

DEGREASER RECONDITIONING CASE STUDY

P149e.0

GENERAL

Organic solvent mixtures, which are sold under the name "degreaser" are used to clean and degrease components. Because cleaning is often by hand, today chlorinated hydrocarbon-free mixtures are usually used.

Both solid matter and least and most volatile organic materials are contained in unknown quantities in contaminated products.

The parts-cleaning equipment is often provided including supply of degreaser with a trade-in policy. Cleaning and recovery is today preferred to burning.

- ☞ Corrosion resistance
- ☞ Turn-key equipment
- ☞ Support from official authorisation

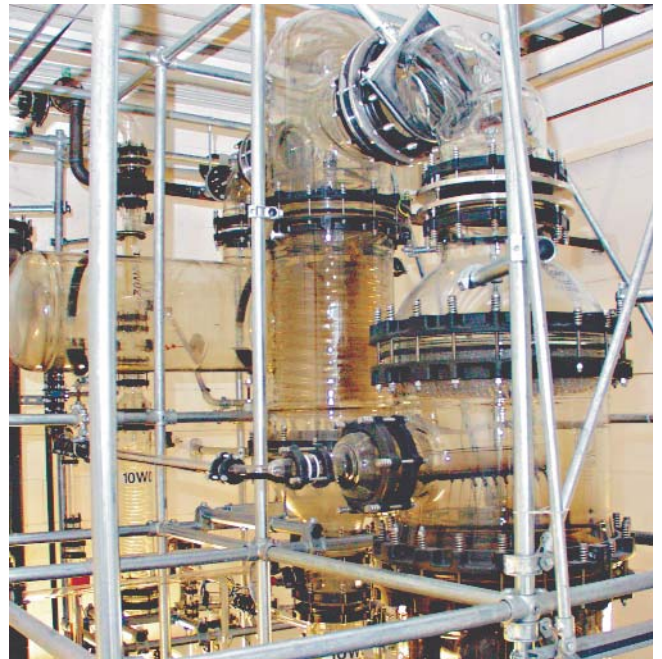


Fig. 2: Pre-cleaning

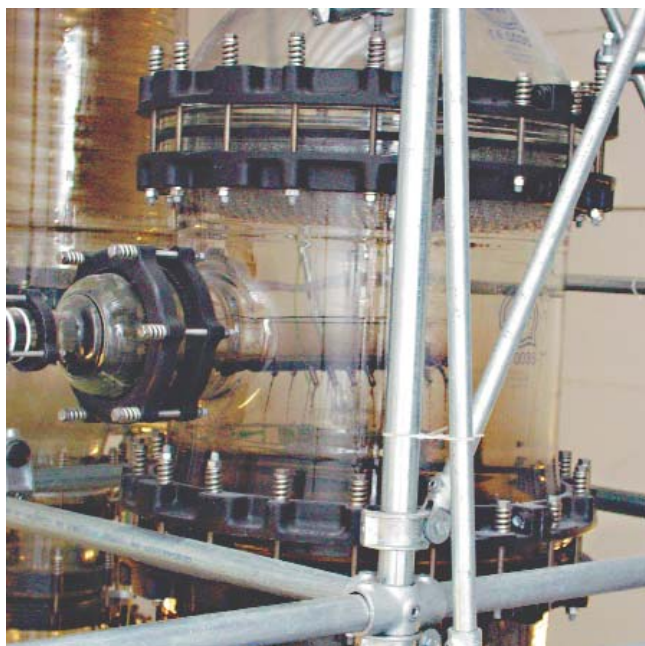


Fig. 1: Liquid distributor for column DN600

THE PROCESS

After mechanical cleaning the organic contaminants are separated in a 2-stage distillation with two different vacuums. In the first stage, at about 150 mbar, low boilers are stripped, while in the second stage the degreaser is evaporated in a horizontal evaporator at 5 mbar. The product pre-cleaned in this way is finally cleaned with sulphuric acid of organic contaminants in a 3-stage mixer settler and neutralised in the last stage. The recovered degreaser leaves the equipment transparent.

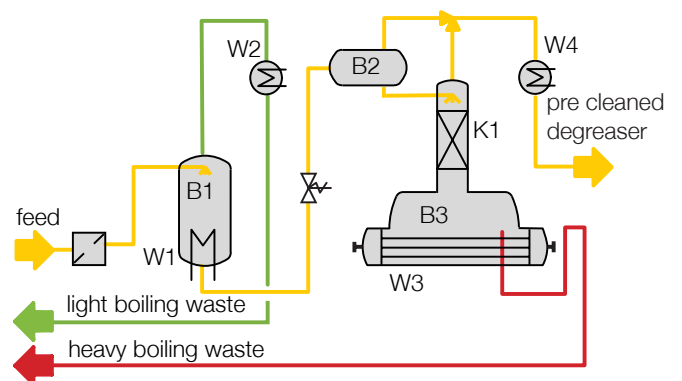


Fig. 3: P&ID for the pre-cleaning



Fig. 4: Stage 2 of the final cleaning

THE EQUIPMENT

The evaporator stages and the mixer settler are made from borosilicate glass 3.3, the heater in stainless steel and silicon carbide. The steam generator is delivered with water conditioning, a cooling water unit and vacuum equipment in addition to complete pipework and measurement and control.

A requirement for the basic engineering was for experiments to be carried out in our customer test facility where the process engineering design data was recorded.



Fig. 5: Horizontal evaporator

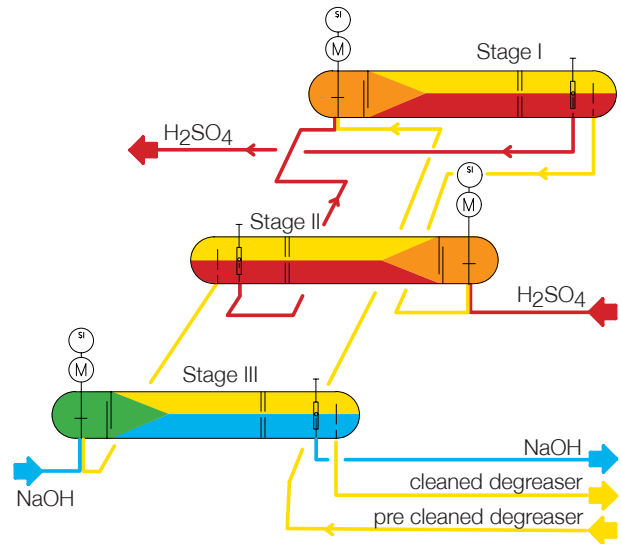


Fig. 6: P&ID of the final cleaning

THE HORIZONTAL EVAPORATOR

While usually the horizontal evaporator is used to optimally exploit the available temperature difference between heating steam and upgraded product, in degreaser evaporation the advantage lies in the beneficial pressure relationship in the deep vacuum. The silicon carbide pipes are sealed on both sides of the horizontal evaporator with the proven single-pipe sealing.

SCOPE OF SUPPLY

- Process development/engineering
- Feasibility studies
- 2-stage evaporator (DN 600 = second stage)
- 3-stage mixer settler DN 200
- Heating steam generator
- Cooling water circulation (air cooler)
- Vacuum generator
- Process control system with visualisation
- Guarantee of the process parameter



Fig. 7: Heating steam generator



Fig. 8: Air cooler

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