

THE PARTICULATE INJECTION MOULDING FABRICATION PROCESS. ARE MICRO-SCALE PRODUCTS VIABLE?

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Introduction

Meso-scale parts

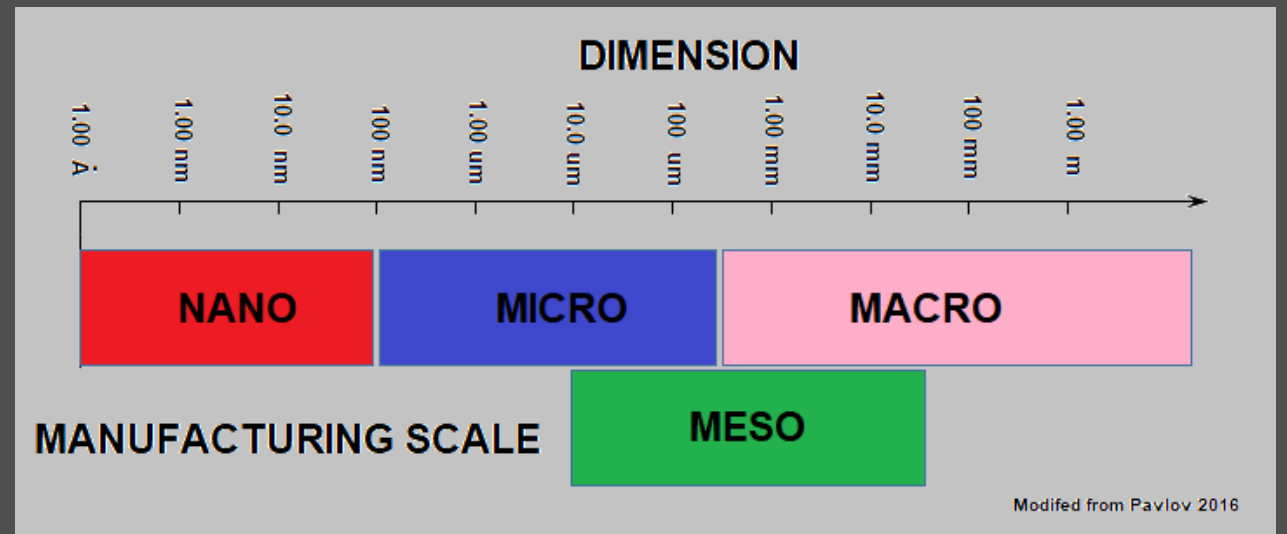
- Small parts

Micro-scale parts

- Advanced manufacture

Multi-scale features

- Micro, meso & macro



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The PIM Process

Feedstock formulation

- Powder and carrier system

Injection moulding

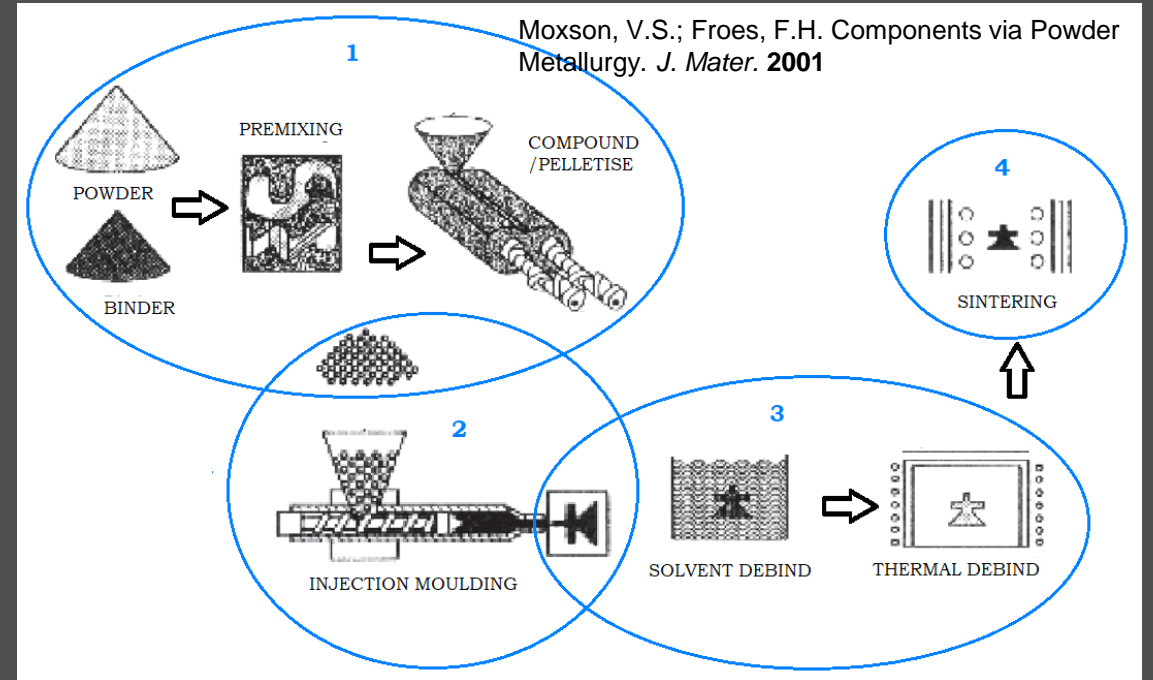
- Geometry creation

Solvent/thermal debinding

- Removing carrier system

Sintering

- Thermal consolidation



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Processing Equipment

Standard debinding equipment

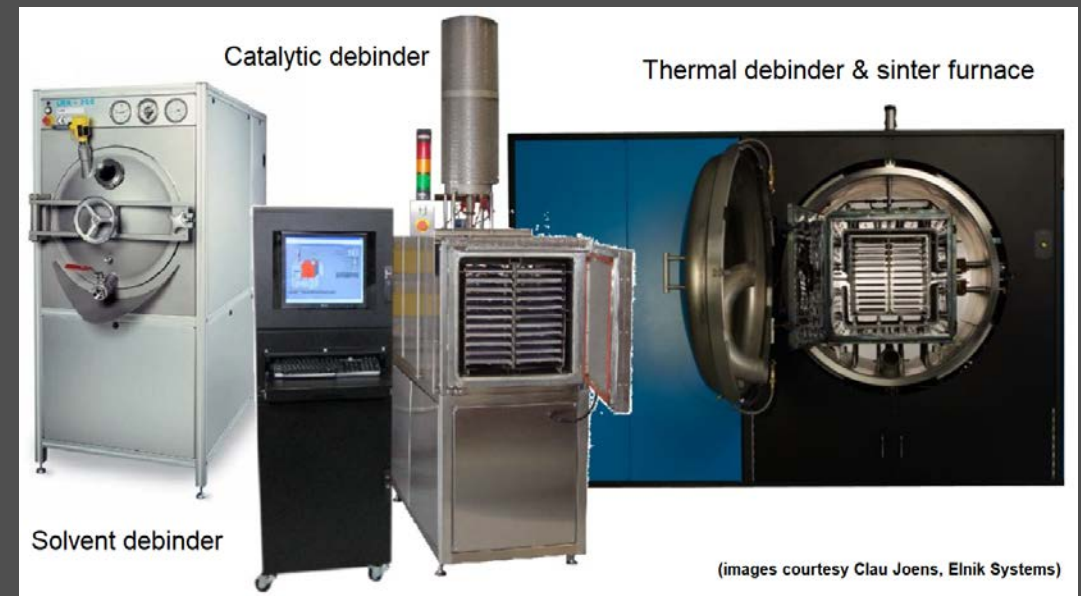
- Allows high volume

Standard sintering furnace

- Allows high volume

Standard moulding machine

- Unsuitable for meso shot size



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Tooling & mould cavities

Component geometry

- Dictates tooling layout

Moulding cavity

- Designed to enable size and shape

Machining

- Size limitation not seen at macro

Polishing/ surface finish

- Care needed with finer features



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Feature formation

Powder and particles

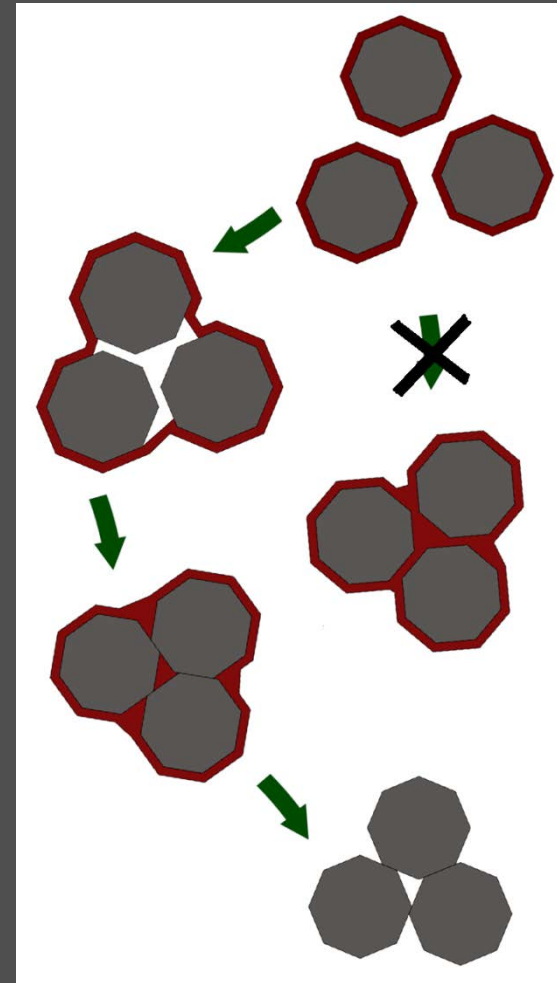
- Particles resistant to flow

Feedstock melt flow

- Separation of powders & carrier

Feature creation

- Particle size limitation



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Closing summary

The electronics, medical and automotive industries are pushing growth in the global PIM markets. Enabling this in NZ could be as simple as adaptation and innovation of known manufacturing processes.

To support this we are developing custom moulding equipment, 5 axis meso machining capabilities, and surfacing techniques for tooling and finished products.

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Questions ?



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