Turning waste into profit

Treatment of slop oil, emulsions and oily waste

Experience counts
Slop oil stored for years in ponds and tanks is an increasing environmental problem. When treated properly, however, this waste can be minimized and the oil recovered from such sources can be sold at a profit.

Alfa Laval has decades of experience in successfully solving even the most complex problems related to recovering oil from slop oil, emulsions and oily waste.

Solution to a demanding requirement
Slop oil comes in many forms, which creates multiple challenges that call for efficient, specific treatment.

At the core of Alfa Laval slop oil solutions are disc stack centrifuges and decanter centrifuges that have proved to be a cost-effective way to meet these challenges, while at the same time meeting specifications for treated products. In addition, Alfa Laval mobilization and pre-processing equipment enables us to handle the entire process in an efficient, well-integrated way.

Alfa Laval combines extensive field experience in processing slop oil with a dynamic development programme. This ensures that all our products are equipped with special features that make them stand out from the competition – just as customers expect from the world leader in centrifugal separation.

Alfa Laval supplies a full range of solutions designed to meet almost every requirement in an efficient, profitable way.

- When compared with traditional trial-and-error test runs, Alfa Laval's proven methods for pre-installation analysis and design result in major savings in both time and money.
- Our process knowledge guarantees the correct treatment and ensures that the solution will work for your particular application.
- The high efficiency of Alfa Laval centrifugal separation solutions significantly speeds up the payback time on your investment.
- The most versatile product range in the industry makes Alfa Laval the right choice for all kinds of slop oil treatment assignments, from the simplest to the most complex.

Full-spectrum supplier
Alfa Laval works closely with specialist partners throughout the world to provide process solutions for turnkey slop oil plants.

We also supply a comprehensive range of systems and sub-systems that include both heat exchangers and two- and three-phase separation equipment. We also supply component systems directly to customers to enable them to upgrade their existing processes.

The know-how to optimize your treatment processes
Feedstock specifications can vary considerably from one installation to another as well varying greatly over time at any particular installation. It is therefore crucial to design each treatment process to meet specific requirements.

Alfa Laval solutions can tackle virtually any combination of feedstock specifications and requirements regarding the treated product. Our experience with numerous projects all over the world enables us to tailor process configurations to meet your specific requirements.

The process in general
Each particular treatment process features special requirements that need to be taken into consideration. In general, however, the feedstock normally comes from a pond, a tank or straight off a reject stream pipe.

The initial transfer of the feed to the treatment equipment can involve anything from the simple installation of pumps to outright excavation. Subsequent pre-processing involves whatever action is necessary to prepare the slop oil for separation, including the sorting/screening of large solids, process heating, chemical injection and intermediate storage. Utility supply includes the generation and distribution of utilities to operate the plant, such as steam, water, power, compressed air and chemicals.

The separation stage features key Alfa Laval components, and is where separation into the three phases – oil, water and solids – takes place. The following is a description of three typical processes using Alfa Laval centrifugal separation technology.

Alfa Laval also provides a number of other processes that are well-suited to particular requirements associated with slop oil processing.

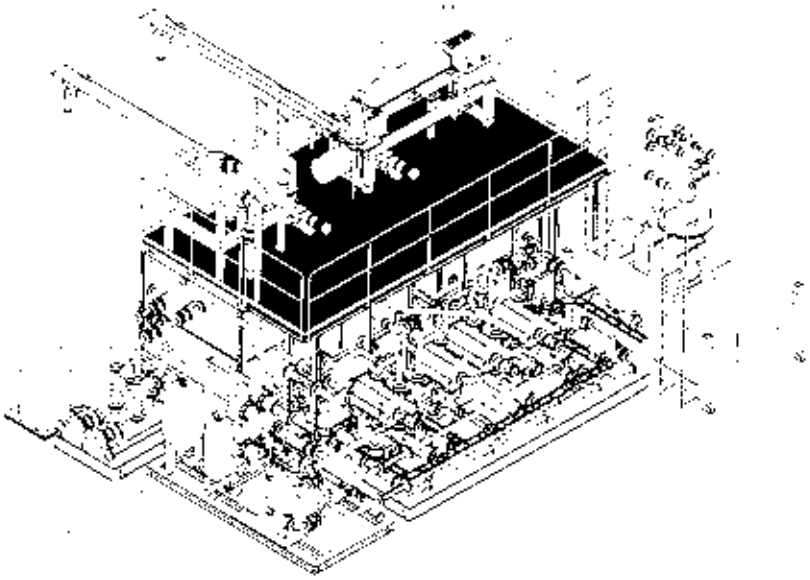

Fig. 1 Alfa Laval slop oil processing system

Single-stage separation featuring the nozzle disc stack centrifuge

This high-performance oil recovery process deals with difficult emulsions of the kinds often found in the slop oil ponds and intermediate “rag layers” in most oil production and refining set-ups.

It can also handle substantial feedstocks that contain ultra-fine solids at the same time as meeting demands for premium-quality oil. Once this oil has been removed, the water and sediments are easily separated in a settling tank installed downstream.

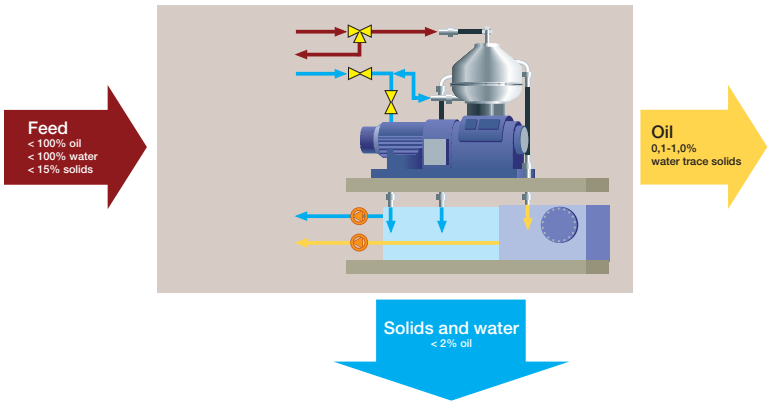

Fig. 2 Single-stage process with nozzle disc stack centrifuge

Features and benefits

- Results in treated oil of the best quality obtainable.
- Unparalleled separation performance (approx. 8000 G)).
- Separates tough emulsions and very fine particles.
- High solids handling capacity.

Two-stage combined separation

The two-stage process is used when the feedstock has a high solids content or when the solids present are particularly abrasive.

Once the bulk of these solids has been removed, the oil and water are then separated using the disc stack centrifuge. Any remaining solids are separated from the water in a cone tank installed downstream.

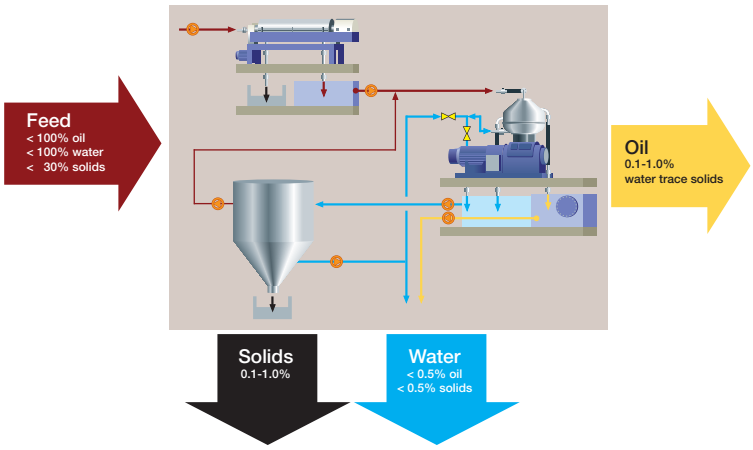

Fig. 3 Two-stage process

Features and benefits

- Results in treated oil of the best quality obtainable.
- Unparalleled separation performance (approx. 8000 G).
- Separates tough emulsions and coarse to very fine particles.
- Handles feedstock featuring up to 50% solids.

Three-stage combined separation

The three-stage process is a state-of-the-art method for slop oil treatment, combining two-phase decanter centrifuges with a disc stack centrifuge. This process is designed to tackle both tank cleaning residues and the kinds of difficult emulsions often encountered in old slop oil ponds and at waste reception facilities.

The process handles feedstocks with high levels of solids and satisfies demands for the best quality oil, low levels of impurities in the water phase and solids that are as dry and hydrocarbon-free as possible.

Features and benefits

- Handles feedstock featuring up to 50% solids.
- Most effective cleaning of the water content in the feedstock.
- Results in treated oil of the best quality obtainable.
- Provides the highest yield of recovered oil.
- Unparalleled separation performance (approx. 8000 G).
- Separates tough emulsions and coarse to very fine particles.

From lab scale to full production

Alfa Laval's exceptional expertise in separation technology, combined with our ability to test and analyze each process configuration prior to full-scale implementation, has been built up over decades.

Alfa Laval PAD – Process, Analysis and Design – utilizes a special laboratory method for optimizing slop oil treatment plants in terms of both technical capabilities and bottom-line results.
One of the functions of PAD is to determine the quantity of hydrocarbons that can be recovered using the full-scale system under real-life conditions. It also makes it possible to analyze the slop oil with regards to its composition and to define its separability. This provides an excellent basis for selecting the most appropriate equipment and the right system layout.

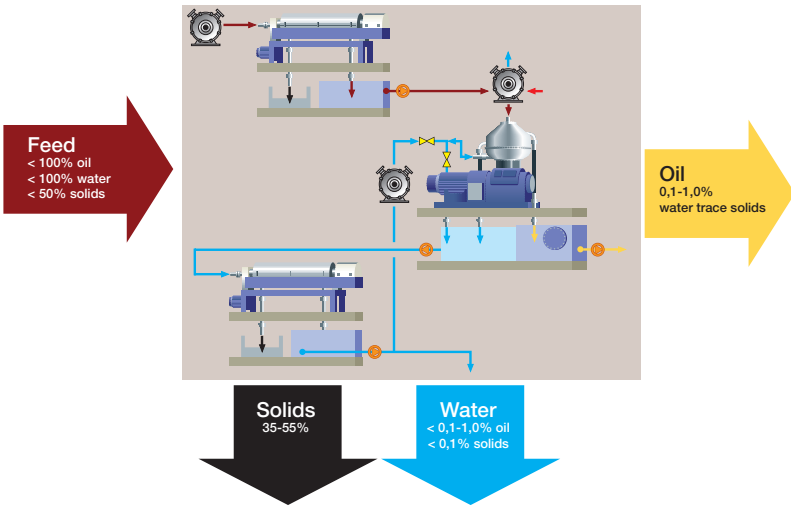

Fig. 4 Three-stage process

How to contact Alfa Laval
Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com