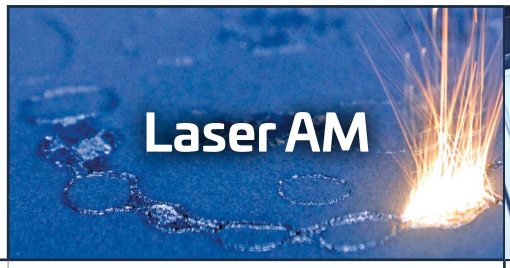
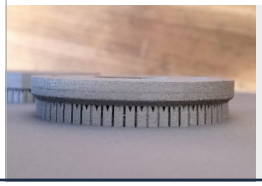
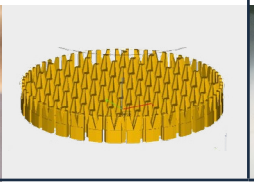
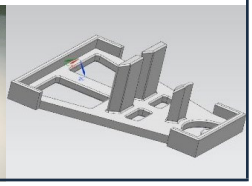
TECHNICAL FACTS ABOUT
LASER POWDER BED FUSION & BINDER JETTING

		
AVAILABLE MATERIALS	**316L** **1.2709** **20MnCr5** **CuCr1Zr** **AlSi10Mg** **IN625**	**316L** **17-4 PH**
MATERIAL REQUIREMENTS	weldable materials	sinterable materials
TYPICAL MACHINE VENDORS	EOS	HP
MECHANICAL PROPERTIES	Better than casting, PM and Binder but usually worse than forged	Comparable with MIM: MPIF 35 min
POWDER SIZE	10-45 µm	<25 µm
LAYER THICKNESS	30-70 µm	35-100 (typical 70 µm)
PROCESS DURATION PER LAYER	Depending on Volume in layer (>30 s)	Independent of volume in layer (<30 s)
BUILD SPEED	≥15 cm^3/h	>=1.500 cm^3/h (today) 3.000 + cm^3/h (target 2021)
RELAT. MATERIAL DENSITY	>99,5 %	95% + (today) 98% + (target 2021)
COSTS PER PART	High	Low (for Serial applications)
ADVANTAGES	Short delivery times Applicable already for batch size = 1 Wider material database available	> Small series that are not economical feasible in other technologies > Large series with geometrical features, that can't be realised in other techn.
SUPPORTS REQUIRED?	Depending on geometry: Yes, during printing only  	Depending on geometry: Yes, during sintering only  

TECHNICAL FACTS ABOUT
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	LASER AM	BINDER AM
PROCESS CHAIN	> Data preparation/Simulation > Printing > De-powdering > (Stress relief) > Removing supports > (Heat treatment) > (Machining)	> Data preparation/Simulation > Printing > De-powdering > Sintering > (Sizing/Machining)
SHRINKAGE	Already included in machine parameters and is considered for the prepared print model automatically	Shrinkage during sintering has to be calculated before and is part of the GKN knowledge
DISTORTION	Has to be simulated before, depends on the print orientation	Same as above
STRESS RELIEF	Is required depending on geometry and material (e.g. AlSi10Mg, 20MnCr5)	Not required
BUILD VOLUME	420x420x400 mm^3	430x310x150 mm^3
EFFICIENCY OF LPBF AND BINDER JETTING VS. CONVENTIONAL TECHNOLOGIES