About Dytran

- Founded in 1980
- Serving aerospace and commercial markets for 38 years
- 180+ Employees, privately owned and operated
- ISO-17025 certified with A2LA accreditation
- ISO/AS9100 certified
- Currently occupying 40,000 sq ft
- Vertically integrated
- Innovation driven
- All products Made in the USA!
Brand Strategy

Technology developments

- **Smart, broad band, bus based vibration sensor**
  - The emergence of edge computing and the transition from centralized to distributed processing
  - End of reliance upon a separate data acquisition system
  - Turning big data into manageable, “actionable data” and sending it directly to the bus
  - High fidelity broad-band sensor migration

- **Cloud based Internet of Things (IOT)**
  - Allows our customers to look at the condition of their equipment from anywhere in the world

**Investment and development of our bus based- smart sensor platform known as CAN-MD®**
Product Design

Technology developments

- **Improvements of COTS MEMS Accelerometers**
  - Frequency ranges are increasing, and noise levels are reducing
  - Potential to be more affordable for our customers
  - More efficient miniature circuit assembly
  - MEMS are approaching the high bar that piezo technology has set for the world of health monitoring

DC MEMS accelerometers have become the fastest growing segment of the Dytran product line.
Paradigm Shift: “Going Digital”

- One multiconductor wire snakes through the structure with sensor/node drops off of that wire (potential big weight savings!)
- Better resistance to EMI/RFI because data gets digitized on the spot at the actual sensor location. No long analog wire runs to act as “antennas”
- No centralized data acquisition unit required
- No longer in a separate “wire for every sensor” environment
- More easily creates a “sensor fusion” environment where many measurements (acceleration, pressure, temperature, chip detectors) are on the same bus allowing the algorithms to make better choices about machine condition
- Potential big $$$$ dollar savings in overall system cost
Paradigm Shift: “Going Digital” Continued

- Each sensor runs its own programmable algorithm purpose built for its location/application
- Prices will come down as volumes of sensors rise
- Time Synchronous Averaging (TSA) is available for bearing and gear analysis
- New sensors being developed constantly
- Triaxial sensors for modal/structural analysis (Future state- could be used for structural integrity, damage detection of the airframe, in situ)
- Sensor with user processor or “Sandbox” is coming on line soon. Allows user to run their own proprietary algorithm
- IOT dream- It takes a low cost web appliance to (i.e. Raspberry pie) to get to the cloud

Developer’s welcome!!
Why CAN-MD®?

- Are they broad band, high fidelity accelerometers - YES!
- Is it a high level, multi-processor computer - YES!
- Is it CAN bus based - YES!
- Does it process broad band vibration data directly in the sensor and output a simplified condition indicator on the bus - YES!
- Does it take the place of my FFT analyzer - YES!
- Can it do advanced machinery diagnostics - YES!
- Is it highly configurable and expandable - YES!
- Can the system do time synchronous averaging - YES!
- Is this new technology known as “distributed processing” - YES!
- Can the vibration data be easily sent to the cloud via a gateway - YES!
- Can I monitor my machinery from anywhere, even on my phone - YES!
- Does it save money over conventional system installs - YES!
- Does it save thousands of dollars and lbs of cable weight because it is bused based - YES!
- Is the Interface Control Document (ICD) available for developers - YES!
- And all of this is in one sensor - YES!
Sensor Fusion

- **IEPE sensor** - combined with CAN-MD® IEPE (Internal Electronic Piezoelectric) adapter
- **Optical tachometer** - optical tach introduced through a CAN-MD® Tach adapter
- **High temperature sensor** - combined high temp charge amplifier and CAN-MD®
- **Piezo sensing element** - combined with CAN-MD® sensor
- **MEMS sense element** - combined with CAN-MD® sensor
- **Optical blade tracker**
- **Triaxial MEMS CAN-MD®**
- **Seismic sensor adapter** - combines with CAN-MD® Seismic adapter (coming soon)
Currently Integrated

- Magnetic Tachometer
- Optical Tachometer
- Optical Helicopter Rotor Blade Trackers
- IEPE Sensor
- High Temp Charge Mode Piezoelectric Sensor

Example of a CAN-MD integration system

- High Temp Charge Mode Sensor Model 3316C2
- Charge Amplifier Model 4745A
- CAN-MD® to IEPE CAN Adapter Model 4760A
- CAN-MD® Sensor Model 3410A
- CAN Logger w/Wifi Model 4763A

Future Integrations

- Pressure Sensors
- Magnetic Chip Detector
- ADAHRS
- Differential Output Sensors
- Force Sensors
- Temp Probe
- 6DOF

More Custom Configurations!