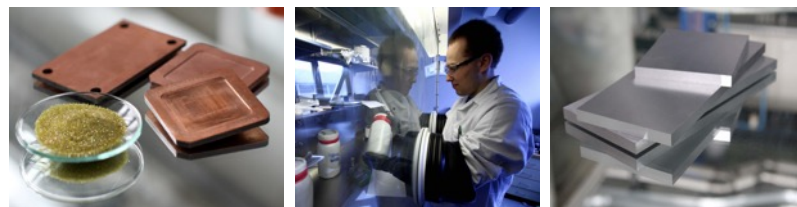




# Development of a Machine for Multi-Material Manufacturing

Erich Neubauer, RHP-Technology GmbH



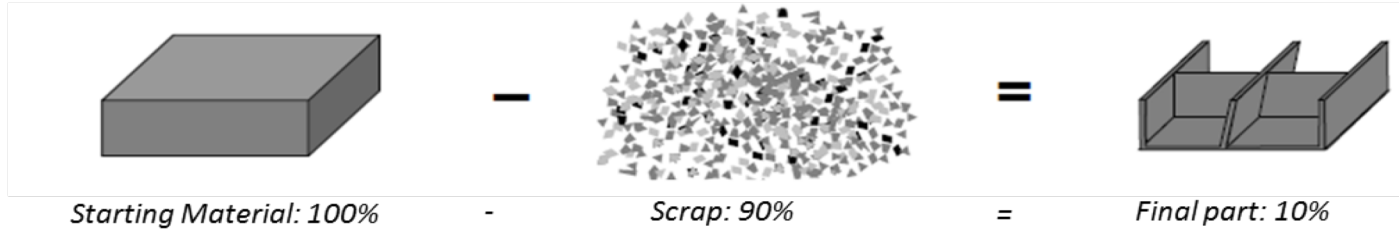
# Advanced Materials and Processing Technologies



***Fast and Green Manufacturing by using 4M System***



***Conventional Machining:***

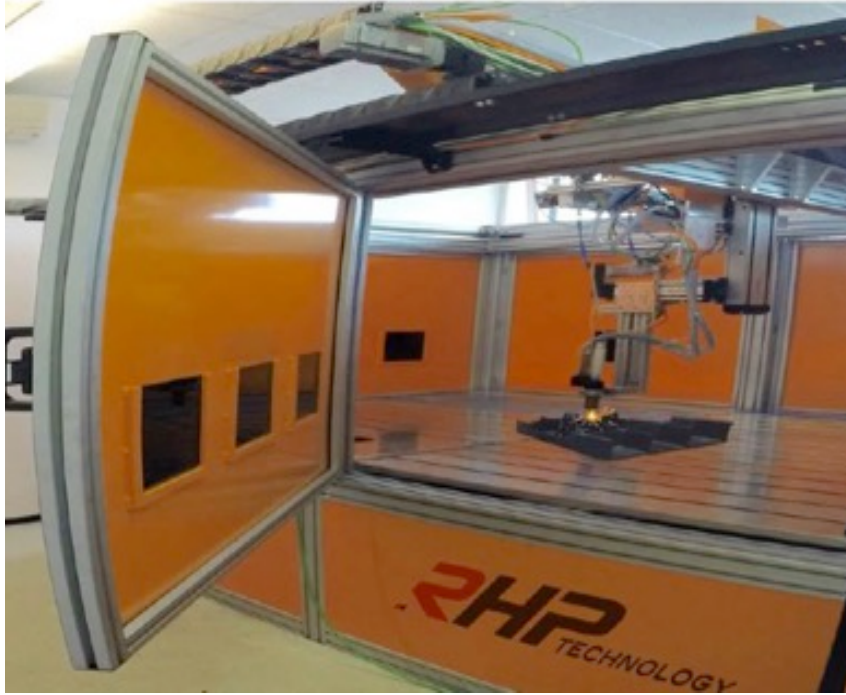


***4M System:***



***4M System saves significant resources over current methods:  
raw materials, energy, fewer chemicals (cutting fluids), lead time = cost***

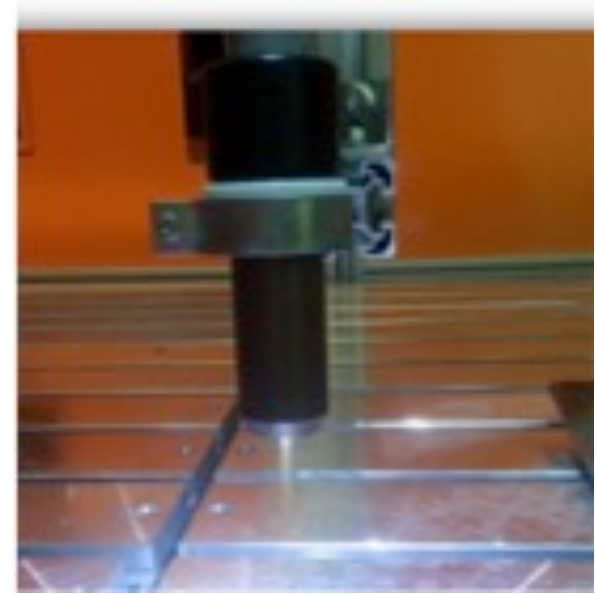
Source: NASA, adapted RHP



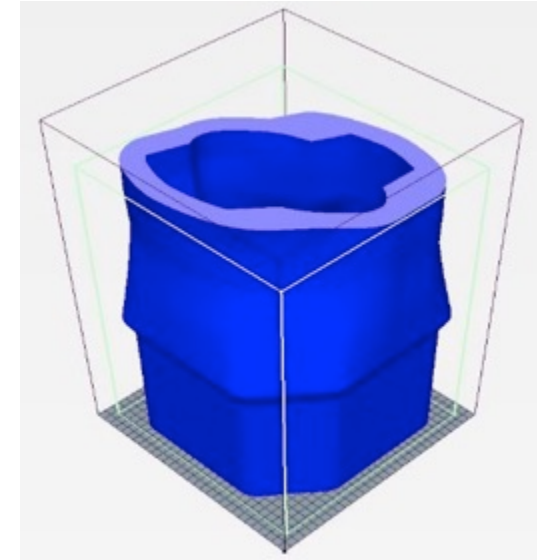
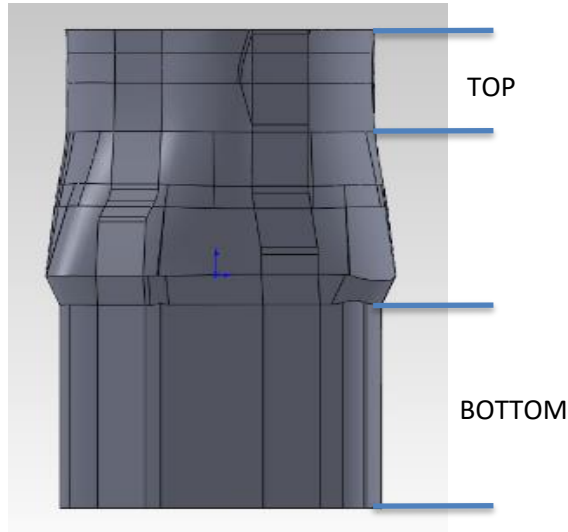
### Plasma Metal Deposition System

- Plasma Transferred Arc combined with wire feed technology
- Large Building Platform (1,5 m x 1,8 m)
- Various Materials demonstrated
- Deposition rates of 3-5kg/hour

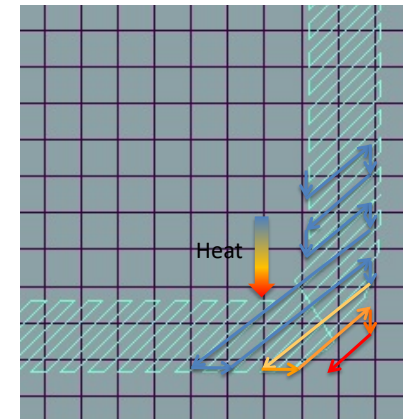
- Large parts possible (up to some meters..)
- High deposition rate
- Novel material alloy developments
- Multi-Material Build-up possible
- Reduced Investment cost compared to Laser or Electron Beam system



## How does it work ?

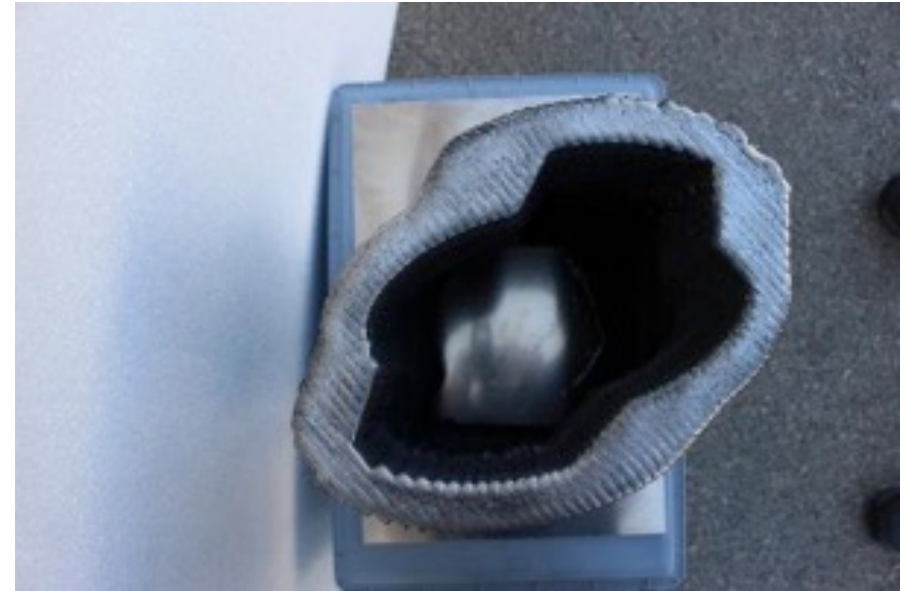
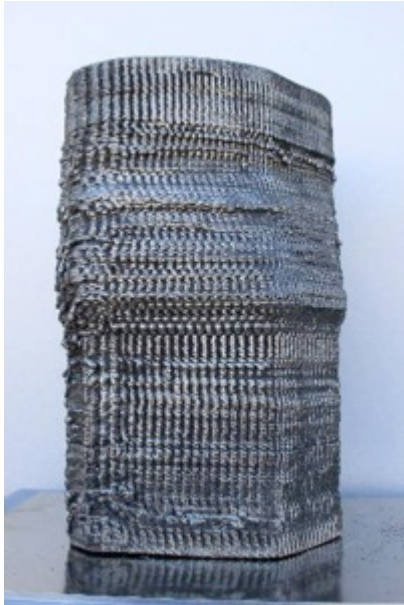


- /// CAD file is sliced into individual layers
- /// Layer by Layer is built up using a plasma arc process
- /// Machining of part to final dimensions

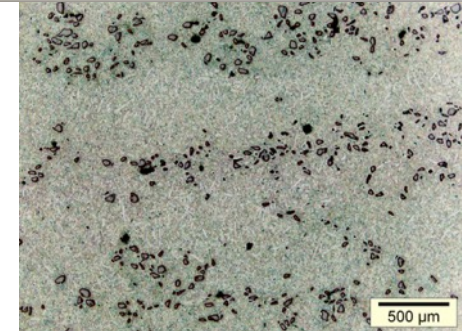
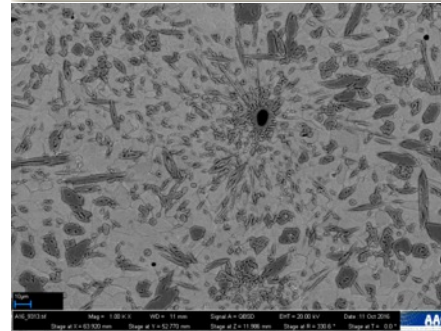
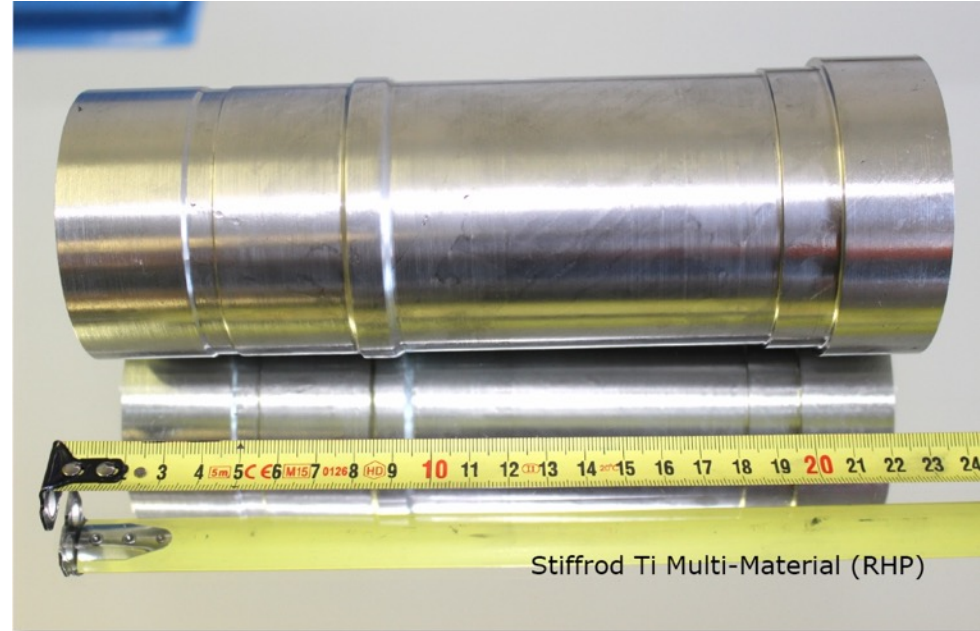
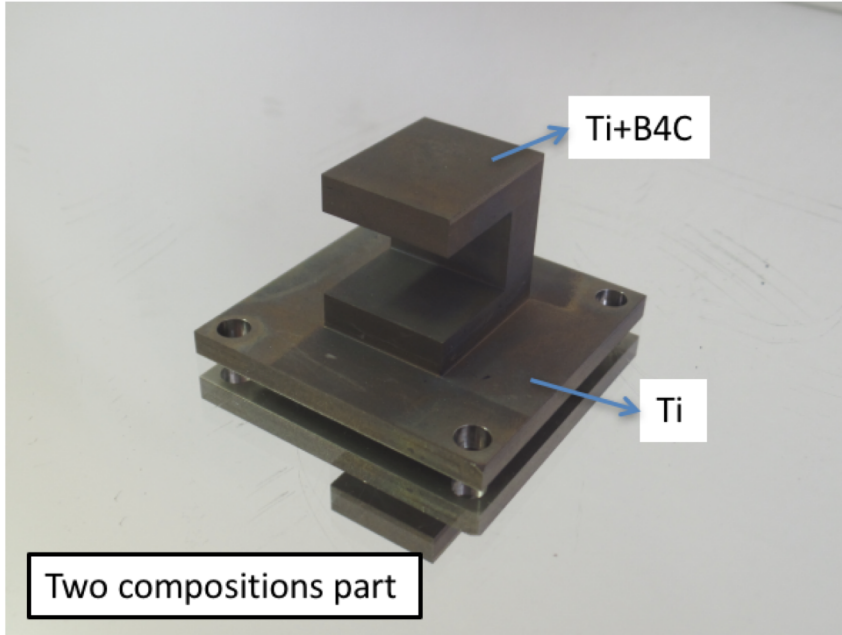




## Example: Metal Core for Tooling Applications



Production data	Value
Building Weight	85 kg
Final Weight	67 kg
Height	Ca. 450 mm



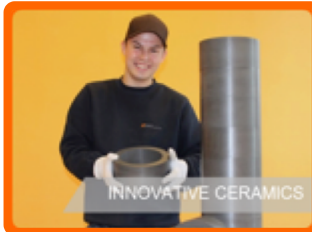




## THIN FILM MATERIALS



## POWDER INJECTION MOULDING



## PROCESS AND MATERIAL DEVELOPMENT



## ADDITIVE MANUFACTURING

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Work

### **Further information:**

[www.rhp-technology.com](http://www.rhp-technology.com)

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