

Design Engineer Exposes Industry-wide Filtration Problem and Brings Solution to Market

PROBLEM:

Huge amounts of time being spent by shops cleaning out coolant tanks and repairing machines damaged from running dirty coolant.

SOLUTION:

Cyclonic Debris Removal System (CDR). Uses several carefully engineered hydro-cyclones to separate debris from coolant and direct it towards a compact, easy to clean settling tank that can be raked out as little as once/month.

DESIGNER:

Kyle Quintin, 35
Lead Design Engineer

Specializes In:
Electromechanical
Engineering, Fluid
Dynamics, Product Design

"We are planning to start purchasing these units with every new machine we buy from now on."

- Daryl Owen from Dexter Axle

Overview

Kyle Quintin has been an employee at MP Systems for the last 11 years. He began working for the company shortly out of high school as an assembly worker but after President Mike Sayers saw promise in him as a future engineer he was fast-tracked to taking night classes and earning his engineering degree all while learning the trade first-hand designing some of the first product lines for the company. Quintin is now the lead Design Engineer for MP Systems but he has by no means begun to rest on his laurels. His most re-cent task has been to design a product to solve a machine tool coolant problem that has plagued the industry since automated manufacturing has existed. High production machining centers cutting cast iron or aluminum create a sludge-like debris that, despite the best efforts of advancing chip conveyor technology, still seems to find its way into the tank of these machines and wreak havoc on coolant pumps, tool life, spindles, and productivity. Many have tried and failed to provide a good solution to this problem that does not add to the already time-consuming programmed maintenance schedules of these machines... Until Quintin's newest creation the Cyclonic Debris Removal System (CDR).

The CDR uses hydro-cyclone technology to separate fine debris from dirty coolant at an unprecedented rate. Quintin's attention to detail and optimization of fluid velocity and cyclone geometry have resulted in faster and more effective debris removal rate than any product on the market. Coupled with a 15 gallon settling tank, the filtration system requires an average of only about 5min of hands on maintenance per month.

4%

avg increase
in total
productivity

\$10k

avg saved per
year in labor and
lost part costs
per machine

9/10

of customers
order more CDR
units after initial
purchase

MP Systems designs rugged, dependable high pressure coolant systems, chillers, cool-ant filtration systems, and accessories for machine tools. Their corporate headquarters and assembly shop are located in East Granby CT, USA

MP
Systems

Adding just 1 quart of debris a day to your tank may not seem like much, but it accumulates over time.

One quart of debris a day is equal to:



45 gallons of sludge in
your tank over **6 months**

90 gallons of sludge in your tank over **1 year**

The prototyping process for the CDR began back in 2018 when Quintin began to notice High Production Customers, especially in the automotive industry were struggling with finding a solution to their debris build-up problem. At the time it was very common to see maintenance crews designing their own in-house solution to the problem but nobody seemed to be able to provide a real, long-term solution.

Quintin spent the next 12 months experimenting with various solutions to the problem but eventually came to the conclusion that cyclonic filtration was the only path to a truly hands-off, maintenance free solution. He quickly realized that there was far more science that went into properly designing a cyclonic separator than anybody had cared to notice. He immediately signed up for more advanced courses and bought as many textbooks as he could find on the subject and quickly became an expert in the field. It was Quintin's attention to detail and proprietary angles that finally cracked the code. After making revisions to the CDR that most would not notice with the naked eye, effectiveness of the product began to improve by multitudes.

A little over a year ago MP sold and installed the first CDR systems. In an industry that was understaffed and over-booked a solution that freed up as much manpower as the CDR was capable of was met with extreme excitement. Before production was even finalized, orders began to fly in. Shops who bought one CDR to test it out soon were putting in orders for dozens more. One shop in particular saved a combined \$21,000 in labor and lost part costs in just the first 6 months after installing their first CDR system.

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