



Wison Engineering Ltd.

📍 633 Zhongke Road, Zhangjiang, Pudong,
Shanghai, 201210, P.R.China

☎ 86-21-20306000

✉ wisonmarketing@wison.com

🌐 wison-engineering.com



🌐 Website



in LinkedIn



Leading Provider of Industrial Furnace Technology and EPC Services



Industrial Furnace



TOP TIER

Leading Service Provider in China's Industrial Furnace Sector



GLOBAL

A World-Class Chinese Enterprise



HIGH-END

A Benchmark for Successful Independent R&D in China's Industrial Furnace Sector



Core Products



- Ethylene Cracking Furnace



- PDH Heater



- General Fired Heater
(Refinery, MTO, LAB, SAF, Sulfur Recovery, Methanol, etc.)



Strategic Foothold Products



- EDC Cracking Furnace
(Ethylene Dichloride Cracking Furnace)



- Reformer
Steam Methane Reformer (SMR)



Milestone

Wison established; Industrial Furnace Division founded; Undertook Qilu Petrochemical ethylene cracking furnaces revamp

Formed industrial furnace team via partnerships, absorbed international standards, broke tech monopoly

2007

Proprietary technology EPC for: Sinopec Guangzhou 40 KTA cracking furnace; PetroChina Lanzhou two 40 KTA cracking furnaces

Solved dual radiant & staged mixing challenges; delivered first proprietary large-scale cracking furnace – entered high-end market

Wanhua's 750 KTA PDH project utilizing UOP technology (EPC); Largest in China at that time

Expanded from ethylene to ethane cracking furnaces, reformers, PDH heaters – built comprehensive furnace portfolio

2013

2015

SABIC United 200 KTA ethane cracking furnace (EPC); First step into the global market

Leveraged modular advantages and a strong domestic track record to enter the Middle East, winning bids against global competitors and gaining recognition in high-end global markets

Zhejiang Petrochemical 1.4 MTPA ethylene plant 9 cracking furnaces – fully modularized delivery

Pioneered modular design, factory prefabrication, integrated installation for large industrial furnaces

2018

2022

One 550 KTA PDH project

Adopted cutting-edge standards, aligned with global leaders, achieved import substitution, proven under the toughest conditions

Proprietary technology + EPC: Wanhua Phase II: seven 200 KTA cracking furnaces Shandong Junchen: four cracking furnaces

Shifting R&D to low/zero-carbon tech; Next-gen furnaces for green, smart transformation

2025

Extensive Experience

240+

Newly Constructed/Revamped
Cracking Furnaces

50%

China's
Cracking Furnace Market

120+

Cracking Furnaces Using Wison's
Proprietary Technology

3

One of 3 Domestic Million-Ton
Ethylene Technology Providers

130+

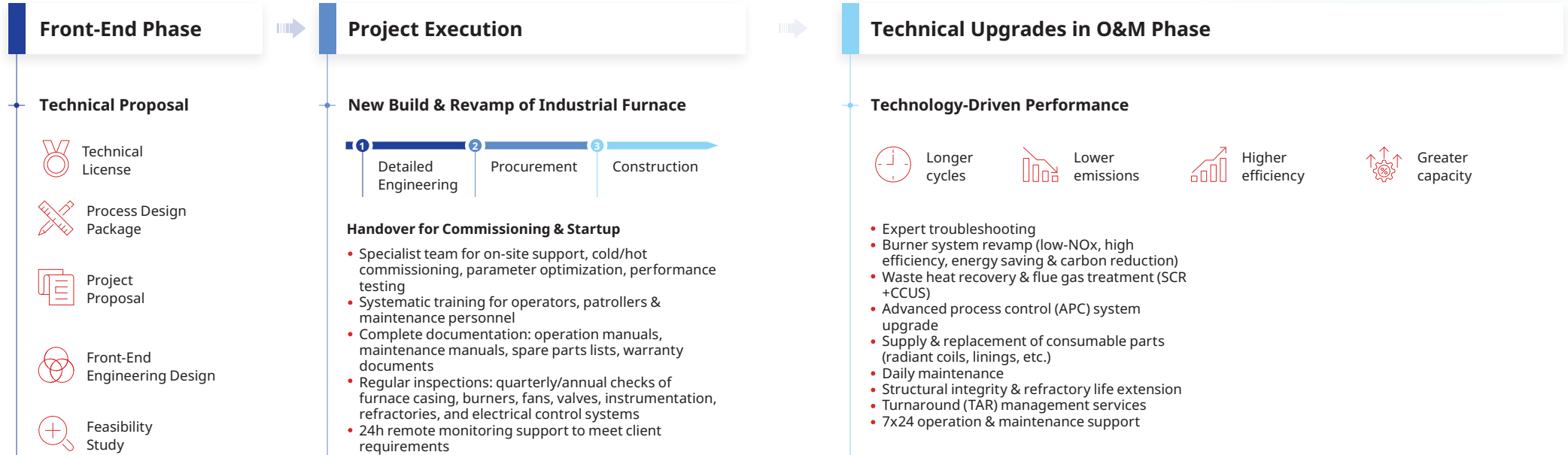
Fired Heaters

20+

Patents Granted



Full Lifecycle Services



Design Execution

High-Quality, High-Efficiency Design Execution



Scope Study

- Requirements Analysis
- Patented Equipment
- Code & Standard Study
- Lessons Learned



Design Organization

- Expert Team
- Professional Efficiency
- Strong Teamwork
- Focused Execution



Design Planning

- Responsibility Matrix
- Schedule Plan
- Document Numbering Control
- Interface Management
- Project-Specific Plan
- Engineering Software



Quality Control

- Review & Approval System
- Internal & External Audit System
- Management of Change (MOC)
- Expert Review
- Specialty Reviews



Schedule Control

- Critical Path Analysis (CPA)
- Monitoring & Corrective Action
- Key Milestones
- Risk Management

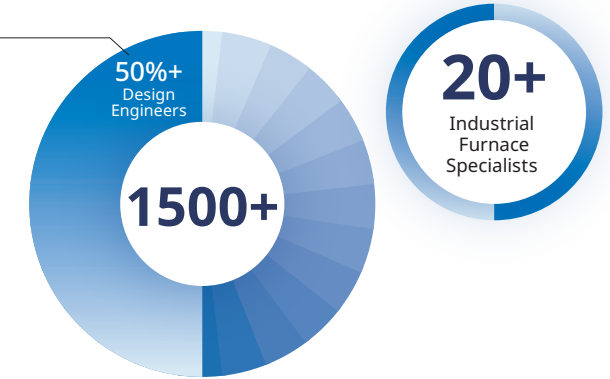


Document Control

- Revision Control
- Digital Delivery
- Deliverable Distribution
- Document Archiving

Design Resources

- 6% Electrical
- 6% Plant Facility & Utility
- 17% Process
- 24% Piping
- 12% Equipment
- 9% Engineering Design
- 19% Civil
- 7% Instrument



85%

Globally Experienced

30%

Master's, PhD and Above

68%

10+ Years Industry Experience

Global Supply Chain



PLANNING

- Requirements Analysis
- Procurement Strategy
- AVL Screening
- Risk Assessment



PURCHASING

- Purchasing Strategy
- Commercial Review
- Technical Evaluation
- Contract Performance Management



EXPEDITING

- Expediting Level
- Risk Alert
- Expediting Status Tracking
- Corrective Actions for Deviations



INSPECTION

- ITP
- Inspection Release Note
- Inspection Level
- Resident Supervision or Flying Inspection



LOGISTICS

- Logistics Planning
- Customs Clearance
- Road Survey
- Transportation Tracking



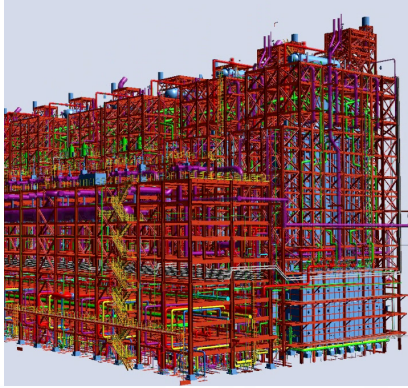
WAREHOUSING

- Out of Box Audit
- Storage and Distribution
- OSD Report
- Stock Taking



China-Manufactured Modular Solutions

1



STUDY & DESIGN

- Modular execution strategy and technology research
- Commercial viability analysis
- Design capability for mega modules

2



FABRICATION & ASSEMBLY

- Shop drawing, module layout plan, module construction sequence, component fabrication, module assembly, inspection & testing, weighing, pre-commissioning, module envelope

3



TRANSPORTATION

- Load-out planning, sea fastening planning, module load-out and marine operations, shipping, offloading, land transportation

4



POSITIONING

- On-site module transportation, foundation preparation, Ro-Ro to location by SPMT or lifting to location by crane, complete module installation, inspection and testing

Construction Management

40+

International
Construction Subcontractors



RESOURCES

- 100+ professional management staff
- 200+ global/local partners
- Contributor to 20+ national & industry standards
- 16 proven construction methods

DIGITAL PROCESS MANAGEMENT

- SM construction management system
- SPOOLGEN piping construction management software
- SC project handover management system



EXECUTION PLANNING

- Preparation & review of execution plans
- Site layout planning
- Heavy lifting & temporary facility planning

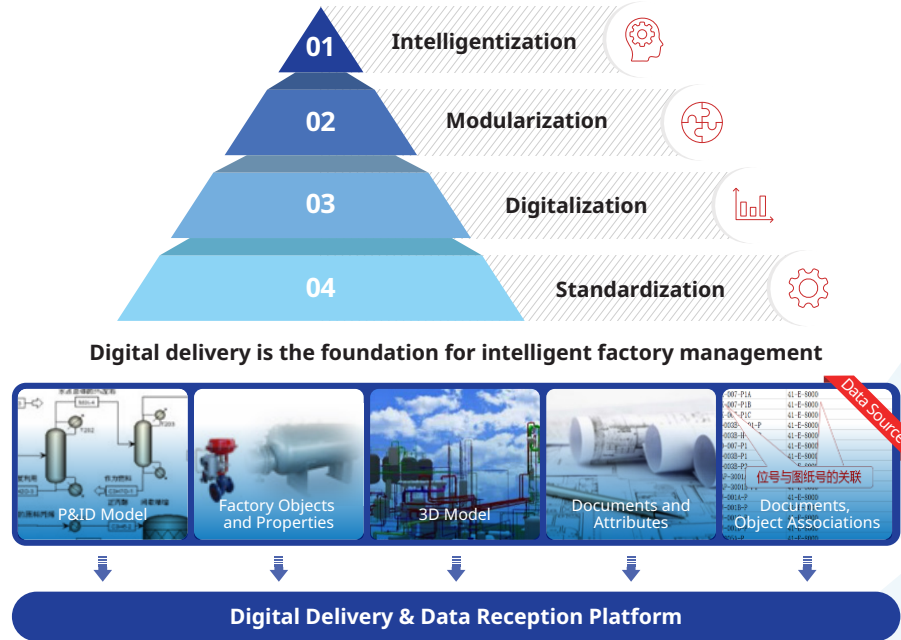


SYSTEM HANDOVER & COMMISSIONING

- Division and handover of domestic and international units
- Planning and management of unit commissioning
- Specialized start-up experts and operations team



Digital Delivery Solution



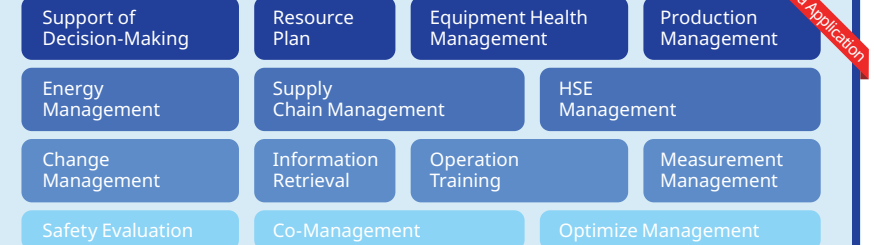
Mature digital delivery capabilities and sophisticated experience

Design digital delivery is the only way to standardize data

Integrate process licensors, equipment suppliers, construction companies, commissioning units to jointly complete digital delivery and achieve seamless data connection

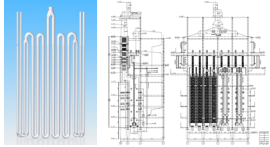
EPC can achieve digital delivery better than E+P+C

Wison and Honeywell established a joint laboratory to explore the data connection between EPC and intelligent plant operation and maintenance, so as to better leverage the significance of digital delivery



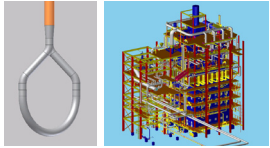
Cracking Furnace

HS-I



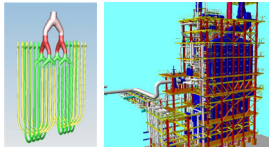
- Applicable to Gas Feedstocks Cracking (Ethane, Propane)
- 4-Pass or 6-Pass Tapered Tubes
- Adopts Traditional TLE or Linear TLE + Traditional TLE
- Overall Thermal Efficiency > 94%
- Successfully Applied at: Daqing, Liaoyang, SECCO, BASF-YPC, JPC, CSPC, Wanhua, and Other Ethylene Plants

HS-II



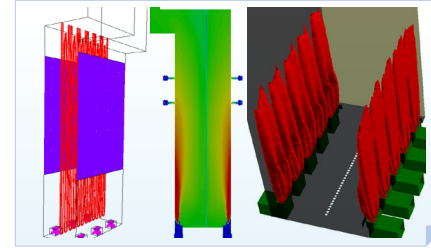
- Applicable to Liquid Feedstock Cracking
- Single-Row, Double-Fired U-Coil (Single Inlet, Single Outlet), Symmetrical U-Fitting Absorbs Thermal Stress from Differential Expansion of Inlet/Outlet Tubes.
- Traditional and Linear TLE Options Are Available
- Overall Thermal Efficiency > 94%
- 20+ Furnaces Have Used HS-II Coil (Newly Built or Revamped)

HS-III



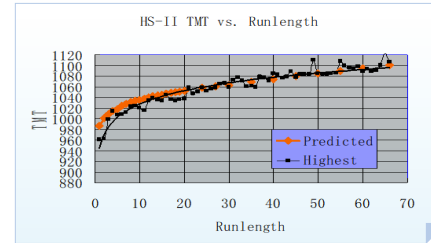
- Applicable to Liquid Feedstock Cracking
- Double-Row Arrangement, Symmetrical U-Fitting Connecting Inlet Leg and Outlet Leg
- 60+ Days Run Length. Higher Capacity or Longer Run Length in the Same Furnace Volume, Widely Used in Liquid Feedstock Cracking Furnace Revamps

CFD-Optimized Furnace Design & Operation



- Thermal Field & Burner Layout Optimization, NOx Prediction, etc

PS-II Cracking Furnace Simulation Tool



- Measured vs. Calculated Tube Temperatures in Strong Agreement, Run Length Accurately Predicted

Fired Heater

1 INTEGRATED ENGINEERING

- Partnership with technology licensors (Honeywell, PFR Engineering, UOP)
- Licensed software: FRNC-5PC & REFORM-3PC
- Customized process & equipment integration
- Full EPC project management



PFR Engineering

- FRNC-5PC™ (General Fired Heater)
- REFORM-3PC™ (Steam Methane Reformer)

2 PROJECT EXPERIENCE

Extensive EPC Project Experience in Global Petrochemical Markets

130+

Furnaces Delivered

20+

Years of Experience

3,900 t+

Ultra-Large Module
Delivery

3 SOLUTION CAPABILITY

Integrated capabilities: software simulation, low-carbon revamp, and global supply chain delivery. Full lifecycle services from design to installation, powered by large-scale modular fabrication.



Software Simulation
Solutions



China Supply
Chain Integration



Plant
Studies & Revamp



Additional
Services



Electrically Heated Ethylene Cracking Furnace

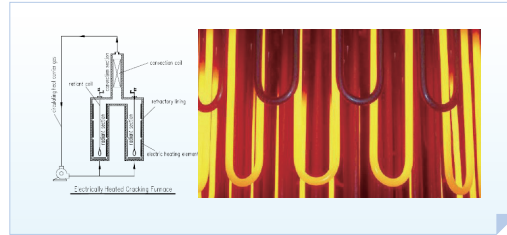
1 Overall Thermal Efficiency > 98%

Radiant Section

Heat supplied by electric heating elements (MoSi_2)

Convection Section

Heat recovery via closed-loop hot gas circulation



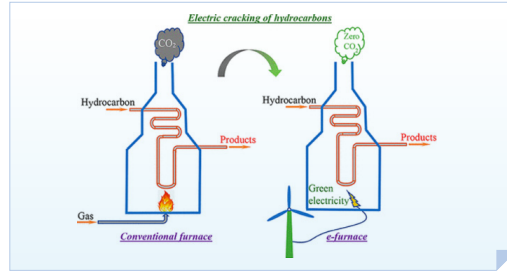
2 Utilizing Green Power to Achieve Zero Emissions

Energy Substitution

Heated by green electricity – no burners

Environmentally Friendly

Zero flue gas – zero CO_2 emissions



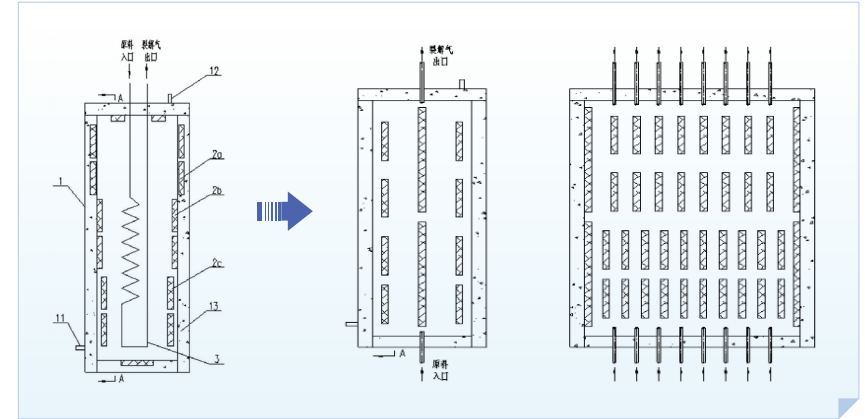
3 For New Builds & Revamps – Energy Saving

Wide Applicability

Suitable for new builds & revamps; no impact on steam balance

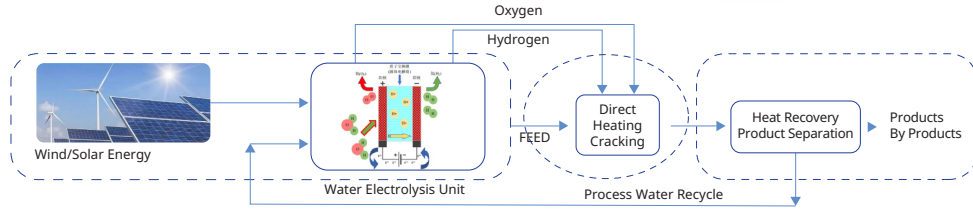
Advanced Heat Recovery

- Simplified to a single radiant box
- External mixing & preheating, maximum power reduction

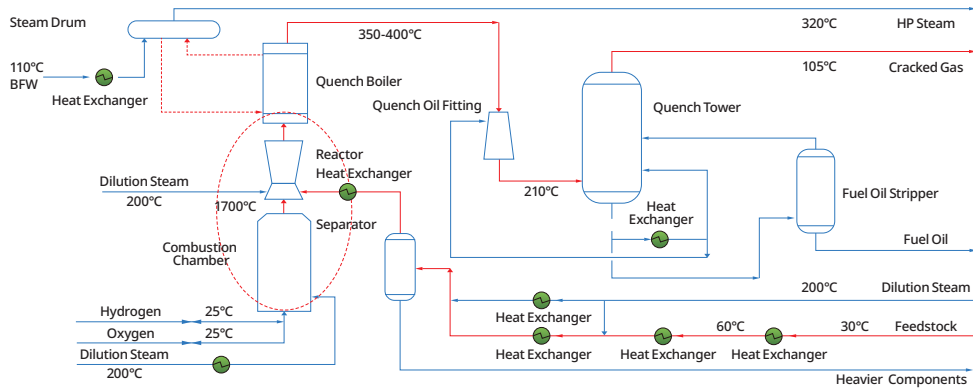


H₂-O₂ Direct-Fired Cracking Reactor for Olefins Production

1 Green H₂ & O₂ Co-Production via Water Electrolysis



2 H₂-O₂ Direct-fired Cracking for Olefins



3 200 KTA Ethylene

- Each reactor can be individually shut down for maintenance
- Significantly reduced capital investment
- OPEX driven by H₂, O₂ & natural gas prices



4

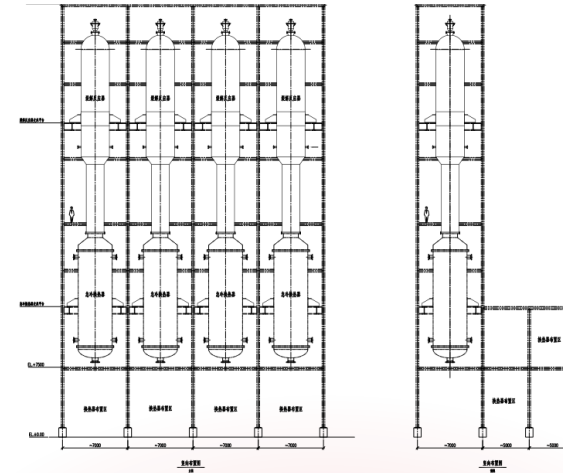
Reactors



46.5m
Height



21m
Length



Hollow Intersecting Plate Enhanced Heat Transfer Tubes



Enhanced Heat Transfer



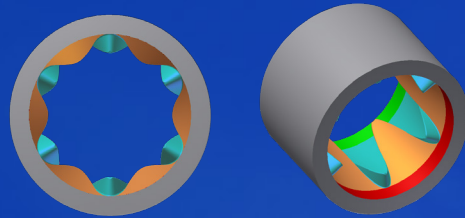
Increase Ethylene Yield



Reduce Coke Formation

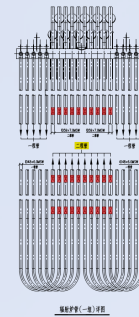


Extend Run Length



Tube Wall Temperature Reduced by 20°C Significantly Extended Run Length

- **Case Study:** 4 New-Build Cracking Furnaces
- **Furnace 3# (F-1230):** Radiant tubes equipped with hollow intersecting plate enhanced heat transfer tubes
- **Furnace 4# (F-1240):** Identical design to 3#-used as the baseline for comparison

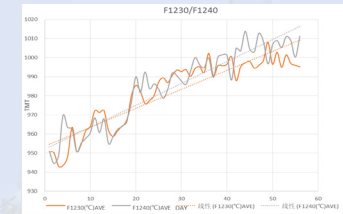


Jun 2019: Technical solution finalized (3 optimized hollow intersecting plate enhanced heat transfer tubes added per second-pass tube).

Apr 2023: Unit commissioned and in stable operation for over one year. Max wall temp of 3# tube reduced by 10–20°C (same operating conditions); operation cycle significantly extended.

F1230 (Hollow) vs. F1240 (Standard)

The TMT gap widens in the later stages of 60-day run, demonstrating excellent coking resistance.



Project Cases

SABIC Ethylene Cracking Furnace Project



Contract Scope: New 200 KTA Cracking Furnace and Decoking Drum
Licensor: KBR
Contract Mode: EP, Cracking Furnace EPC
Time: 2013-2015

- The new design comprises a 200 KTA cracking furnace and a decoking drum, with specifications identical to the existing units
- The cracking furnace feed consists of fresh ethane with 95% purity, which is mixed with recycled ethane at 99% purity before entering the furnace
- Wison was responsible for the design, procurement, construction, and start-up support of the new cracking furnace

One PDH-2 Project



Contract Scope: 550 KTA PDH Unit, 570 KTA PP Unit
Licensor: UOP
Contract Mode: EPSS
Time: 2023-2024

- Wison's first overseas PDH heater project
- The project maximized modular design, fabrication, and transportation, significantly reducing on-site construction complexity and workload
- The PDH unit's reaction section is equipped with four PDH heaters based on UOP process packages
- As a key equipment supplier, Wison was responsible for the detailed design, procurement, fabrication, delivery, and on-site technical support of all four PDH heaters