"MIG Additive Manufacturing Technology for vibration damper NiTi Shape Memory Alloy Ring"

"Seeking industrial partners for co-development, production and marketing"

Preface

- ***Vibrations during machining operations produces frictional heat which causes thermal expansion and deteriorates machine components. It also causes wobbling which limits work quality due to dimensional errors and poor surface finish of work pieces.***

- ***A shape-memory alloy (SMA) is an alloy that can be deformed when cold but returns to its pre-deformed ("remembered") shape when heated.***

- ***Shape Memory Alloys are used as passive vibration damper as they dissipate frictional heat energy and dampen vibrations.***

- ***NiTi SMAs in particular, have unique thermomechanical behaviors such as shape memory effect and pseudoelasticity, which have made them attractive candidates for structural vibration control applications.***

- ***NiTi SMAs are prepared using powder metallurgy, thermal spray, Plasma melting etc., but use of MIG additive manufacturing in its preparation has strategic advantages.***

- ***We are offering license for method of fabricating NiTi Shape Memory Alloy Ring using MIG Additive Manufacturing technology***

Market Size & Growth Projection

- ***According to Verified Market Research, the Global Shape Memory Alloys Market size was valued at USD 12.03 Billion in 2020 and is projected to reach USD 28.18 Billion by 2028, growing at a CAGR of 14.02% from 2021 to 2028.***

- ***With increasing competition in Space Tourism & Space Mining demand for smart materials like SMA will increase.***

- ***Morgan Stanley's Space Team estimates that the global space industry could surge to over $1 trillion by 2040.***

- ***Launch of various Performance/Production Linked Schemes by the Government of India to revive economy will boost manufacturing sector and machine tool operations.***

Competition

- ***Method has competitive edge in terms of ease of implementation, cost, time and product quality making it an ideal choice for designing high performance NiTi SMA passive vibration damper.***

The Technology

Method of fabricating a NiTi Shape Memory Alloy ring using metal inert gas (MIG) additive manufacturing technology.

Innovator

Indian Institute of Technology Indore

Value Proposition

- *Efficient passive damping of vibrations*
- *Actuates itself to facilitate enhanced clamping*
- *Ease of coupling with collet*
- *Detachable*
- *Reduces wobbling*
- *Improved shape memory compression*
- *Improved shape memory elasticity*
- *Protects workpiece and tool*
- *Negates possibility of dimensional error in workpieces*
- *Prolongs life of tool*
- *Actuation: 60-150 degree C*
- *Makes machine operation faster*

Industrial Utility

- *Machine Tool Operations*

Development Status

- *Proof of concept established through extensive experimentation.*

Intellectual Property

- *Patent applied in India*

On Offer

- *Right to use and have used the method*
- *Right to make, have made, use, import, export, sell, and offer to sale the NiTi SMA ring prepared using the method.*

Technical Support

- *Optional Technical Consultancy on payment basis*

Contact us at: reema.fitt@gmail.com

i-TTO, a regional tech transfer office established at FITT with support from NBM, BIRAC

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