



MOTORSPORT CASE STUDY

REINVENTING THE WHEEL



PROJECT REQUIREMENTS

Motorsport client required high quality, precision engineering fast!

- High quality components
- Right first time
- Tight deadline

Complex wheel components for front and rear wheels. Client wanted to test different spoke configurations for aerodynamic advantage.

Was using another supplier but required a greater degree of accuracy and reliable delivery. Time was of the essence with the new season approaching.



**MANUFACTURED TO 3D
CAD DATA IN
CONJUNCTION WITH
DRAWING TO IMPROVE
TOLERANCE ACCURACY
AND LEAD TIME.**

THE PLAN

- 1** Process Control
 - Plan operations and route card
 - Materials allocated
 - Special tooling purchase
- 2** Design and Programming
 - Fixtures
 - CNC turning
 - 5 Axis milling
- 3** Machining Operation
 - Rough CNC turning
 - Stress relieving
 - Finish CNC turning
 - 5 axis milling
- 4** Quality Inspection
 - After each operation
 - First off
 - Final
- 5** Delivery on Time



CLIENT'S REQUIREMENTS

Aerodynamic testing for minute wheel performance improvements to one tenth of a second.

MANUFACTURE #1 PROGRAMMING

Problem

- Complex profiles
- Deep pockets with small corner radius
- Precise surface finish and blends

Solution

- Manufactured to 3D CAD data
- Trialled various machining strategies



MANUFACTURE #2

FIXTURES

Project Requirements:

- Deep pockets and thin wall sections

Problem

- Poor fixturing would result in distortion

Solution

- Sufficient material for work holding
- Bespoke clamping methods developed

MANUFACTURE #3

MACHINING

Project Requirements:

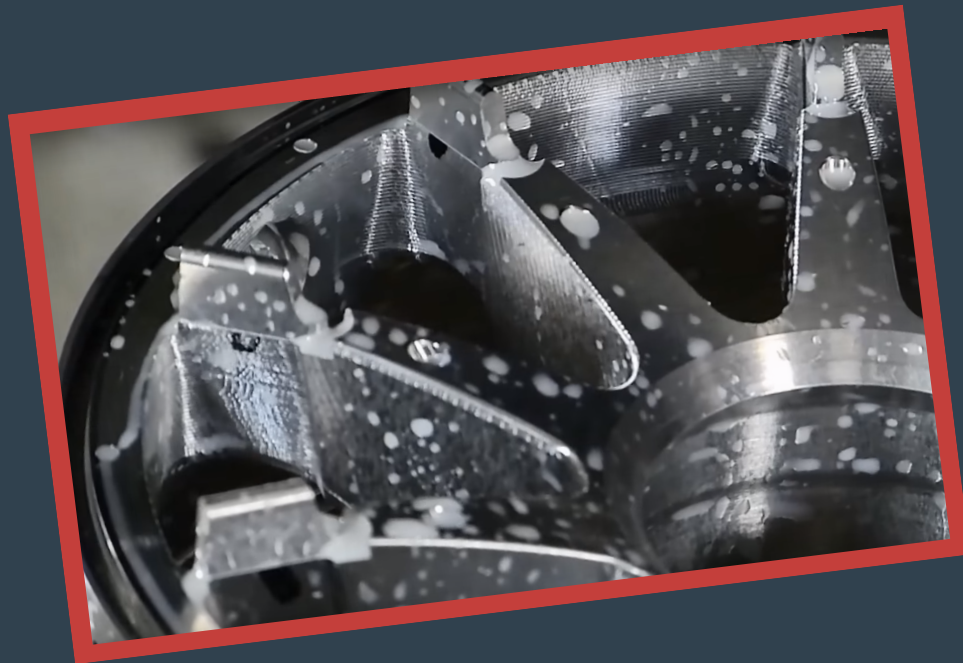
- Complex spoke configurations

Problem

- Limited machine accessibility due to deep pockets with tight corner radius
- Thin wall sections causing distortion

Solution

- Rough machine for stress relieving
- Extra-long tool holders
 - Lollipop cutters
 - Long series ball nose cutters



ISO 9001 STANDARDS



PROCESS CONTROL

Plan operations, route card, materials allocated and special tooling purchase.



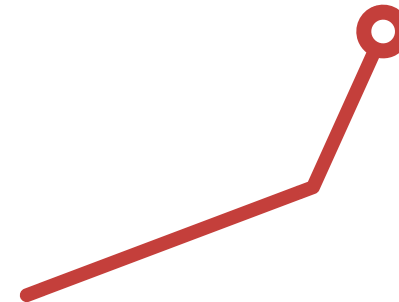
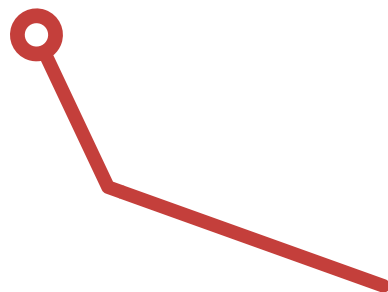
TRACEABLE MATERIALS

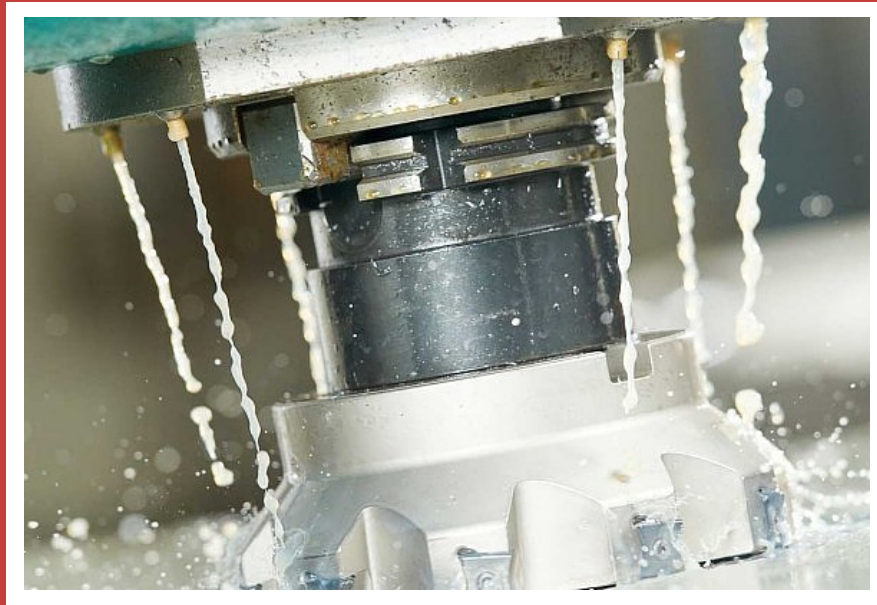
High quality aluminium sourced from a reputable European company.



QUALITY CONTROL

Inspection performed to 3D cad data and drawing after each operation.





CAPACITY & CAPABILITY

At Axis everyone you talk to is an engineer

The programming was challenging. Our programmer experimented with various machining cycles and milling tools before perfecting the process.

This level of expertise, coupled to exceptional machine capability and process control, allowed the lead time to be further reduced.



Our range of machines gave us the flexibility and capacity to minimise operations - the right job on the right machine at the right time!



AXIS SAYS

We'd not had a job like this before so it was a steep learning curve with a tight deadline.

Our programmer, Pete, had to try a number of machining strategies before settling on a tube milling cycle.

Unfortunately, the first component produced had to be scrapped during the roughing stage due to aluminium back end defects.

The material was replaced and the components manufactured without the customer being affected - the job was still completed and delivered on time.

Alan Friedrich, Production Manager



CLIENT SAYS

Fantastic job!

Delivered on time and right first time too.

The original supplier was struggling with the complexity of the job and tight delivery.

Axis actually beat them on both time and quality.

Highly recommended!

Anonymous (Non Disclosure Agreement)

QUALITY FROM START TO FINISH - CALL AXIS

01268 271144



AXIS PRECISION

ENGINEERING COMPONENTS

- Financially secure
- Quality from start to finish
- ISO 9001:2008 approvals
- Components - right first time
- Exceptional value for money
- Capacity - continued investment in machinery

CONTACT US

