

A SOLUTION FOR ALL FURNACE TYPES

Furnaces with a single diameter and u-bends are easy to clean and inspect due to their straight forward design.

More specialized configurations such as plug headers, boxes, horseshoes and reducers however require a specialized approach in order to clean the furnace tubes.

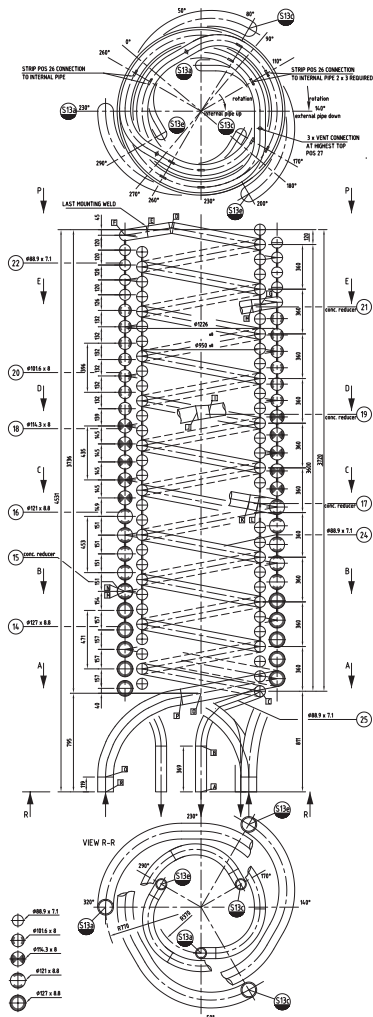
Regardless what kind of furnace you have, if pigging is an option, we have the tools and expertise to clean it.

Gasification units, such as the one pictured here require frequent cleaning. However, these units can be challenging due to their spiral configuration and reducers. Only high quality equipment, sophisticated procedures and experienced operators are key for a successful furnace decoking operation.

The pictured gasification unit, a specially designed spool piece was fabricated to connect the launcher to the furnace. After cleaning, the unit was inspected for the minimum wall thickness with particular attention given to the inlet of the system where the velocities are the highest. The client was so satisfied, that for over the last 10 years, we have been cleaning their furnaces.

From inlet to outlet

- 4.37" ID
- 4.30" ID
- 3.87" ID
- 3.44" ID
- 3.00" ID



COMPARISON

This table shows you that in general with mechanical decoking we reduce the down time of your furnace with 20-30% in comparison to steam air decoking.

STEAM AIR DECOKING		MECHANICAL FURNACE DECOKING	
Phase	Duration (hrs)	Phase	Duration (hrs)
Flush out and cool down	12	Flush out and cool down	12
Disconnect from process, safety, permitting, rigging up	5	Safety, permitting, rigging up	4
Decoking	55	Decoking including change over	34
Cooldown	8	Cooldown	0
Rigging down, connect back to process	5	Rigging down, connect back to process	4
Back on line		Back on line	
Total time: crude to crude	85	Total time: crude to crude	54

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Furnace Cleaning

Your furnace in optimal performing condition

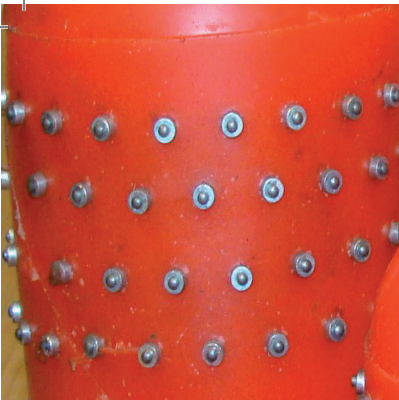
RELIABLE, FLEXIBLE, FAST

Regular cleaning and inspection of furnaces increases reliability and continuity. Knowing the remaining wall thickness of the tubes gives you control on the life-cycle of the furnace and prevents unexpected shutdowns. A.Hak Industrial Services' furnace decoking solutions are based on advanced pigging technology to remove cokes and scale without eroding the furnace tubes. With our services we minimize shutdown time and reduce environmental emissions.



Multiple services, singular solutions  
for the Oil, Gas & Petrochemical Industry





One of the major challenges plant operators are facing is the continuous build-up of coke deposits along the inner wall of furnace tubes. Without service and maintenance, these coke layers grow in thickness, restricting flow of process fluids and increase pressure across the furnace. In addition, coke deposits act as an insulator, reducing heat transfer from the tube to the process fluid. This results in reduced furnace efficiency and higher operational costs.

#### FURNACE DECOKING OFFERS YOU

- Increased profitability
- Lower production costs
- Increased furnace capacity
- Increased heat exchange
- Increased flow
- Reduced hotspots
- Longer tube life
- Lower differential pressure
- Decreased energy consumption

Over the years we have successfully executed numerous furnace decoking projects. Based on our extensive industry knowledge and experience, we have developed a superior decoking service that will safely and reliably remove coke deposits from furnaces.

When combining our furnace decoking services with our Furnace Piglet® inspection technology, we can guarantee the cleanliness of the furnace tubes by performing a Cokescan. During the cleaning, verification runs are used to demonstrate the cleanliness of the tubes in order to optimize the decoking process and reducing decoking time. After the cleaning has been completed, we can run our Furnace Piglet® inspection tool that will provide you with the remaining wall thickness of the furnace tubes and the integrity of the furnace. Combining our cleaning and inspection services minimizes shutdown time, reduces unplanned stops and optimizes performance of your heaters.

#### WHY USE A.HAK INDUSTRIAL SERVICES' FURNACE DECOKING TECHNOLOGY?

- Efficient, safe and reliable
- Reduces shutdown time
- Allows optimization of heater operation
- Reduces energy consumption
- Environmental friendly
- Determination of abnormal coking areas
- Simultaneous cleaning and inspection

Our Furnace Decoking Service incorporates the latest developments in pigging technology to be able to remove cokes and scale without eroding tubes. A.Hak Industrial Services developed its own resilient and flexible pigs that can navigate pipe systems which have short radius elbows, U-bends, boxes or plug headers, while the high tech studs remove the coke layers.

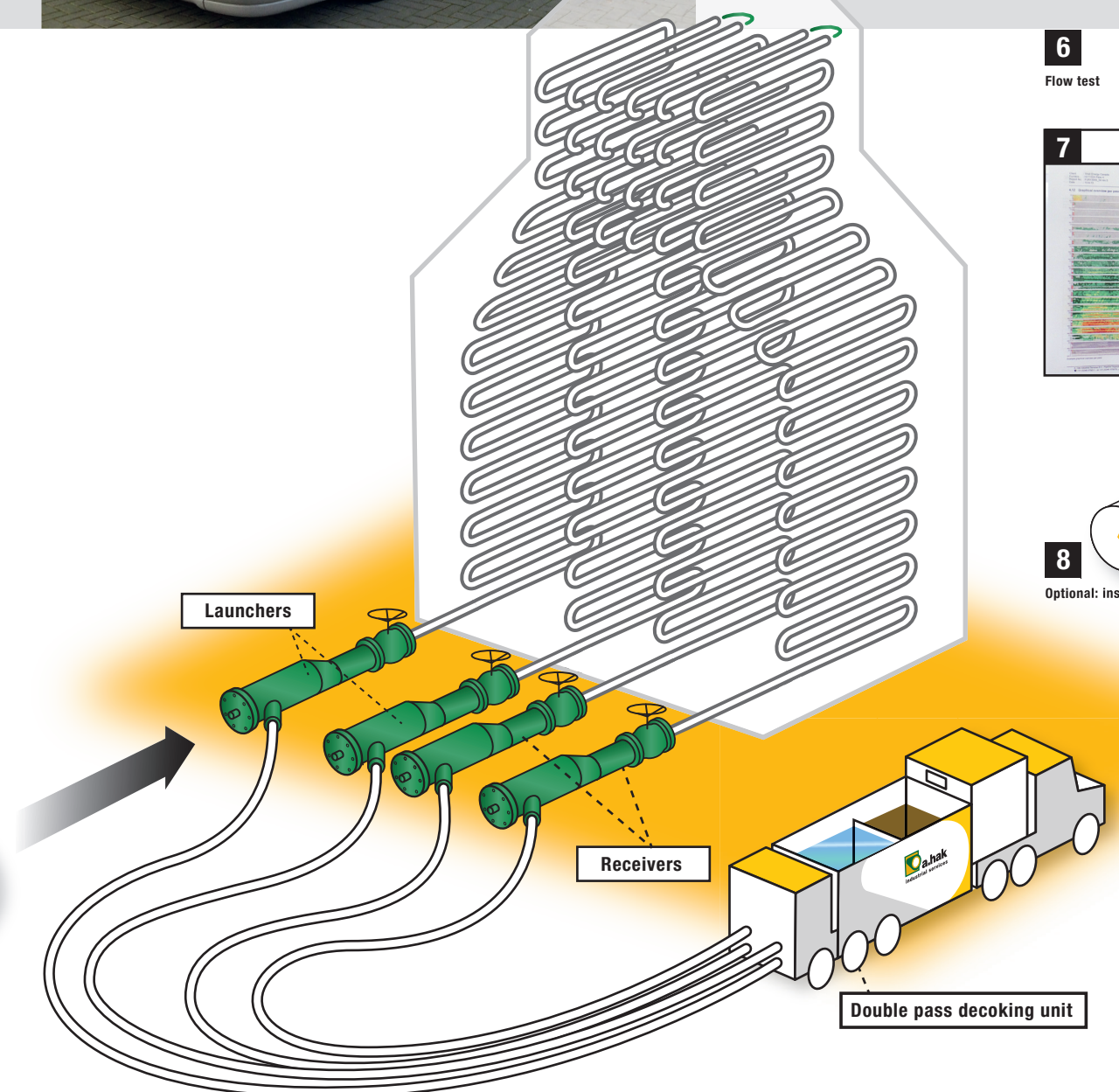
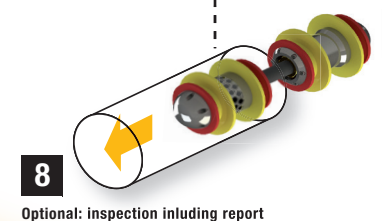
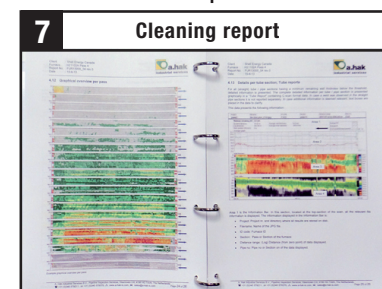
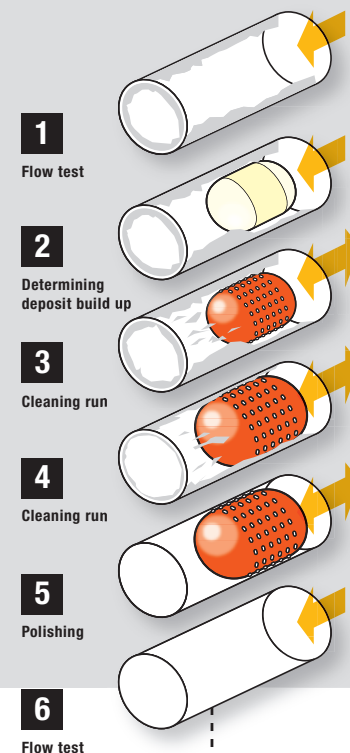
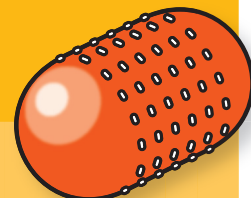
Our Services ensure thorough cleaning of the furnace tubes without blocking them.

Our double pass units are set up to allow the collection and examination of coke samples for accurate composition and structural analysis. By regularly examining the amount, size and hardness of your furnace cokes, it is possible to determine their characteristic history. This valuable information leads to extended run-lengths, reduced maintenance costs, improved reliability and minimal operational costs.

After completion of the decoking operation, a full report is presented containing information about the condition of the furnace and details of the decoking operations.

Our extensive industry knowledge, combined with our experienced crews and readily available resources at A.Hak Industrial Services, means we offer the latest in decoking and inspection technology to provide innovative and flexible solutions to optimize furnace performance.

# One solution!



## Optimize your heater performance