CASE STUDY

# NANOREACTOR

Gravity-based bacteriological treatment for cutting fluid application


Application

## Recycling of cutting fluid for aluminum machining

Volume of liquid to be recycled

**1 m³/day on average**

Objective

**Stabilization and reduction of bacterial concentration**

NANOREACTOR is a UV treatment module designed to ensure effective disinfection of cutting fluids. Operating in a continuous loop throughout the day, it is powered by a circulation pump (2 m³/h) and equipped with two 48 W lamps, providing a germicidal action that prevents bacterial growth and durably stabilizes the emulsion.

**In this practical case, NANOREACTOR is integrated into the EASYPURE station, which also includes the settling, filtration, and oil removal steps, providing a complete treatment and enhancing the quality and longevity of the cutting fluid.**

## Results

**65 m³**
Non-disposed fluid

**8000h**
Before UV lamp replacement

### Cutting fluid savings

Reduces the cost of reprocessing used fluid, reduces the purchase of new fluid, increases the life of the fluid used.

### Stabilized emulsion

SIEBEC filtration ensures the elimination of particles and lubricating oils, while preventing bacterial growth.

### Odor elimination

The UV treatment and efficient separation of tramp oils prevent bacterial proliferation, thereby eliminating unpleasant odors from the fluid.

### 1 Waste fluid storage

Chip juices and used cutting fluids are stored in a 1000 l IBC. The fluid is then automatically transferred to the station in 500 l batches.

### 2 Settling

The fluid is transferred to the separation tank. Lubrication oils are recovered in module (3b) and sludge and chips are transferred to a BigBag for disposal (3a).

### 3 Recovery modules

Pollutants can be recovered on different modules.

**3a. Sludge recovery**
Sludge recovery in filter bag mounted on trolley.

**3b. Oil recovery**
Oil recovery in drum mounted on trolley

WASTE

### 4 Finishing filtration & oil removal

Once freed from sludge, chips and floating oils, the fluid receives finishing treatment to refine filtration and remove fine particles and traces of lubricating oil.

### 5 UV treatment

The regenerated fluid is stored in the final IBC where it receives continuous UV treatment to prevent any bacterial growth.

NANOREACTOR
High UV radiation

### 6 Regenerated fluid

The fully regenerated fluid is ready to be transferred to the machine tool lubricant tank for a new life.

REUSE