



THIRD WAVE SYSTEMS

MODELING TECHNOLOGY · MACHINING SOLUTIONS

Using Innovative Programming to Achieve Machining Potential

The Background

When production responsibilities for the F-35 dual vane pump were awarded to Massachusetts-based manufacturer Tell Tool, engineers knew the component would be challenging to program. The previous part supplier had not been able to machine the component within the production cost target, yet Tell Tool engineers had committed to producing four parts within budget before a first article inspection date. With funding from Hamilton-Sundstrand and no time for mistakes, Tell Tool engineers took on the manufacturing challenge by utilizing Production Module to help achieve customer requirements.

The Part

The dual vane pump is machined from a solid titanium block; the volume of the part is one cubic foot.

The Approach

- ▶ TWS engineers train Tell Tool staff on Production Module capabilities
- ▶ Tell Tool engineers load proposed NC programs with dummy feed rates into Production Module
- ▶ Tell Tool and TWS engineers collaboratively optimize NC programs, using Production Module to set feed rates, balance tool loads, and keep machining time to a minimum
- ▶ NC program parameters defined in Production Module implemented

The Results

- ▶ All machining trials were run successfully
- ▶ Production Module software purchased and institutionalized; now being used to analyze every component Tell Tool manufactures

▼ Optimization results for a dual vane pump milling sequence. Efforts focused on setting force limits and balancing tool loads with consideration for these new parameters.



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Third Wave Systems is the premier provider of validated material physics-based modeling solutions and services. The physics-based machining simulation software products and services are used to optimize machining processes, giving engineers access to more information than trial-and-error tests and allowing them to make better decisions. Third Wave Systems' modeling products and services are used by progressive companies to dramatically reduce costs of machined components, accelerate design cycles, improve part quality and get to market faster.

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