

Recycling of Water Based Fluids with TUF Technology Metalworking

TUF Filtration Technology

CRS Tough Ultra Filtration (TUF) Technology is a proprietary, highly engineered cross flow filtration system. During the cross flow filtration process, the feed stream (used fluid) is filtered into a permeate stream (re-usable fluid) and a concentrate stream (contaminants). The TUF system can be configured as microfiltration, ultrafiltration or nano-filtration, dependent upon the application and the degree of filtration required.

CRS has successfully used this technology over the last 7 years to recycle many different fluid types in many industries.

Metal Rolling, Grinding and Cutting

Water-oil emulsions are used in many metal working operations as a coolant/lubricant. Over time this fluid can become contaminated with free oil (tramp oil), bacteria and metal particulates. If these contaminants are left to accumulate they will cause quality issues in the final metal product. Current filtration methods are adequate in removing metal particulates; however, they typically require the use of expensive cartridges, fragile membranes or potentially hazardous filter aids while doing a poor job of removing free oil and bacteria. In order to reduce the free oil content and control bacteria, many facilities remove a portion of their fluid as waste and replace it with virgin material. This can be a very costly endeavor.

Utilizing the TUF technology will greatly diminish this waste stream as well as provide a more uniform coolant material. Clean fluid and additives pass through the TUF membrane and are returned to the coolant system, allowing the coolant system, tramp oil levels to remain consistently low, rather than fluctuating due to the large purges that are common. The contaminants remain in the TUF concentrate stream. Depending on the objectives, the concentrate stream can then undergo further filtration using a smaller pore membrane to produce a clean water stream and a highly concentrated oil stream.

Incorporation of the TUF system will eliminate expensive cartridge use as well as eliminating hazardous filter aids associated with stack and paper filtration methods. This eliminates the operating cost associated with spent media disposal. In most cases there are significant cost savings by eliminating coolant dumps which reduces virgin coolant costs and waste disposal expenses. The TUF membranes are regenerated using a clean-in-place procedure that is specifically developed for your application.

Quality:

- Particle load can be reduced from up to 5% to 0.1%
- Free oil (such as tramp oil) removal from up to 5% to 0.2%
- No loss of soluble oil in the emulsion

Features:

- Defined pore sizes in 5 different versions (A, B, C, D and N) to design the system based on customers' needs
- High resistance against aggressive media, high pressures or temperatures
- Proprietary self-cleaning included
- Customized to generate the highest flux rate and the lowest cost of operation
- No chemicals added to the customer's operating system
- No disposable filter media
- Depending on fluid composition and filtration requirements recovery rates of up to 99.9% are possible

Benefits:

Add-ons to the TUF will allow:

- Higher solid & free oil content in feed stream
- Hardness control
- Additive adjustment
- Fluid Management

