

MIM Case Study—Valve Body



Application: Instrumentation unit of control valve

Functional requirements: I/P (current/pressure) housing

Competing technologies: powder metallurgy plus machining

Overall size: L x W x H = 55 x 45 x 45 mm

Part weight: 200 grams

Material: Fe 50 Ni

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- Why MIM?
 - ✓ Production rates >120K annually. Capable of handling high volume
 - ✓ Offer better magnetic property because no flux leakage
 - ✓ Manage only one source
 - ✓ Little material waste
 - ✓ Minimal burr removal problems
 - ✓ Less assembly process
 - ✓ Better product performance
 - ✓ Cost saving >40%



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- MIM Issues

- Part Size

- Thick wall, weight
 - Every process stage is critical
 - Tremendous cost impact on poor yield
 - Cannot meet tight tolerances (approx. 0.5%)

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- Economics

- Reduces number of parts from 5 to 1
- Reduces number of processes
- Reduces number of vendors
- Reduces cost so as to remain competitive in the market >40% cost saving
- Reduces flux leakage thus enhance performance
- Better market share