

Experience Report - Cleaning of processing oil

Problem

CVT Capellmann in Gosheim specializes in gearing production. It has a large chip removal machine and uses a low viscosity oil as the cooling lubricant for its CNC processing centers.

A new installation was intended to address the problem of high oil consumption: CVT was having to replace about 1,000 l of oil a week, which was removed with the metal chips. The oil costs approx. 2,- € per litre.

Solution / Realization

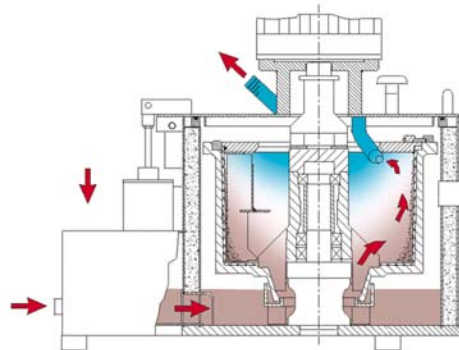
CVT installed a chip processing station. The recovered oil passes from the centrifugal chip separator and through a cleaning system built by STA, where the oil collected is stored and also constantly cleaned. The oil is fed back into the production process by corresponding feed pumps.

Process and Functional Description



The liquid to be cleaned flows from the centrifugal chip separator into the dirty liquid tank (capacity 2,300 l), built by STA, where pre-sedimentation occurs. The containers are equipped with dished boiler ends to prevent deposits from forming and also to avoid clogging of the outflow, as would happen with conical bases. From there, the contaminated liquid flows freely into the self-sucking S-15 centrifugal separator.

The S-15 centrifugal separator operates independently. The liquid is sucked through the open drum floor by a rotary pump. The particles to be separated are compacted against the sides of the sludge insert, which is changed manually. The cleaned liquid is removed by a stripping nozzle and returned to the clean liquid tank. The oil is returned to the clean tank under the dynamic pressure created by the centrifuge. The acceleration power of about 2,000 g and the special liquid guidance system enables filtration to a particle size of about 3 μm .



A pump previously installed in the clean tank feeds a pressure tank that supplies the processing machines with clean lubricant oil as necessary. To achieve the finest possible degree of cleaning, the separator switches automatically to "fine cleaning" of the clean liquid tank when the centrifugal chip separator is idle.

Result

With the solution provided by STA, the processing oil can now be cleaned in a circulating process and returned to the production process. Disposal costs are eliminated as well as a significant fraction of the cost of purchasing the processing oil, since only slight operating losses need to be replenished.