Alexander Afonin

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Date of birth: 18.12.1994
Family status: not married

2018 – present

SIU System

Innovation Center. Market leaders in the implementation of advanced technologies in the manufacturing industry. Exclusive partner of 3D Systems and InssTek.

Senior Design Engineer

- Automated reverse engineering using NX including processing and filtering point clouds.
- Created automatically generated fractal supports for 3d prints in NX.
- Implemented "Zero sketch - all features" NX approach
- 3D design and sculpting from scratch. Redesigning components and parts for manufacturing by the newest technologies.
- Reverse engineering, 3D scanning.
- Topological and parametric optimization in NX and ANSYS. Bionic design. Generative design.
- Lattice structures design. Automated Lattice generation and optimization in NX.
- Designing parts for manufacturing by injection molding machines.
- Technical audit of manufacturing enterprises. Analysis of the economic effect in case of implementing advanced technologies.
- Meetings and contract negotiations with customers and manufacturing engineers.
- R&D of 30kN 90 % 3D printed gas turbine engine for UAV.
- Experience with 3D Systems printers and their CAM, as well as InssTek, 3dCeram and Voxeljet.

2016 – 2018

Central Institute of Aviation Motors scientific center

Designer in Department of dynamics and strength. AT subdivision

- Development of aircraft engine parts with the addition of lattice and honeycomb structures.
- Parametric, multidisciplinary and topological optimization of parts and assemblies.
- Dynamic and strength calculations of structures and engine components, detuning from resonance and flutter. FEA and analytical verification
- R&D, cowriter of patents and articles.
- Engine parts tests, samples tests and data analysis as FEA confirmation.
- Participation in programming of industrial robots.

Professional skills

- Product development and optimization of parts and assemblies for various 3D printing technologies (metal alloys, ceramics, polymers, composite parts) and their post processing (SLM, SLA, SLS, DMD, MJP, BJ, FDM, etc.).
  Support structures and lattice structures design.
- Development of A-class, organic, surface models. Curvature and continuity analysis.
- Lean manufacturing design. Design for high volume production. DFX.
- Design cast parts, gating systems and molds for the precision casting, including printable ones.

- Strength, stability and resource calculations, FEA. Frequency analysis, detuning from resonance and flutter (ANSYS, NX Nastran).
- Computational fluid dynamics (CFD) and thermal analysis.
- Drafting and technical documentation development, GD&T.
- Development of technological processes for CNC machines (Delcam PowerMill, NX CAM, Netfabb, Materialise Magics, Cura, 3Dxpert).
- Deep knowledge of propulsion engines, including rocket engines, power plants, wind and solar power.
- Detailed knowledge in blade machine theory, hydraulic machines, including cavitation processes, diagnostics of its technical state.
- Extensive knowledge of manufacturing technologies and material treatment in numerous areas.

Wide knowledge of electrical engineering and electronics. Mid PCBs design. PCB assembly, soldering. Microcontroller programming. Software development on C++, Python.

Education

«**Bauman Moscow State Technical University**»
Aerospace engineering, Propulsion engines specialty. Master's degree

Additional education:

2020 – Netfabb – generative design, lattice optimization
Autodesk
2019 – Geomagic DesignX – 3D Scanning, reverse engineering, polygon mesh processing.
3D Systems
2018 – Delcam powermill – CAM, 5 axis milling, manufacturing preparation
Autodesk

Author of several scientific articles in international journals (VIAM, CIAM, ICAS, etc.) about topological optimization, lattice structures, blades design, 3D printing.

Languages

English, German, Russian

Software skills

Teamcenter, NX, NXOpen, Nastran, CATIA, Solidworks, ANSYS, Rhino, Alias, Magics, Netfabb, Geomagic DesignX, AutoCad, SketchUp, 3DS Max, Houdini, Python, C++, Arduino, MathCad, Wolfram Mathematica.

Why me ?!?

- Sales and client oriented
- Team player
- Ideas generator
- Keen on technology
- Adore challenging tasks