



# Advanced Mechanical Engineering

## Early-stage R&D, Design, Analysis & Testing

# SOFTWARE & TOOLS USED

## Solid modeling/design

- SolidWorks Premium
- Autodesk Inventor & Fusion360
- Pro/ENGINEER (PTC Creo)
- AutoCAD
- PhotoView 360 - Solidworks
- Showcase - Autodesk Inventor
- Microsoft Visio
- AutoCAD P&ID
- Engineering drawings using GD&T per ASME Y14.5

## Analysis

### Finite Element Analysis

- ANSYS
- SolidWorks Simulation
- Autodesk A360

### Computational Fluid Dynamics

- Star-CCM+
- ANSYS Fluent
- CONVERGE
- Autodesk A360

### Magnetic Modeling

- Maxwell
- FEMM

### Dynamic modeling

- MATLAB/Simulink/Simscape
- SolidWorks Motion Study
- PLECS
- GT-SUITE

### Hydraulic Simulation

- MATLAB/Simulink/Simscape
- HYSAN
- GT-SUITE - Flow Library;  
Hydraulic

### Thermodynamic Analysis

- MATLAB/Simulink/Simscape
- GT-SUITE
- EES
- Refprop (NIST)

## Embedded systems

### Rapid prototyping of real time controls systems

- Simulink/Stateflow/ Real Time Workshop
- dSPACE
- Woodward/ Mototron/GAP
- National Instruments/LabVIEW
- Custom systems using Freescale MPC family microprocessors and Siemens C series microprocessors

### Programming

- C, C++, C #, Silverlight, Visual Basic, FORTRAN
- MATLAB Coder/Simulink Coder

### Communication protocols

- J1939, J1857, Modbus, XCP, CCP

### Instrumentation and data acquisition systems

- National Instruments/LabVIEW
- Measurement Computing
- Custom designed systems

### SCADA

- Allen Bradley AC800M PLC
- Woodward Micronet and Atlas

## Data processing and presentation

- MATLAB
- National Instruments DIAdem
- Excel
- Mathcad
- PowerPoint

## Project and program management

- Microsoft Project
- Asana