



Washing lye treatment

All advantages at a glance

- Significantly reduced washing lye requirement
- Reduced disposal costs
- Improved cleaning effect as the circulating washing lye is always clean
- Solids and oil are discharged in concentrated form
- Lower costs for cleaning the washing lye circulation system
- High surface quality due to uniform cleaning effect

Example:

Input:

- Free oil or fat in the washing lye: 1-5 % (by volume)
- Particle size: < 500 µm

Output:

- Free oil or fat in the washing lye: 0.2-0.5 % (by volume)
- Particle size: < 5 µm



Mechanical Separation

GEA Westfalia Separator

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Separation Instead of Disposal

Environmental protection by washing lye cleaning and oil recycling



Separation. Solution. Success.

Mechanical Separation / GEA Westfalia Separator

Certain surface treatment processes in the metal-processing industry require thorough cleaning. Treatment of the cleaning agents used not only provides environmental protection in the long term; it also significantly reduces costs.

This is also the case for cleaning washing lye and recovering valuable deep drawing oil from a washing lye of a well-known customer from the automotive supplier industry.

Two-stage process

Centrifugal separators are suitable for cleaning washing lye. They process the washing lye of a hot defatting bath and the resultant drawing oil from the deep drawing process.

Between 7000 and 9000 tonnes of steel are processed per month. The deep drawing processes operate with pressing weights of up to 2000 tonnes. Local temperatures of up to 2000 °C can occur as a result of the high level of pressure and friction between the tool and the work piece. For this reason, the oil is sprayed by means of nozzles into those areas in which the largest deformations take place. This reduces the level of wear and tear on the expensive tools, and also increases the precision of the dimensions of the automotive components. Before further processing in the welding or paint shop, the parts are defatted in an immersion bath.

Away with the oil

The hot defatting installation is used for this purpose; in this installation the work pieces pass through several immersion tanks. The actual defatting process takes



A centrifugal separator can be used for either clarification of liquids or separation of liquid mixtures with simultaneous solids removal.

place in the first two tanks using a washing lye which is heated to a temperature of 75 °C. This is an approximately 5 percent alkaline aqueous solution. The tensides reduce the surface tension.

A centrifugal separator from GEA Westfalia Separator is applied in a bypass system to remove tramp oil and metal particles. This prevents any fat contamination and also prevents fat from being transported to the downstream baths. The operating life of the washing lye bath is also increased many times over.

Temporary corrosion protection is applied in the final bath; this protects the components against corrosion before painting.

Treatment instead of disposal

In order to continuously maintain the content of tramp oils at a low level, the lye-drawing oil mixture is conveyed from the defatting basins to a self-cleaning separator from GEA Westfalia Separator. This machine separates the mixture into three phases. The lye is subsequently recycled back into the tank. The thin sludge consisting of solids and lye with a small oil content has to be disposed of. The drawing oil is collected.

What can be done with this low-grade oil is an issue facing those responsible. Complaints had been heard for many years about the high costs of disposing of around 1200 litres of spent oil and the associated pollution of the environment. A solution was worked out in a joint project between a university, customers and GEA Westfalia Separator.

New oil for old

The separated drawing oil is treated in a second process stage by a self-cleaning separator. In this way, the residual lye content can be reduced to such an extent that the tribological properties (friction reduction, reduced wear, heat dissipation) of the spent oil are improved significantly.

The centrifuge separates the inflowing mixture into three phases. The solids which are discharged and contain only small amounts of lye and oil are disposed of. The virtually oil-free lye is sent to an ultrafiltration installation for further processing. The purified oil flows into a mixing tank where it is enriched with additives. This process compensates for components of the high-quality oil which have previously been lost. The recycled drawing oil is then recycled into the drawing process.



OSD 2 installation