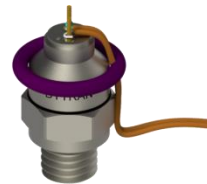


# About Dytran

- 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<sup>®</sup>**



# 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<sup>®</sup> ?

- 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 bus based-**YES!**
- Is the Interface Control Document (ICD) available for developers-**YES!**
- And all of this is in one sensor- **YES!**

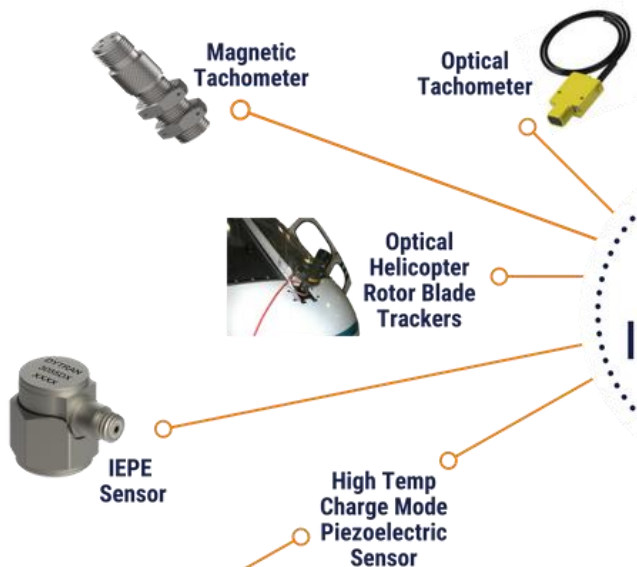


Trade in data acquisition systems  
and hundreds of feet of cable for CAN-MD<sup>®</sup>

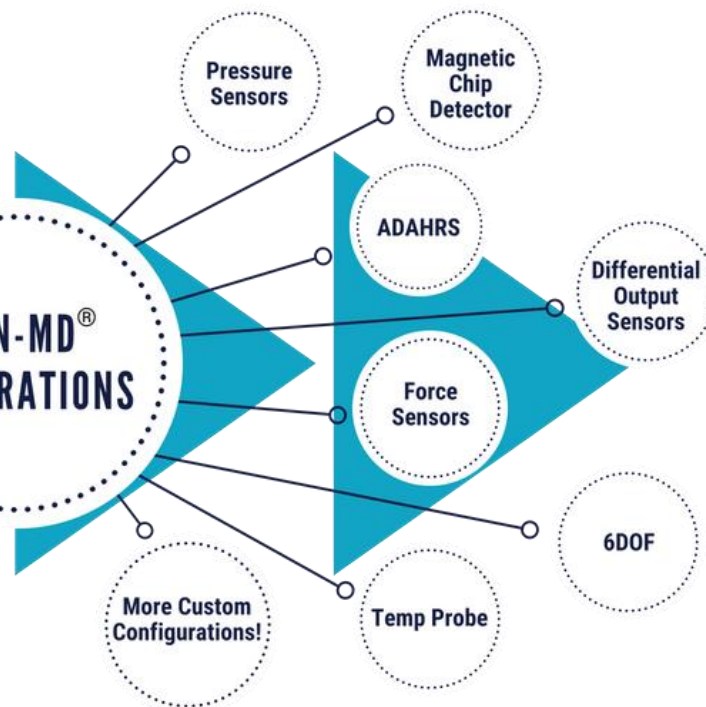
# Sensor Fusion

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

### Currently Integrated



### Future Integrations



### Example of a CAN-MD integration system

