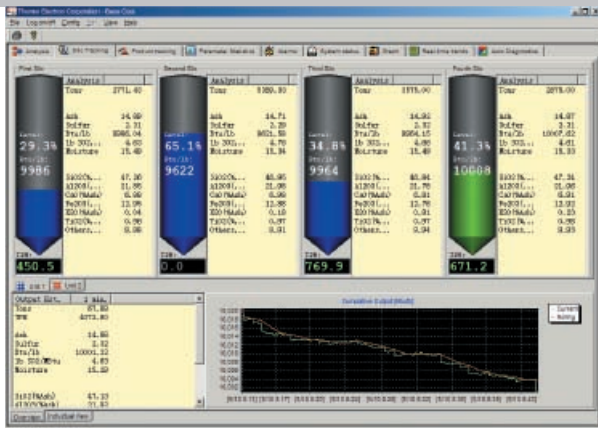


The Thermo Scientific Silo Tracking Software (STS) provides real-time analysis information on the inventory contained in downstream silos, as well as the composition of the coal being drawn from them, helping users adapt to changes in coal quality.

Silo Tracking Software™ (STS)

Software to Track Coal Quality in Silos and Bunkers



The Thermo Scientific Silo Tracking Software (STS) is the perfect complement to its online coal analyzers. This product runs on the Operator Console (OpCon) and gives the operator an expanded knowledge of the composition (sulfur, ash, moisture, and calorific value) of coal conveyed to downstream silos. The minute-by-minute analysis, along with the associated tonnage, is tagged by its destination to create a database of the composition of all the coal entering a downstream silo or bunker. The destination is automatically provided to the STS from digital inputs reflecting tripper position.

The STS also receives level sensor inputs from each downstream silo, as well as tph inputs from the weigh feeders that withdraw material from the silos. Armed with this information, the software is able to determine the current average composition of the material in each bunker or silo. The program makes a

first-order assumption that the silo flow is "first in first out." However, since most silos do not strictly follow this flow pattern, the "layers" of coal quality in lower portion of the silo are averaged. The fraction of the silo to be averaged is user selectable. Thus the program can predict the average composition of coal being withdrawn from the silo at any point in time. Furthermore, the program can generate a weighted average composition of all the coal being withdrawn at any time from multiple silos.

This valuable tool gives the operator real-time awareness of trends in the downstream composition, trends that can adversely impact the plant if no operator intervention occurs. In particular it can provide estimates to a coal-fired power plant of the coal quality about to enter the boiler. It can alert the plant to potential derate situations or to excursions which may exceed emission limits.

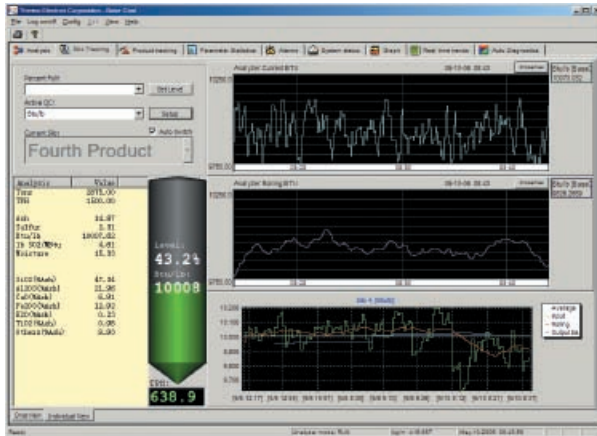
Features

- Identifies potential emission issues
- Defines the current average composition of silo contents at any time
- Presents real-time awareness of trends in downstream composition
- Produces a weighted average drawn from multiple silos
- Acquires level sensor inputs from downstream silos and mass flow inputs from weigh feeders

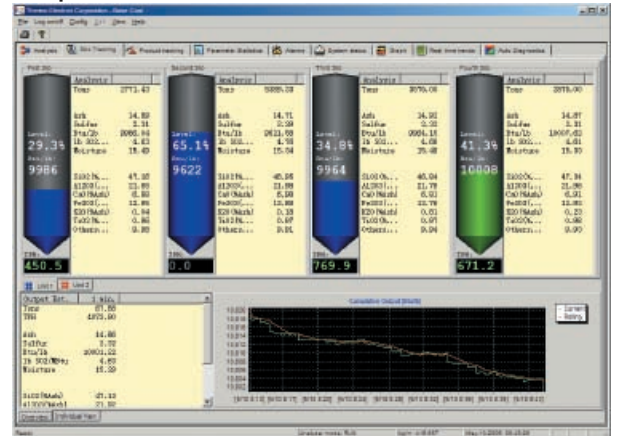
Specifications

The STS program consists of two displays on the OpCon. One display depicts all the silos, their levels, the current average composition of the most important composition parameter (such as sulfur or Btu/lb), and the estimated weighted average composition of the coal being withdrawn from all the silos or bunkers. A second screen shows details associated with a selectable silo or bunker.

Individual silo view



Multiple silo view



Silo Tracking Software™ (STS)

General Specifications

Silos or Bunkers	Up to 48 separate destinations
Composition Parameters Tracked	Typically sulfur, ash, moisture, calorific value
Software Platform	OpCon
Signal Input Requirements	Level sensor from each silo or bunker Silo or bunker being filled Mass flow rate on conveyors feeding the silos Mass flow rate on weigh feeders beneath the silos
Selectable User Inputs	Number of silos and units Extent of deviation from FIFO silo flow Primary composition parameter of interest Standard graphics choices, such as pen color, range of X and Y values in trend displays, etc.

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Process Instruments

Americas
+1 (800) 488-4399
+1 (858) 452-9250 fax

China
+86 (0) 21-6865 4588
+86 (0) 21-6445 1101 fax

Europe
+41 (0) 21-694 7111
+41 (0) 21-694 7112

India & Australasia
+91 (20) 6626 7000
+91 (20) 6626 7001 fax

South Africa
+27 (0) 11-609-3101
+27 (0) 11-609-3110 fax

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