Waste Reduction Investment at VT Metal Ltd.

Significant Coolant and Lubricant Savings and Increased Production Reliability with the EcoFluidSaver System

In the mechanical machining operations of VT Metal Ltd., a significant amount of **coolant and lubricant (emulsion and oil)** leaves the production process together with the metal chips during machining. Treating these fluids as hazardous waste results in both **environmental impact** and **continuous, substantial operating costs**.

Recognizing this, the company set the objective of comprehensively optimizing its coolant and lubricant management — not only to reduce waste volumes, but also to **increase process reliability, operational stability, and cost efficiency**.

Application of EcoFluidSaver and EcoOilSaver Systems

To achieve these objectives, VT Metal implemented **two complementary technologies** within the EcoFluidSaver system ecosystem:

- **EcoFluidSaver** – designed for the recovery and recirculation of emulsions,
- **EcoOilSaver** – specifically developed for oil recovery and fine filtration.

On conventional machining centers where the coolant-lubricant is an **emulsion**, the **EcoFluidSaver** system ensures efficient recovery and automatic recirculation. On **minimum-quantity lubrication (MQL) dedicated machines**, where **oil itself serves as the cooling medium**, the **EcoOilSaver** technology is applied.

Both systems operate **fully automatically**, requiring no continuous manual intervention, and integrate seamlessly into existing production processes.

Emulsion Recirculation on Machining Centers

More than 10,000 liters of emulsion recovered over 8 months

As part of the project's first phase, **two EcoFluidSaver units** were installed. The system collects emulsion directly from the chip conveyor and, after **filtration and sterilization**, automatically pumps it back into the machine's own coolant tank, enabling repeated reuse.

Over approximately **8 months of continuous operation**:

- more than **10,000 liters of emulsion** were recirculated,
- corresponding to an average of **over 620 liters per machine per month**,
- or **more than 30 liters recovered per machine per day**.

In practical terms, this resulted in:

- a significant reduction in coolant top-up requirements,
- proportionally lower consumption of emulsion concentrate,
- and on the two affected machines, **the avoidance of purchasing more than 335 liters of emulsion concentrate**, delivering direct material cost savings, reduced procurement dependency, and more predictable operations.

Thanks to their mobile design, the units can be redeployed to other machines as needed, further optimizing savings.

Oil Recirculation on MQL Dedicated Machines

Nearly 300 liters per month of fresh oil replacement eliminated

On minimum-quantity lubrication machines, the **EcoOilSaver** system was introduced, recovering oil through **5-micron (5 µm) fine filtration** from the machine's dual-tray collection system.

As a result:

- the purchase of **nearly 300 liters of fresh oil per month** was eliminated,
- recovered oil can be re-filtered and reused **4–5 additional times**,
- and the risk of downtime related to lubricant supply was significantly reduced.

Automated Operation, Transparent Data, Increased Production Reliability

Beyond recovery and reuse, the EcoFluidSaver and EcoOilSaver systems provide **continuous data collection**. Recovered volumes can be monitored via a **web-based interface with shift-level resolution**, enabling real-time, data-driven control of coolant and lubricant management.

As a result:

- a substantial amount of time was freed up for the personnel responsible for coolant and lubricant handling,
- manual checks and interventions were significantly reduced,
- and thanks to stable, controlled lubricant levels, **overall production reliability increased markedly**, making processes more predictable and robust.

A Sustainable Decision with Measurable Business Impact

VT Metal Ltd.'s investment clearly demonstrates that **automated coolant and lubricant management** supports environmental, operational, and financial objectives simultaneously.

With the introduction of EcoFluidSaver and EcoOilSaver:

- hazardous waste volumes were reduced,
- procurement and disposal costs decreased,
- production stability and reliability improved,
- and sustainability-driven decisions translated into **tangible, measurable business benefits**.

This success story illustrates that **digitalized, automated environmental investments** are an integral and competitive component of modern industrial manufacturing.