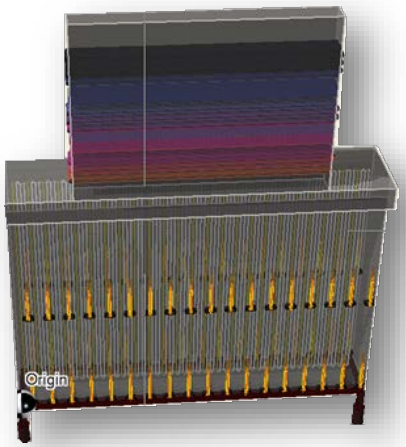
FHinfinity.Olefin©

Revolutionary Olefin Cracking Furnace Simulation – Where Precision Meets Usability

Powered by NAFTPack (NP) Engine, An integrated thermodynamics & kinetic modeling package with pre-configured kinetic packages for ethane cracking for calculation of:

- Reaction rates along coil length
- Coke formation profiles
- Component conversion and yields
- Byproduct prediction (methane, butadiene, etc.)



Technical Highlights

3D Furnace Visualization

- Interactive coil temperature profiles
- Real-time coke deposition mapping

Seamless Integration

- Import from Aspen HYSYS, Petro-SIM
- Standard outputs (XLSX, CSV, PDF, HTML)

Feedstock Versatility

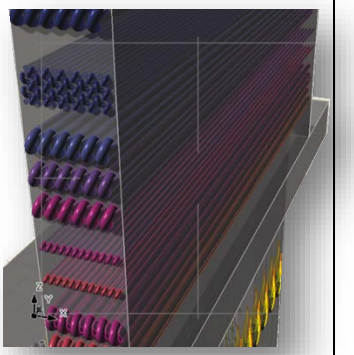
- Methane/ethane/propane and other light components
- Naphtha feed (under development)

Target Users

- **Olefin Plant Operators:** Debottlenecking, feed flexibility analysis
- **Furnace Designers:** Coil geometry optimization
- **Process Engineers:** Emission reduction studies

Case Study

FURNACE TYPE	*Box w. CS*
TUBE ORIENTATION	*Vertical*
TUBE LOCATION	*Central (Double Fired)*
BURNER TYPE & NO	*LNB, 72 (Multi Level)*
FUEL TYPE	*Fuel Gas (NG & Prod. Gas)*
NO OF TUBE BANKS	*6*
NO OF FURNACE PROCESS FLUIDS	*3*
DRAFT TYPE	*Induced*



Result	***Design***	***Simulation***
Heat Released [Gcal/h]	59.02	59.1
Furnace Duty [Gcal/h]	54.9	54.8
Firebox Duty [Gcal/h]	26.6	26.3
Convection Duty [Gcal/h]	28.31	28.5
Overall Efficiency [%]	92.5	92.8
Box Efficiency [%]	45.07	44.6
Ethane Conversion [%]	67	66.5
COT [°C]	847	849
COP [bara]	1.82	1.8
Average Heat Flux [Mcal/h.m2]	55.56	55.42
Bridgewall Temperature [°C]	1169	1168
Crossover Temperature [°C]	679	672.3
Max Skin Temp. [°C]	1009	1011
Flue Gas Quantity [kg/h]	88385	88289
MW of Effluent (wet) [g/mol]	18.37	18.44
Ethane in Effluent [wt.%]	25.01	25.2
Ethylene in Effluent [wt.%]	40.53	39.3