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# Additive Manufacturing: Processes, Equipment, and Applications in Aerospace & Defence

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Erasmus+

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## SKILLS NEEDS — OVERVIEW

**TIER 1**

### AM Operator / Technician

Hands-on equipment operation, powder handling and post-processing on the shop floor.

**TIER 2**

### AM Engineer / Quality & Process

Design for AM, process qualification, non-destructive testing and compliance management.


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## TIER 1 — AM OPERATOR / TECHNICIAN

### TECHNICAL SKILLS

- Operation of PBF-LB/M, DED (laser/wire/arc) and EBM systems
- Powder handling, storage & characterisation under HSE protocols
- Post-processing: heat treatment, support removal, surface finishing
- Reading engineering drawings, precision metrology
- Basic CAD/CAM and slicing-software literacy
- Awareness of ISO / AS9100

### SOFT SKILLS

- Discipline and precision under standardised procedures
- Mentoring capacity toward peers and junior staff
- Independent problem-solving within strict protocols
- Adaptability to fast-evolving equipment and software
- Safety-conscious, dependable work habits


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## TIER 2 — AM ENGINEER / QUALITY & PROCESS

### TECHNICAL SKILLS

- Design for Additive Manufacturing (DfAM), topology optimisation
- Process qualification & NDT: tomography, digital radiography
- Non-conformity resolution and root-cause analysis
- Quality systems: EN 9100 / AS9100, etc.
- CAD & simulation software: CATIA, Ansys, Fusion 360
- Materials science for Ti, Inconel, Al and high-strength steels, and so on

### SOFT SKILLS

- Project and stakeholder management
- Clear technical communication with OEMs and auditors
- Cross-disciplinary team collaboration
- Results orientation and audit-ready documentation habits


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## CROSS-CUTTING — DEFENCE & SPACE COMPLIANCE

**REQUIRED AT EVERY TIER**

- Security clearance eligibility and handling of sensitive or classified information
- Traceability and criticality analysis for flight- and mission-critical components
- Process qualification to NADCAP / AS9100 / EN 9100
- Export-control awareness (obligations in the EU context)


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## GENERATIONAL DIMENSION

### KEY FINDINGS

- Younger candidates increasingly enter AM-native, with less grounding in classical manufacturing fundamentals
- Only a minority of manufacturing training programmes combine technical and soft-skills development
- Pair structured onboarding in classical manufacturing fundamentals for AM-native junior hires with digital/DfAM upskilling for senior staff, and institutionalize mentoring pairs to transfer tacit process knowledge before retirement of key profiles.


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