pre-screening tool which reduces the burden on the supply planning staff



# H/COMET

## - What users have done.....

Netback Setup ( SingSeminar ) :      Select Region: Singapore--AG

**Product Values (US Dollars)**

| Product             | Value  | Freight | Units  |
|---------------------|--------|---------|--------|
| LPG                 | 30     |         | \$/bbl |
| Naphtha             | 49.03  |         | \$/bbl |
| Mogas 97            | 60.48  |         | \$/bbl |
| Mogas 92            | 57.48  |         | \$/bbl |
| Kerosene            | 60.2   |         | \$/bbl |
| Jet-A1              | 60.2   |         | \$/bbl |
| Gasoil @ 50ppm S    | 61.21  |         | \$/bbl |
| Gasoil @ 0.05% S    | 59.86  |         | \$/bbl |
| Gasoil @ 0.25% S    | 58.71  |         | \$/bbl |
| Gasoil Reg 0.5% S   | 57.8   |         | \$/bbl |
| LSFO 180cSt (2%S)   | 255.79 |         | \$/MT  |
| HSFO 380cSt (3.5%S) | 252.47 |         | \$/MT  |
| Bitumen             |        |         | \$/MT  |

**Bid Stocks Costs (US Dollars)**

| Component          | Cost | Units  |
|--------------------|------|--------|
| Feedstock LPG      |      | \$/bbl |
| Feedstock Naphtha  |      | \$/bbl |
| Feedstock Alkylate |      | \$/bbl |
| Feedstock VGO      |      | \$/bbl |

**Gasoline Season Grade :**

Intermediate  
 Winter  
 Summer

Note: This setting is NOT saved to DB, but is maintained within the session on a per Region basis.

**Price Info CSV Management**

**Refinery Config Management**  
 Select Refinery Configuration :  
 SINGSEMINAR

**Product Price Management**  
 Open Saved Priceset :  
 SingSeminar

**Product Spec Management**  
 Select Product Spec Config :  
 Default

Selected Assays -FULL PAGE-    Blends    Help

Selected Assays ( NEWCRUDE ) :

| # | Library | AssayID   | AssayName | Price (\$/bbl) | Freight (\$/bbl) | Status   | Action |
|---|---------|-----------|-----------|----------------|------------------|----------|--------|
| 1 | COMET   | CRUDEX    | CRUDE X   | --             | --               | Selected | Remove |
| 2 | COMET   | DUBAI2007 | DUBAI     | --             | --               | Selected | Remove |
| 3 | COMET   | OMAN02    | OMAN      | --             | --               | Selected | Remove |
| 4 | ---     | ---       | ---       | ---            | ---              | ---      | ---    |
| 5 | ---     | ---       | ---       | ---            | ---              | ---      | ---    |
| 6 | ---     | ---       | ---       | ---            | ---              | ---      | ---    |
| 7 | ---     | ---       | ---       | ---            | ---              | ---      | ---    |

**Assay Slate Management**  
 Open Saved Slate :  
 NEWCRUDE



# H/COMET

## - What users have done.....

Refinery Configuration Settings: -- Singapore--AG -- [

Refinery Capacity Units :  Percent (of ADU)  b/cd (Barrels/CalendarDay)

hsi.davida      Simple Refinery

Retrieve an H/Comet PreConfig      None

User Defined Name (Optional)      None

| Refinery Unit     | Code   |                          |
|-------------------|--------|--------------------------|
| Atm. Dist. Unit   | ADU    | Alliance Rayong          |
| ADU Naph Desulf   | DSNLVN | ExxonMobilJurong         |
| ADU Kero Desulf   | DSKKER | FormosaMailiao           |
| ADU LGO Desulf    | DSGLGO | HyundaiDaesan            |
| ADU HGO Desulf    | DSGHGO | HyundaiInchon            |
| Gas Plant         | GPL    | KNPCMinaAbdulla          |
| Reformer          | REF    | KNPCMinaAlAhmadi         |
| Isomerization     | ISO    | LGCaltexYosu             |
| Hydrocracker      | HCR    | NIOCAbadan               |
| Vac. Dist. Unit   | VDU    | NIOClfahan               |
| VDU LGO Desulf    | DSGLVG | NipponOilNegishi         |
| VDU HGO Desulf    | DSGHVG | PertaminaCilacap         |
| Alkylation        | ALK    | PetroChinaKaohsiung      |
| Atm Resid Cracker | ARC    | PetroChinaTaLin          |
| Cat Cracker       | FCC    | PetrominShellAUJubail    |
|                   |        | RelianceJamnagar         |
|                   |        | SaudiAramcoRabigh        |
|                   |        | SaudiAramcoRas Tanur     |
|                   |        | SaudiAramcoYanbu         |
|                   |        | ShellPulauBukom          |
|                   |        | SingaporePetPulauMerilir |
|                   |        | SinopecMaoming           |
|                   |        | SinopecNanjing           |
|                   |        | SinopecNingbo            |
|                   |        | SinopecZhenhai           |
|                   |        | SKUlsan                  |
|                   |        | SOilOnsan                |
|                   |        | YukosAngarsk             |

Refinery Configuration Settings: -- Singapore--AG -- [UserConfig: SINGSEMINAR]

Refinery Capacity Units :  Percent (of ADU)  b/cd (Barrels/CalendarDay)

hsi.davida      Simple Refinery      SemiComplex Refinery      Complex Refinery

Retrieve an H/Comet PreConfig      None      None      None

User Defined Name (Optional)      SingaporePetPulauMerilir      SKUlsan      SaudiAramcoRas Tanur

| Refinery Unit         | Code   | Enabled                             | Capacity | Enabled                             | Capacity | Enabled                             | Capacity |
|-----------------------|--------|-------------------------------------|----------|-------------------------------------|----------|-------------------------------------|----------|
| Atm. Dist. Unit       | ADU    | <input checked="" type="checkbox"/> | 273600   | <input checked="" type="checkbox"/> | 817000   | <input checked="" type="checkbox"/> | 550000   |
| ADU Naph Desulf       | DSNLVN | <input type="checkbox"/>            |          | <input checked="" type="checkbox"/> | 4500     | <input type="checkbox"/>            |          |
| ADU Kero Desulf       | DSKKER | <input type="checkbox"/>            |          | <input checked="" type="checkbox"/> | 159300   | <input type="checkbox"/>            |          |
| ADU LGO Desulf        | DSGLGO | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          |
| ADU HGO Desulf        | DSGHGO | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          |
| Gas Plant             | GPL    | <input checked="" type="checkbox"/> | 273600   | <input checked="" type="checkbox"/> | 817000   | <input checked="" type="checkbox"/> | 550000   |
| Reformer              | REF    | <input checked="" type="checkbox"/> | 13500    | <input checked="" type="checkbox"/> | 69570    | <input checked="" type="checkbox"/> | 54000    |
| Isomerization         | ISO    | <input checked="" type="checkbox"/> | 0        | <input checked="" type="checkbox"/> | 0        | <input checked="" type="checkbox"/> | 0        |
| Hydrocracker          | HCR    | <input checked="" type="checkbox"/> | 30300    | <input checked="" type="checkbox"/> | 27000    | <input checked="" type="checkbox"/> | 44000    |
| Vac. Dist. Unit       | VDU    | <input checked="" type="checkbox"/> | 76000    | <input checked="" type="checkbox"/> | 78850    | <input checked="" type="checkbox"/> | 135000   |
| VDU LGO Desulf        | DSGLVG | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          |
| VDU HGO Desulf        | DSGHVG | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          |
| Alkylation            | ALK    | <input checked="" type="checkbox"/> | 4500     | <input checked="" type="checkbox"/> | 5400     | <input checked="" type="checkbox"/> | 0        |
| Atm Resid Cracker     | ARC    | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          |
| Cat Cracker           | FCC    | <input checked="" type="checkbox"/> | 36000    | <input checked="" type="checkbox"/> | 45000    | <input checked="" type="checkbox"/> | 0        |
| ARC / FCC Naph Desulf | DSNCCN | <input type="checkbox"/>            |          | <input checked="" type="checkbox"/> | 54000    | <input type="checkbox"/>            |          |
| ARC / FCC LCO Desulf  | DSGCLC | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          |
| ARC / FCC HCO Desulf  | DSGCHC | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          | <input type="checkbox"/>            |          |
| Visbreaker            | VBR    | <input checked="" type="checkbox"/> | 28800    | <input checked="" type="checkbox"/> | 0        | <input checked="" type="checkbox"/> | 60000    |

# H/COMET

## - What users have done.....

| Assay ID  |                               |               | CRUDEX  | DUBAI2007 | OMAN02 |       |
|---|-------------------------------|---------------|---------|-----------|--------|-------|
| Crude Name  |                               |               | Crude X | Dubai     | Oman   |       |
| Location  |                               |               |         | UAE       | Oman   |       |
| Year  |                               |               | 2009    | 2007      | 2002   |       |
| Assay Library   |                               |               | COMET   | COMET     | COMET  |       |
|   |                               |               |         |           |        |       |
| SingaporePetPulauMerlimau <a href="#">( User Config - SINGSEMINAR )</a> |                               |               | CRUDEX  | DUBAI2007 | OMAN02 |       |
|   | Crude Cost                    | US\$/B        | NA      | NA        | NA     |       |
|   | Crude Est Ref Value           | US\$/B        | 47.33   | 46.83     | 48.91  |       |
|   | Crude NetBack Value - [ SEA ] | US\$/B        | NA      | NA        | NA     |       |
| Product Make (Vol%)   |                               |               |         |           |        |       |
|   | LPG                           | @30.00 \$/bbl | Vol%    | 1.48      | 1.71   | 0.60  |
|   | Naphtha                       | @49.03 \$/bbl | Vol%    | 20.86     | 15.91  | 17.74 |
|   | Mogas 97                      | @60.48 \$/bbl | Vol%    |           |        |       |
|   | Mogas 92                      | @57.48 \$/bbl | Vol%    | 7.10      | 7.14   | 7.10  |
|   | Kerosene                      | @60.20 \$/bbl | Vol%    |           |        |       |
|   | Jet-A1                        | @60.20 \$/bbl | Vol%    | 11.95     | 18.89  | 14.11 |
|   | Gasoil @ 50ppm S              | @61.21 \$/bbl | Vol%    |           |        |       |
|   | Gasoil @ 0.05% S              | @59.86 \$/bbl | Vol%    |           |        |       |
|   | Gasoil @ 0.25% S              | @58.71 \$/bbl | Vol%    |           |        |       |
|   | Gasoil Reg 0.5% S             | @57.80 \$/bbl | Vol%    | 15.67     | 7.81   | 24.50 |
|   | LSFO 180cSt (2%S)             | @255.79 \$/MT | Vol%    |           |        |       |
|   | HSFO 380cSt (3.5%S)           | @252.47 \$/MT | Vol%    | 41.08     | 46.58  | 33.85 |
|   | Products Sum                  |               | Vol%    | 98.14     | 98.04  | 97.90 |

# H/COMET

## - What users have done.....

|   |               |        |       |                           |         |                       |
|---|---------------|--------|-------|---------------------------|---------|-----------------------|
| Assay ID  |               |        |       | CRUDEX                    |         |                       |
| Crude Name  |               |        |       | Crude X                   |         |                       |
| Location  |               |        |       |                           |         |                       |
| Year  |               |        |       | 2009                      |         |                       |
| Assay Library   |               |        |       | COMET                     |         |                       |
| Refinery Type <a href="#">( User Config - SINGSEMINAR )</a> |               |        |       | SingaporePetPulauMerlimau | SKUlsan | SaudiAramcoRas Tanura |
| Crude Cost  |               | US\$/B | NA    | NA                        | NA      |                       |
| Crude Est Ref Value   |               | US\$/B | 47.33 | 47.07                     | 46.88   |                       |
| Crude NetBack Value - [ SEA ]                               |               | US\$/B | NA    | NA                        | NA      |                       |
| Product Make (Vol%)   |               |        |       |                           |         |                       |
| LPG   | @30.00 \$/bbl | Vol%   | 1.48  | 2.11                      | 2.66    |                       |
| Naphtha   | @49.03 \$/bbl | Vol%   | 20.86 | 16.38                     | 17.29   |                       |
| Mogas 97  | @60.48 \$/bbl | Vol%   |       | 6.73                      | 8.35    |                       |
| Mogas 92  | @57.48 \$/bbl | Vol%   | 7.10  | 4.70                      |         |                       |
| Kerosene  | @60.20 \$/bbl | Vol%   |       |                           |         |                       |
| Jet-A1  | @60.20 \$/bbl | Vol%   | 11.95 |                           |         |                       |
| Gasoil @ 50ppm S  | @61.21 \$/bbl | Vol%   |       |                           |         |                       |
| Gasoil @ 0.05% S  | @59.86 \$/bbl | Vol%   |       |                           |         |                       |
| Gasoil @ 0.25% S  | @58.71 \$/bbl | Vol%   |       |                           |         |                       |
| Gasoil Reg 0.5% S   | @57.80 \$/bbl | Vol%   | 15.67 | 25.71                     | 26.56   |                       |
| LSFO 180cSt (2%S)   | @255.79 \$/MT | Vol%   |       |                           |         |                       |
| HSFO 380cSt (3.5%S)   | @252.47 \$/MT | Vol%   | 41.08 | 42.23                     | 43.27   |                       |
| Products Sum  |               | Vol%   | 98.14 | 97.86                     | 98.13   |                       |





**Demo.....**

**[www.assayviewer.com](http://www.assayviewer.com)**





**Thanks**