



# High Speed Rotating Drum Design

## Description

Prototype design and manufacture of a new, innovative, high speed consumer product that is aimed at significantly extending the performance of existing products in terms of speed, efficiency and operation.

State of the art technology is used throughout the product for the motor drive system, sensor technology and vibration control.

Finite element analysis was used extensively for static and dynamic analysis, the complete machine being designed using 3D Solid Works.

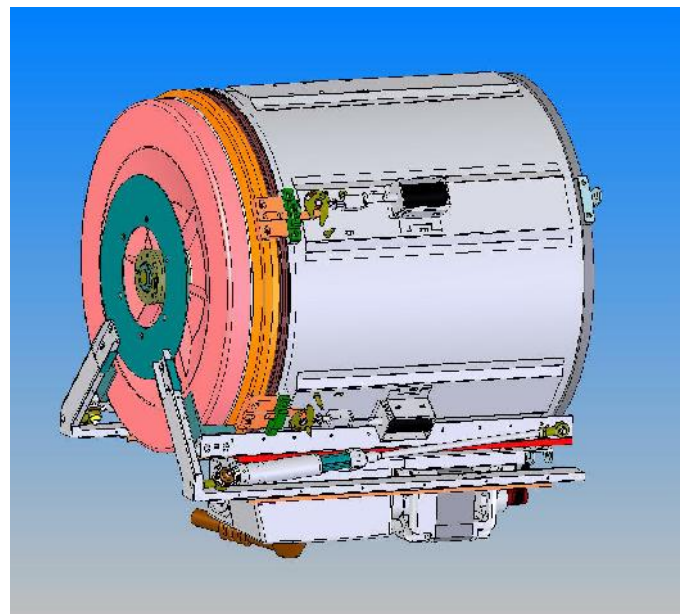
Quadratic was also involved in the manufacture, assembly and testing of the prototype.

## Disciplines Used

- Conceptual design
- Mechanical & electro-mechanical design
- Heat transfer, fluid mechanics analysis
- Stress & vibration FEA
- Prototype manufacture
- Assembly & Test

## Specification Summary

- Extensive comparative testing of competitors products
- Design of rotor / bearing system
- Steady state & transient stress FEA of main rotor and supports
- Rotordynamics analysis of main rotor
- Vibration / damper design & analysis of complete machine
- Investigation & design of main 1 kW drive train system
- Design & analysis of multiple fluid feed systems, pumps & valve systems
- Incorporation of innovative Magneto-Rheological fluid device
- Design & integration of advanced sensing systems for this type of product



*Drum System CAD Model*