



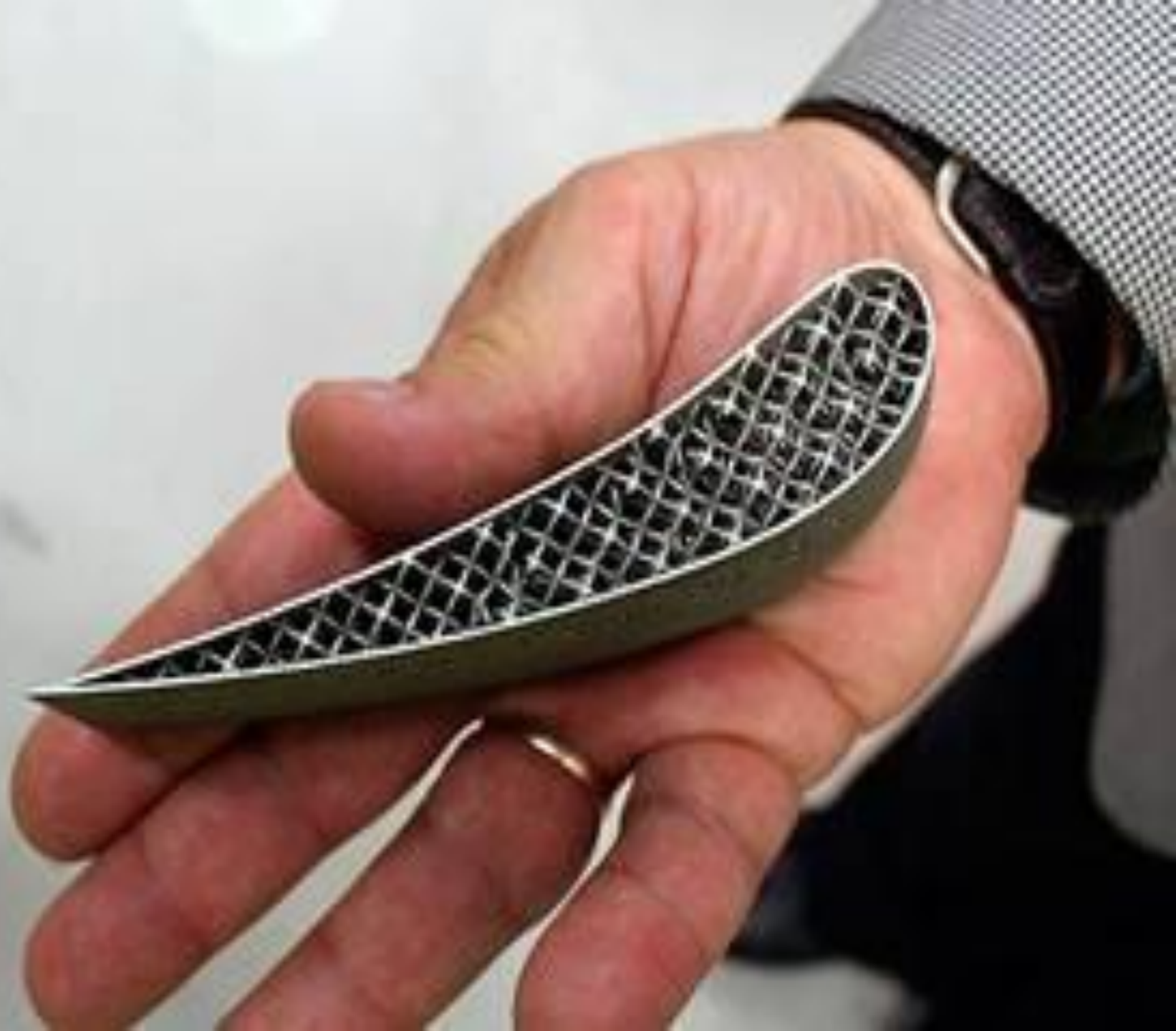
# Common new technology

- Additive Manufacturing (AM), also known as 3-D printing

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## Background

- **AM also known as 3-D printing, refers to a range of manufacturing methods where the as-purchased material (i.e. metallic powder, wire, etc.) is consolidated by a machine in to a near –finished part condition.**
- **Metallic materials as is deposited in the machine by various methods and fused using lasers or electronic beams into near final shape. Non-metallic materials may be heated and extruded through a moving nozzle to create a final part.**
- **AM variability is controled through - material specifications and process specification.**



# How AM is used today by Siemens

- **Additive Manufacturing (3D-printing) of spare parts for industrial gas turbines**
- **With the additive manufacturing (AM) technology of selective laser melting (SLM), Siemens can repair parts for your industrial gas turbines up to 60% faster and with full freedom of design possibilities. Within the last years, additive manufacturing has emerged and is revolutionizing the manufacturing of components. This technology allows design improvement and rapid manufacturing of components, thus enabling quick upgrading of existing assets to the latest part design.**



# Additive Manufacturing (AM) also known as 3-D- printing

## EASA Proposed CM No. Proposed CM-S-008 issue 01

Issued 10 June 2016 and closed for public consultation 22 July 2016 but has not been accepted yet.

Regulatory requirement: CS X.571, CS X.603, CS X.613, CS-E 100(a), CS-P 170, CS-P240, CS-APU 60, GM 21.A.91, 21.A.101, 21.A.133, 21.A.147, 21.A.433, GM 21.A.435(a), 21.A.437, 21.A.447, 21.A.805, AMC 145.A.42(c)

# Impact of Additive Manufacturing (AM) on production organisation

- **Implementation of a new AM process is a significant change.**
- **Exchange information with your NAA at the earliest opportunity before implementation of AM.**
- **Specific oversight by the NAA .**
- **NAA is recommended to inform EASA Certification Directorate and to cooperate closely.**

# What is a EASA Certification Memoranda (CM)?

- EASA Certification Memoranda (CM) are a living document into which either additional criteria or additional issues can be incorporated as soon a need is identified by EASA.
- CM are intended to provide guidance on a particular subject and, as non-binding material, may provide complementary information and guidance for demonstration with current standards.
- CM are provided for information purposes only and must not be misconstrued as formally adopted Acceptable Means of Compliance (AMC) or as Guidance Material(GM).
- CM are not intended to introduce new clarification requirements or to modify existing certification requirements and do not constitute any legal obligation.



We follow the development of AM and will give you more information the next seminar.

