



General Manufacturing Case Study

# **Exactaform Face Mill Reduces Kawasaki Motors - USA Costs By 58%**



# ABOUT KAWASAKI MOTORS USA

## Who are Kawasaki?

Kawasaki Motors USA are a leading manufacturer of engines and industrial equipment. Known for manufacturing small engines, Kawasaki delivers precision-engineered solutions for:

- High-performance small engines for ATVs and commercial equipment.
- Advanced manufacturing processes for engine blocks and critical components.
- High-volume, high-precision machining with strict quality control standards.

## A Quick Overview: The Solution

Customer	Problem	Our Solution	Business Impact
Kawasaki Motors USA, Shannon Walter, Manufacturing Process Engineer.	<ul style="list-style-type: none"> <li>• High tooling costs</li> <li>• Frequent insert replacements</li> <li>• Vibration issues</li> <li>• Inefficient chip evacuation.</li> </ul>	160mm PCD face mill with 15 staggered pockets, optimised chip flow, and enhanced stability.	<ul style="list-style-type: none"> <li>• <b>\$87,700</b> annual savings</li> <li>• <b>58%</b> cost reduction</li> <li>• <b>37%</b> fewer inserts</li> <li>• <b>42%</b> faster tool setup</li> </ul>

*"When I first approached Mike Herle from Exactaform about this project, I shared a principle I had learned early on from an old-school engineer: use an odd number of inserts to disrupt harmonics on a face mill. Unlike other reps, Mike didn't push back and understood the value of that approach. Exactaform got to work and delivered a tool that performed exactly as promised - and it worked brilliantly."*

**Shannon Walter,**  
Manufacturing Process Engineer,  
Kawasaki Motors Manufacturing Corp, USA

## THE RESULTS

### Proven Success In Every Cut.

*The implementation of Exactaform's 160mm PCD face mill delivered tangible cost savings and performance gains while ensuring uninterrupted production cycles.*



58%

#### ***Annual Cost Reduction.***

Lower insert costs and fewer replacements resulted in substantial **yearly savings of \$87,700**, improving long-term cost efficiency.



49%

#### ***Reduction In Tool Costs.***

By optimising the tool structure while maintaining performance, Exactaform offered a more cost-effective solution.



37%

#### ***Reduction in Insert Costs.***

The new tool was designed with fewer inserts (Z15 vs. Z24) without compromising operational efficiency.



42%




#### ***Reduction in Tool Setting Time.***

Simplified tool design made setup faster, reducing downtime and increasing overall operational productivity.

## THE PROBLEM

### High Costs & Inefficiencies.

Kawasaki's previous milling setup suffered from:

-  Frequent insert replacements, increasing consumable costs.
-  Harmonic vibration, impacting surface finish and tool life.
-  Unoptimised chip evacuation, leading to inefficiencies in long-cycle machining.

*Kawasaki sought a more efficient and cost-effective milling solution for machining 750cc lawn mower engine blocks. Their setup, a 160mm face mill with 24 inserts, was driving up consumable expenses without improving cycle times or tool life.*

To address this, Exactaform engineered a semi-standard 160mm face mill with 15 staggered pockets and specialised PCD cartridges, designed to enhance stability, optimise chip evacuation, and reduce vibration.

When implemented across 12 GROB 5-axis horizontal machining centres, this solution reduced **annual cutter costs by 58%** while maintaining production rates and tool longevity.



#### Kawasaki FS730V:

4-cycle engine features cast-iron cylinder liners, a dual-element air filter, and electronic spark ignition.

## OUR SOLUTION

### Engineered For Excellence.

*A successful milling solution requires a strategic balance of tool stability and machining processes. The Exactaform face mill focused on Kawasaki's needs to ensure improved performance and lowered costs without compromising speed or finish quality.*

### Design Innovations

1

#### ***Reduced Insert Count.***

By reducing the insert count from 24 to 15, the tool achieved a 37% reduction in inserts price, leading to a direct reduction in consumable costs.

2

#### ***Increased Feed Rate.***

By raising the feed per tooth from 0.1mm to 0.16mm, the tool maintained the same material removal rate despite fewer inserts, preventing any compromise in machining efficiency.

3

#### ***Optimised Chip Evacuation.***

Precise rake and flute angles improve chip flow, while minimising recutting and heat build-up, which are two primary causes of premature tool wear.

4

#### ***Enhanced Structural Stability.***

The introduction of staggered pockets and specialised PCD cartridges effectively minimised harmonic vibration, a common issue in high-speed aluminium milling, thereby ensuring greater tool longevity and more consistent surface finishes.





## Operational Improvements

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1

### ***42% Reduction In Tool Setting Time.***

The simplified tool configuration and reduced insert count cut setup times by 42%, allowing for faster tool changes and higher overall machine uptime.

2

### ***49% Reduction In Initial Tooling Costs.***

The optimised tooling system resulted in a 49% reduction in initial tooling costs. Additionally, insert pricing dropped by 37%, leading to an annual tooling spend reduction of 58%.

3

### ***Sustainability & Longevity.***

Despite the reduction in consumable costs, the Exactaform solution maintained the industry benchmark of 5,000 parts per tool, proving that cost reduction does not have to come at expense of performance.

## ABOUT THIS EXACTA-SET MILLING SYSTEM

### Key Features & Benefits.

*As part of the Exacta-Set, the PCD face mills deliver consistent, high-performance milling across aerospace, automotive and general manufacturing.*

The 160mm PCD face mill is built for high-speed aluminium milling, offering precision, durability, and an easy set up process. Its lightweight aluminium body reduces spindle load and improves machining efficiency.



#### **Lightweight Aluminium Body**

Reduces spindle load and enhances machine efficiency.



#### **Fully Adjustable Cartridges**

Ensures precision, surface finish consistency, and even wear.



#### **Steel Chip Plates**

Steel chip deflector plates protect the aluminium body.



#### **Anodised Hard-Coat Surface**

Increases durability and wear resistance.

## A Milling Solution Built for Efficiency

Developed after years of industry experience and research, the Exacta-Set system delivers a balanced combination of durability, stability, and simplicity in cartridge-style PCD milling.

Contact us to learn how our solutions can optimise your operations and transform your tooling approach.

[CONTACT US TODAY](#)





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