Challenges in Net-Shape Manufacturing of Metallic Parts

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The cost of metals manufacturing… it's in the chips.

Reasons for high “buy-to-fly” ratio:
- Defect removal
- Equipment capability
- Geometric complexity
- Inspectability
What is GE doing about manufacturing?

- Near-net shape processes
- Material additive processes
- Advanced joining and machining processes
- Advanced measurement systems
Net-Shape Manufacturing
Recommendations for NIST MEL

• Work with industry to understand the complex interactions that occur in the manufacturing chain.
• Encourage the inclusion of processability as one of the primary drivers in material development efforts.
• Work with manufacturers to develop and grow net- and near-net shape manufacturing technologies.
• Develop and extend modeling and simulation of net shape manufacturing processes.
• Develop design practices capable of taking advantage of these new technologies.
• Devise in-line monitoring and adaptive control capabilities for net shape manufacturing.