

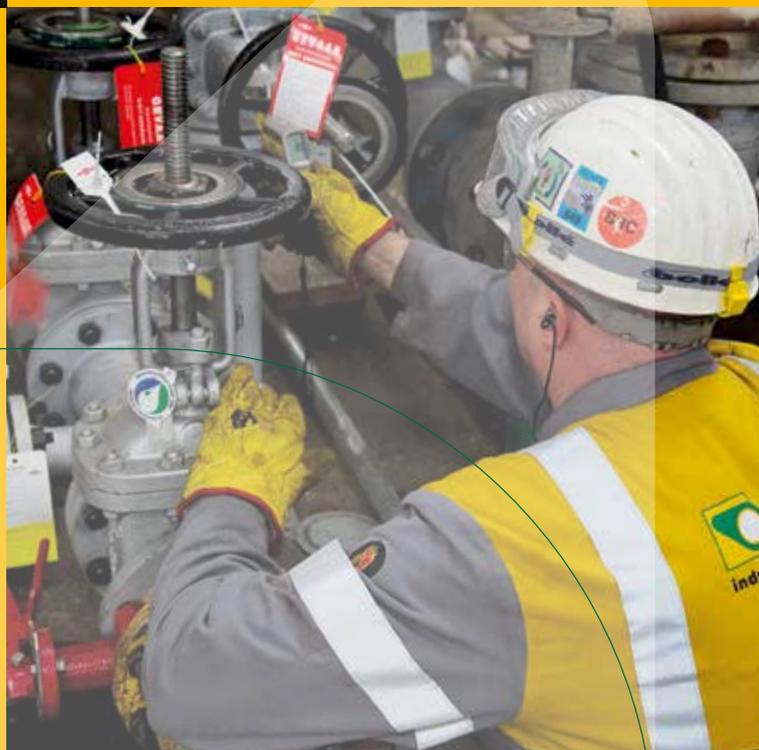
Chemical Decontamination

A new generation in decontamination fluid

Hak-SafeGuard®

SAFE, FAST AND COST-EFFECTIVE

For safe operations during maintenance activities in refineries and chemical process systems, it is vital to ensure systems are clean and free of hydrocarbons. Hak-SafeGuard® is a unique powerful decontamination fluid that delivers a level of cleanliness unparalleled in the current industry and produces a completely hydrocarbon-free system. A.Hak Industrial Services' decontamination procedure using Hak-SafeGuard® is safe, fast, reliable and cost-effective with no environmental impact.



 **a.hak**
INDUSTRIAL SERVICES

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



With the growing demand for higher safety standards in the industry, the effectiveness of regular cleaning and maintenance measures is of vital importance.

A.Hak Industrial Services' designed and developed Hak-SafeGuard® is in full compliance with REACH regulations and is the most powerful, unique and successful decontamination chemical available in the current market. For the thorough removal of hydrocarbons our product, combined with the expertise and dedication of our personnel, will help to achieve maximum efficiency and safety of your process systems with minimal environmental impact.

GOOD, BETTER, HAK-SAFEGUARD®

Hak-SafeGuard® consists of a mixture of solvents and a blend of detergents which have the ability to form a micro-emulsion that will deliver a higher degree of system cleanliness. The major benefits are the low dosage and the strong and stable micro-emulsion building capacities resulting in little or no waste.

In minimum time, Hak-SafeGuard® reduces benzene concentrations to less than 0.5 ppm. Following the Hak-SafeGuard® decontamination procedure, maintenance and inspection can start immediately, without any specific measures, making it safer, faster and more cost-effective.

During the shutdown phase, the stable micro-emulsion will remove all gasses and most, in some cases all, of the fouling in the equipment. After pumping out the emulsion to a temporary tank, an emulsion breaker will be applied in order to break the emulsion back into a water and hydrocarbon layer.

The hydrocarbons can then be burned, disposed or pumped into the system after start-up. The water can be stored or pumped into the process system again or into the closed chain system, resulting in little or no waste.

BENEFITS OF HAK-SAFEGUARD®

- PH-neutral
- 100% biodegradable
- Conform REACH regulations
- Impacts only on hydrocarbon-like materials
- A powerful, stable micro-emulsifier
- Emulsion breaking capability meaning no product waste
- Starts working on low temperature
- Large hydrocarbon binding capacity

WHY USE HAK-SAFEGUARD®?

- Increase production
- Lower turnaround costs
- No waste generation – product can be recovered and recycled
- Less mechanical preparation
- Less or no vessel entry for cleaning
- Less or no hydro blasting
- Reduces inspection time
- Increases safety standards
- Minimizes labor intensive clean out

APPLIED SOLUTION

After analyzing an indicative sample and determining the most suitable cleaning loops for your situation, our expert cleaning advisor will assess the project to yield the most cost-effective package for optimal results with minimal safety and environmental impact. During the decontamination process the progress will be measured regularly. If the goals are met, the system will be thoroughly drained and cleaned with water. After aeration the system is clean and ready for people to enter in a far safer environment. A written procedure for execution of the project, including planning and time frame will be produced based on the following goals:

- Zero LEL
- Zero H2S
- Less than 0.5 ppm benzene
- No additional steaming out or nitrogen purging required
- Easier pulling heat exchangers, lowering incident risks
- Time saving
- Pyrophoric (iron sulphides) easier to be oxidized

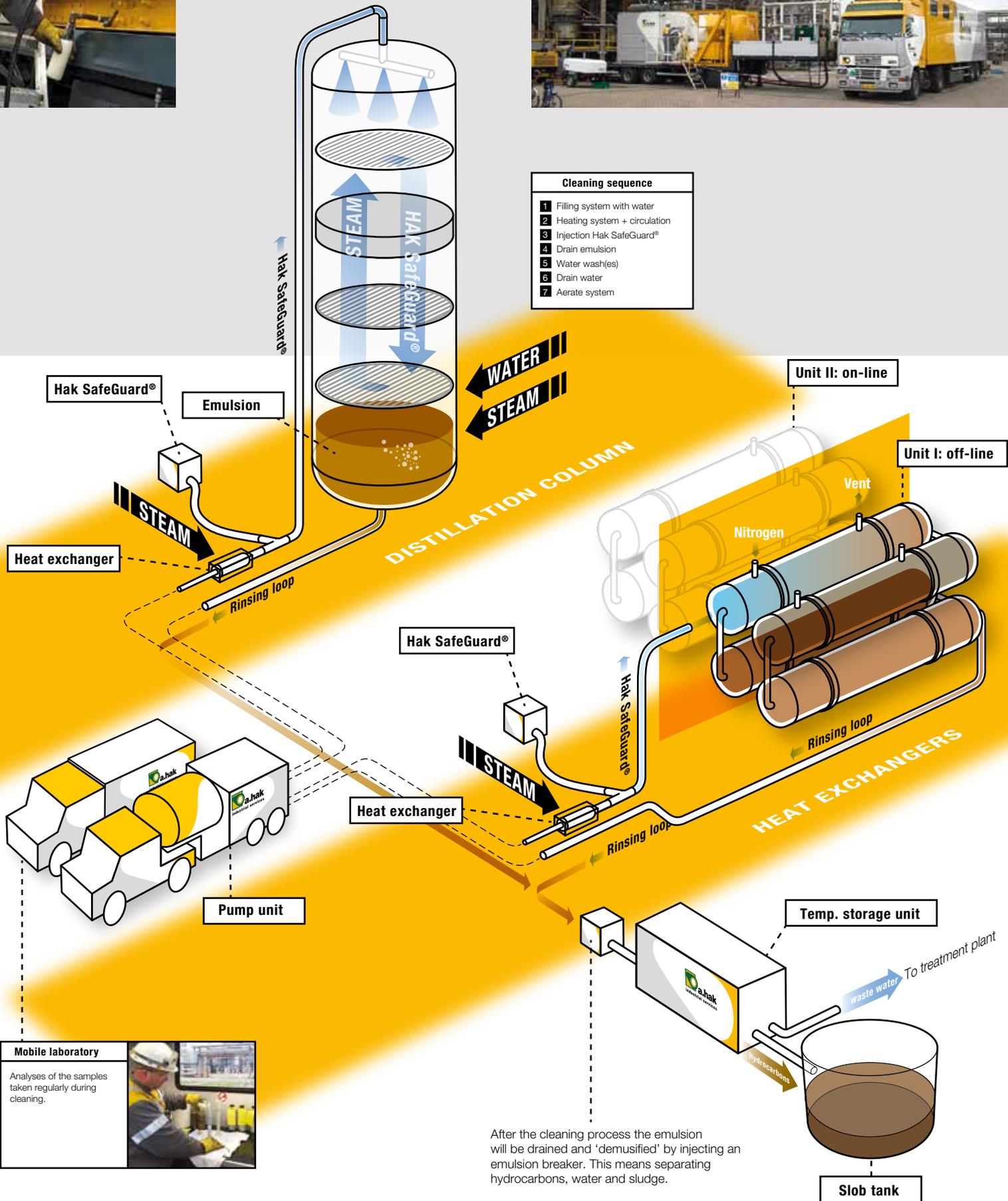
Hak-SafeGuard® can be successfully applied in petrochemical and refinery installations such as:

- Crude units
- Vacuum units
- Hydrotreaters
- Reformers
- Compression systems
- Ethylene systems
- Crackers
- Heat exchangers, single or in a row

The effectiveness of regular cleaning is of vital importance



Cleaning sequence	
1	Filling system with water
2	Heating system + circulation
3	Injection Hak SafeGuard®
4	Drain emulsion
5	Water wash(es)
6	Drain water
7	Aerate system



Mobile laboratory

Analyses of the samples taken regularly during cleaning.

After the cleaning process the emulsion will be drained and 'demulsified' by injecting an emulsion breaker. This means separating hydrocarbons, water and sludge.

ADAPTABLE SOLUTIONS

A.Hak Industrial Service provides flexible solutions which tie in with the changing needs of our customers.

During operation it is normal for heat exchangers to become polluted. This can be either a slow or a rapid process, depending on process interruptions or different feed specifications. By using Hak-SafeGuard® we are able to clean heat exchangers online providing cost savings and reducing safety risks on-site.

There are almost no limits to the number of heat exchangers that can be cleaned in series or in parallel – even a combination of shell and tube sides. By completely filling the systems with a mixture of warm water and Hak-SafeGuard®, the heat exchangers can be cleaned while the others remain in service. During the cleaning, regular measurements are taken to analyze the progress and upon completion, fresh water will be flushed through the system, removing all residue so it is ready for start-up. If it is mandatory for the heat exchangers to be inspected, the bundles can then be pulled much more easily with less risks due to the presence of hydrocarbons.

In some cases, such as bottom heat exchangers of visbreaker units, an extra pre-cleaning step would be applied, due to the heavier hydrocarbons.

During the preparation of systems such as vacuum columns, special attention needs to be given to the supports, pyroforic materials, stress corrosion etcetera which can cause additional problems. In such systems, which were not built to support the free volume in water, the column would be only partially filled. By pumping this volume around the system, the column will be decontaminated by a 'rainshower'. Afterwards it would be cleaned with fresh water and then, following aeration, the system is ready to be entered.



A.Hak Industrial Services B.V.

Plesmanstraat 26
7903 BE Hoogeveen
The Netherlands

T +31 (0)528 225 300
F +31 (0)528 225 400
industrial@a-hak-is.com
www.a-hak-is.com

