

CASE STUDY

Aerospace Components Manufacturer Reduces its Environmental Impact and Cuts New Coolant Purchases by 75%

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With the new system, we have seen around a 75% savings on new coolant purchases. I would recommend this equipment to any other company that is producing parts or having similar issues that we were. We received the exact system and results we were promised and are very happy with the system.

Alexandre Blinov, Maintenance Manager, Koss Aerospace

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Established in 1975, Koss Aerospace is a vertically integrated Tier-1 manufacturer of aircraft components and assemblies for commercial aerospace and defense customers worldwide. The company produces various structural parts and landing gear components, ribs and spars, floor and cross beams, winglets, bulkheads, seat tracks and stringers with in-house capabilities for machining, processing and assembly, resulting in a seamless integration of functions. Koss Aerospace also offers integrated manufacturing solutions for high-speed multi-axis machining, complete metal finishing, assemblies, kitting, program management and supply chain management.

As a Gold Certified Supplier to some of the world's largest aerospace companies, Koss Aerospace takes its environmental responsibility seriously and is always looking for ways to reduce its environmental impact. The company has taken a number of key steps to improve overall

efficiency and eliminate waste as part of its commitment to lean manufacturing, continuous improvement and green initiatives.

Among the most concerning aspects of the Koss Aerospace operation was the excessive production of waste cutting fluid, which was accompanied by the obvious, foul odor caused by bacteria and fungus in the spent coolant. The company's previous recycling process involved a simple coalescence system that was labor intensive, required a lot of downtime for sump maintenance, and lacked the capacity to handle all of Koss Aerospace's 26 machining centers with an average sump size of 500 liters (the largest having a 1,620-liter capacity).

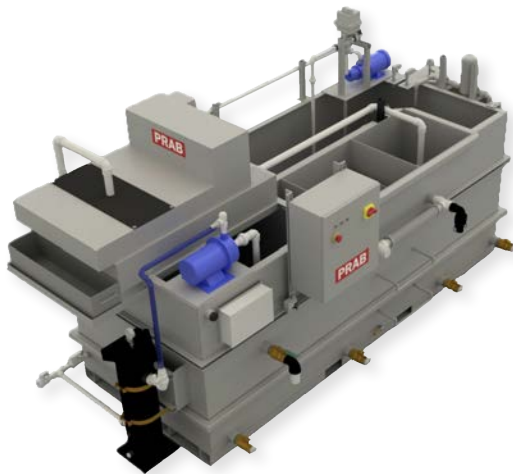
Because of the old system's inability to handle this level of fluid, the company was disposing of the excess spent coolant (which involved moving the fluid around with a mobile sump cleaner) and incurring significant haul-away costs. In total, Koss Aerospace was discarding coolant at a rate of 4 totes (or 4,000 liters) per week.

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Founder and President Drago Cajic, Vice President David Cajic and Maintenance Manager Alexandre Blinov had heard about PRAB several years earlier and remembered the name while researching new recycling solutions. They explored several options and ultimately chose PRAB's Guardian™ Coolant Recycling System due to its greater capacity, ease of maintenance, and potential for significant coolant savings. The Guardian system also offered additional options including the Coolant Manager, an ozone generator designed to address the issues associated with the growth of bacteria, fungus, and mold.

With the primary criteria being ease of use and the ability to clean the company's coolant to maximum capacity, Alexandre worked with PRAB Fluid Filtration Specialist Ben McNinch and PRAB Engineer Chris Jones to specify the solution. After Drago and David gave their final approval, Alexandre installed the system while PRAB Service performed the final inspection and personnel training to ensure proper operation prior to start-up. Because the Guardian system was "plug and play"—only requiring connections for water, air and power—it was up and running within two days.

Koss Aerospace began seeing operational improvements almost immediately in a variety of areas as a result of installing the PRAB Guardian system:

- The company's machining has improved, the need for maintenance has been reduced, and tool life has been extended, all due to the higher quality of coolant.
- During preventative maintenance, the machine sumps are not down as long as the previous sumps were, resulting in smoother production.
- Moving fluid around with a mobile sump cleaner has been eliminated, as spent fluid from each machining center is pumped through a PRAB designed dirty transfer cart directly to the Guardian. From there, the Guardian has a clean return system which pumps recycled coolant back to the machines. This process has helped the company save on labor as well as maintenance.
- Due to less machine downtime for sump cleaning, productivity and efficiency have increased, allowing for decreased customer lead time on parts.



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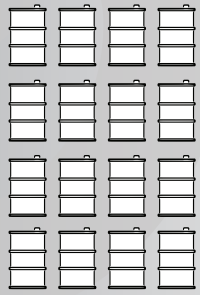
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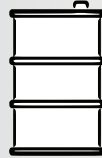
Koss Aerospace Coolant Consumption/Haul-Away Comparison

NUMBER OF DRUMS CONSUMED IN 1 MONTH



OLD SYSTEM

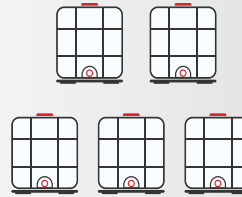
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PRAB GUARDIAN™ SYSTEM

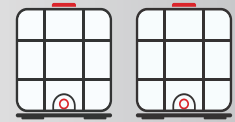
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NUMBER OF TOTES HAULED AWAY IN 1 MONTH



OLD SYSTEM

5



PRAB GUARDIAN™ SYSTEM

1.5

In addition, haul-away costs are lower because there is no longer a need to dispose of excess fluid that – in the past – went above capacity. The combined savings from coolant consumption and spent fluid disposal has been significant:

- With their **previous coolant recycling system**, Koss Aerospace **consumed 4 drums (832 liters)** of new coolant oil and **disposed of 4.5 totes (4,500 liters) of waste fluid every 7-8 days (on average)**.
- With the **PRAB Guardian system**, the company consumes the same amount of new coolant every 28 days and disposes of the same amount of waste fluid every 83 days (on average).

From the engineering department to the finance department, Koss Aerospace employees have noticed a difference

throughout the plant since the installation of the Guardian system. Perhaps the most apparent has been an end to the unpleasant smell in the air caused by bad coolant. Equipment operators in particular have seen major improvements in tool life and uptime. Drago, David and Alexandre have been so pleased with the system's performance that they are discussing adding a PRAB briquetter to further increase their savings. They are also encouraging their coolant supplier to recommend PRAB filtration systems to their other customers.

"With the new system, we have seen around a 75% savings on new coolant purchases. I would recommend this equipment to any other company that is producing parts or having similar issues that we were," Alexandre said. "We received the exact system and results we were promised and are very happy with the system."

Application Information

Current Coolant:	Water-miscible, chlorine-free, mineral oil-based cutting fluid designed for general machining of cast iron, titanium, steel and aluminum alloys.
Future Coolant:	Water-miscible, chlorine free, medium mineral oil-containing cutting fluid designed for machining of soft aluminum alloys, titanium, nickel-based alloys, heat-resistant steels and stainless steel.
Largest Sump:	1,620 liters

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PRAB Filtration Solution Summary

Guardian Coolant Recycling System: Model HG-1200

- Process Tank
 - One 600-US gallon (2,271-liter) capacity dirty coolant compartment
 - One 600-US gallon (2,271 liter) capacity clean coolant compartment
- Inlet Strainer Basket
- TW15 Tramp Oil Separator
- Coolant Make-up System
- Control Panel
- System flow rate: 15 USGPM (57 liters per minute)

Coolant Manager: Model CM-778 (Set of 2)

- Injects ozone directly into the coolant to kill bacteria, fungus and molds while eliminating coolant sump odors

Standard Polishing Filter System

- Further polishes coolant down to 20-micron clarity

Replacement Filters

- 100-micron rated

Dirty Transfer System

- PFA-240 paper bed filter rated @ 5-micron

About PRAB

PRAB is a leading engineer and manufacturer of conveyors, chip and fluid management systems, and industrial water and wastewater treatment equipment. Our customized solutions automate metal handling, reduce labor costs, reclaim and recycle expensive cutting fluids/coolants and maximize return on recycling metals. With our expertise, honed by more than 4,500 installations for the world's leading OEMs and suppliers, PRAB continuously improves material handling, housekeeping and compliance to environmental rules and regulations within the automotive, aerospace, medical, electronics, defense, off-road and energy markets. For more information about PRAB, visit prab.com.

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