



# Fraunhofer USA

FRAUNHOFER CENTER FOR MANUFACTURING INNOVATION

## Gear Manufacturing Technology

### Focus

Due to the complexity of the component as well as high requirements on workpiece quality, gear manufacturing can be quite challenging.

The geometry of the gear and therefore the gear's running behavior is defined by the final manufacturing process and its tolerances. At the same time, cost per part needs to be minimized for economic success. We can help you to optimize single processes or complete gear manufacturing chains directly on your shop floor. Whether you are facing quality issues or you are seeking for higher productivity, we can bring our extensive experience to the table to tackle the task at hand. To proof our concepts or to try new process designs without disturbing your production, we can access state of the art production equipment at our partners' labs at Fraunhofer IPT and WZL in Aachen, Germany.

### Our Expertise

- Analyzing and optimizing gear manufacturing processes
- Simulation based process analysis
- Technological and economical optimization of process chains

- Testing of tools, tool materials and coatings
- Tool lifetime optimization and wear assessment
- Gear quality analysis and improvement
- Analogous trials on several test rigs for detailed analysis
- Analysis of chip forming
- Process force measurement
- In-process temperature measurement
- Evaluation of the gear running behavior using FE-based tooth contact analysis

### Manufacturing Technologies Covered

- Five axis milling
- Soft machining
  - Gear hobbing and shaping
  - Form milling
  - Bevel gear cutting
  - Power skiving
- Hard finishing
  - Continuous generating gear grinding
  - Discontinuous profile gear grinding
  - Gear honing
  - Bevel gear grinding
- Casting and forming
  - Precision forging
  - Powder metallurgy

### Industries Served

- Aerospace
- Automotive
- Industrial drives
- Windturbine industry



### Contact

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