



GENERAL CAPABILITIES PRESENTATION



**77 Years Family Owned
and Operated**

**Customer Relationships
30+ Years**

**200,000 Sq. Ft.
Manufacturing Facility
with Innovation Center**

Quality Systems:

- IPC 610- Class 3
- ISO- 9001:2008
- TS 16949
- ISO 13485 (In process)
- RoHS Compliant
- ITAR Compliant
- Certified FAA Repair Station



Design & Engineering

CM

JDM

ODM

COTS

**Morey
Products**

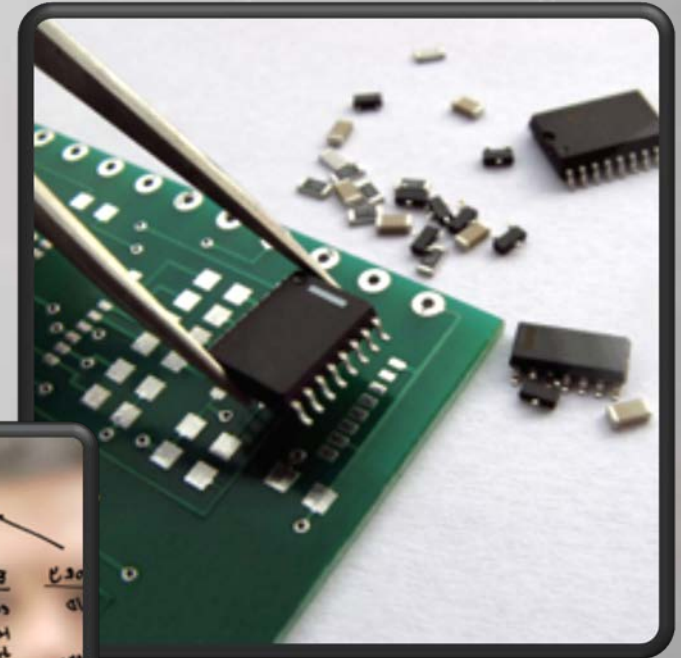
Manufacturing

A machine equipped with MOREY electronics fell through the tundra ice and kept running until it ran out of fuel.

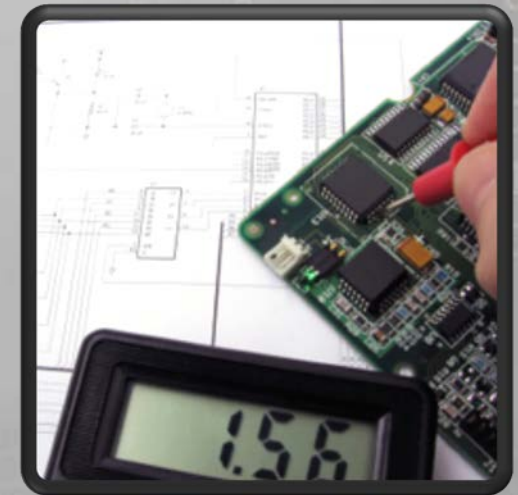
It's simple: MOREY products have endured the Alaskan Pipeline, the fires of Kuwait, the mines of Australia, and roads all across the globe. We've designed and manufactured for the most demanding environments on Earth since 1934.



- Full Service Capabilities
 - Electrical
 - Mechanical
 - Software
 - Test



- Comprehensive expertise designing to the most rugged and precise electronic specifications.
 - **SAE Standards:** J1455, J1939, J1708, J1587, J1113, J1112, J1850, J1962, J2178, J2497, J1812, J1739
 - **ISO Standards:** 11452, 7637, 11783, 15765, 16750
 - **CATERPILLAR EC-1**
 - **Mil-STD-810**
 - **IP Standards:** 65-69K



Custom LCD & LED test set for rugged displays

Testing	Description
AOI Testing	Automated Optical Inspection; Optically inspects printed circuit boards for proper placement of components
Functional Testing	Custom assembly specific test fixtures, used to confirm assembly functionality
End-of-Line Testing	Functional Testing; Custom assembly specific test fixtures, used to confirm assembly functionality
HASS Testing	High Accelerated Stress Screening
In-Circuit Testing	Sometimes called "Bed of Nails Testing", requires custom fixture, test components and "shorts & opens" after placement on a printed board
Flying Probe	Tests components and "shorts & opens" after placement on a printed circuit board
X-Ray Testing	X-Rays Ball Grid Array components for proper solder joints after placement
Validation	Qualification testing that confirms product specification
Verification	Qualification testing that confirms the product meets the product specification
HALT Testing	Highly Accelerated Life Testing
Hi-Pot Testing	Tests voltage protection and non-conductivity
Thermal Soak	Heating assemblies to a specific temperature, usually the high end of the product specification, for a set time period and then performing a functional test at that temperature
Thermal Cycling	Cycling an assembly through the full range of the product's temperature specifications at a set speed for a specified time and functionally testing the assembly at specific intervals
Burn in	Term is often misused; The practice of powering-up an assembly and running the product for a set time period to identify infant mortality failures. Burn-in is often used to describe a thermal soak
Conductivity Testing	Cable testing used to check the integrity of individual wires within a cable assembly



Thermal Chamber

SHIFTT is MOREY's factory wide test data information system. The software ties together all testing methods so that decision makers can respond to quality issues in real time.

- Unprecedented insight into real time testing
 - 8,000 reports & tests
 - 80,000 test points reported daily
- Utilizes barcode scanning to accurately measure test data
- Information is used to increase decision speed, information dissemination, and operations awareness

One of MOREY's SHIFTT Netbooks



- Experience designing and/or manufacturing products for rugged applications:
 - Controls
 - Engine, Transmission, Body, Lights, Auxiliary, I/O, Gen Set & Switch Controllers



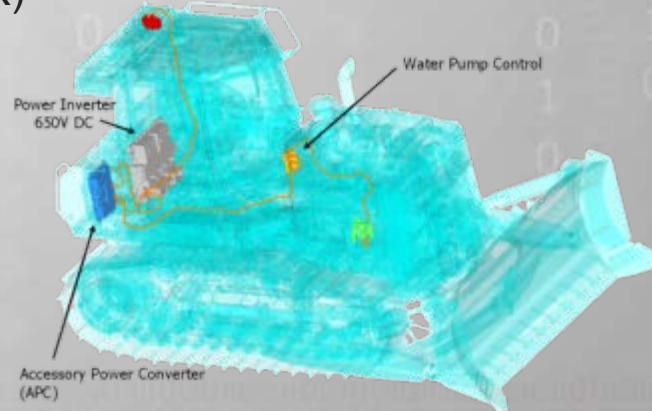
- Displays
 - LED, 7-Segment, EC, TN, STN, FSTN & TFT



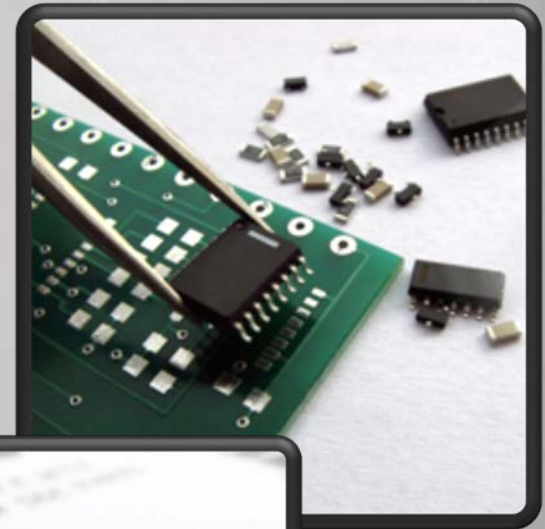
- Telematics
 - GPS, GSM, CDMA & Satellite



- Power Electronics
 - Manufacturer of inverter APC and water pump for D7E track-type tractor (CATERPILLAR)



- **Rapid Prototyping**
 - Prototypes within 10 days
- **Flexibility & Velocity**
 - High Volume
 - 100,000+ units per year
 - Medium Volume
 - Less than 100,000 units per year
 - Ultra Low Volume
 - High Mix
 - 200+ unique product identities currently in production



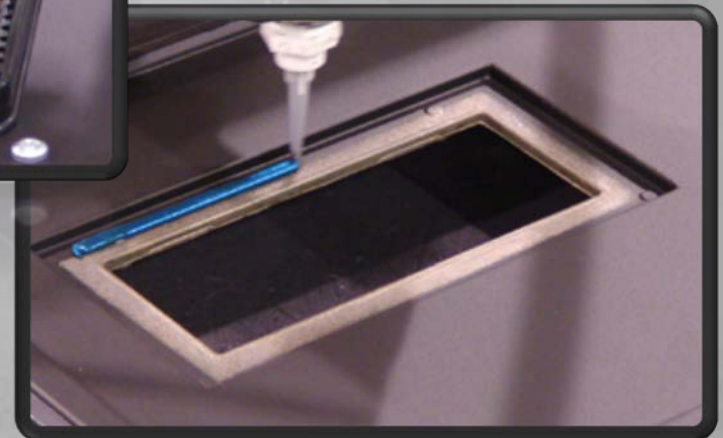
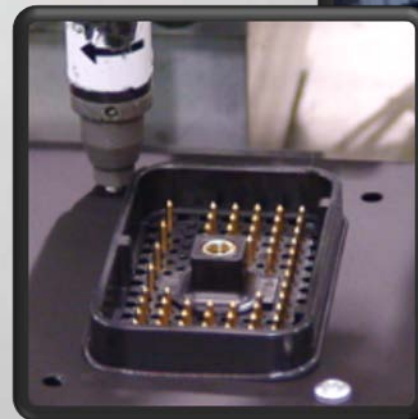
Technology & Automation

- Panasonic Beta Site
 - MOREY operates the most advanced SMT equipment in the industry
- ERSA Selective Solder Machines



Mechanical Automation

- Automated Screw Cells
- Automated Routers
- Automated Sealant Dispensers
- Automated, Double-Sided Conformal Coating
- Potting



- Mechanical Packaging & Sealing

- IP Standards (65-69K)
- Harness Cables
- Displays
- Connectors
- Fasteners
- Castings
- Molded Plastic
- Fabricated Metals
- Encapsulations
- RTV Sealants

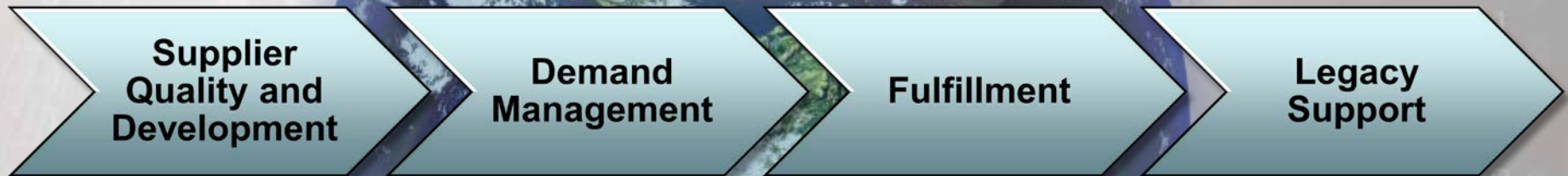
MOREY is a world leader in mechanical packaging. We routinely manufacture units sealed to all IP Standards (65-69K) and hermetically sealed when necessary.





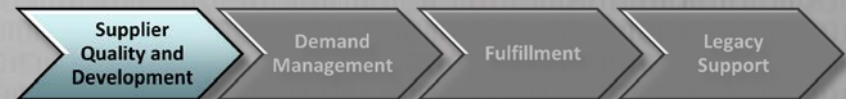
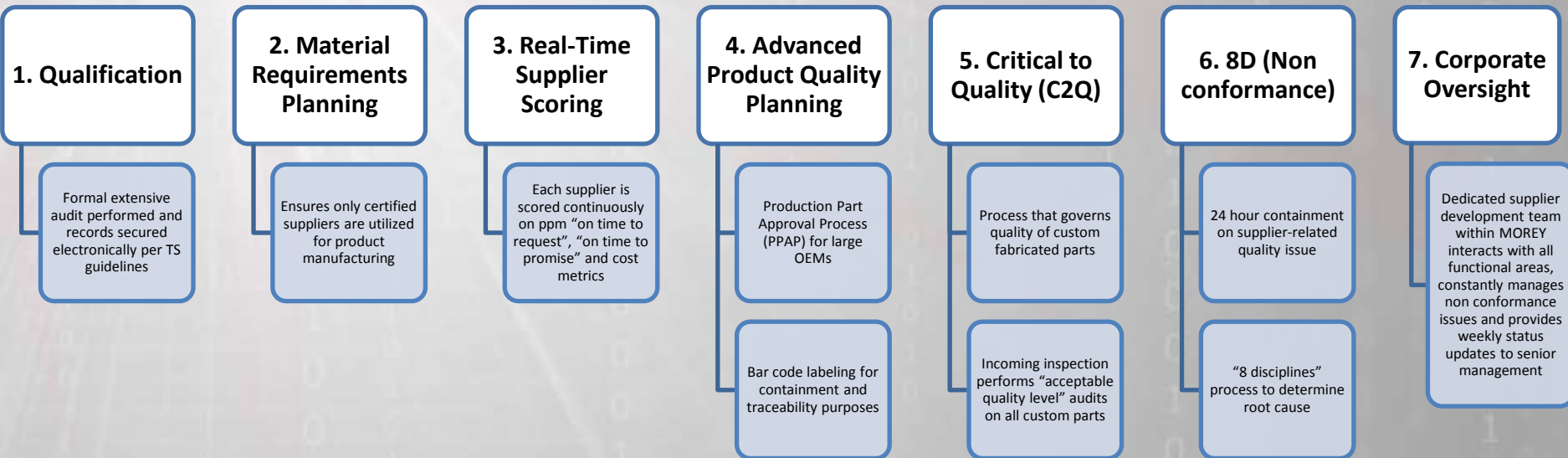
Global Supply Chain Management

MOREY offers a robust solution based on the Four pillars of Global Supply Chain Management



Supplier Development/ Quality System

- TMC employs a 7-layer Supplier Development/Quality System based on TS 16949





MOREY

Demand Management

Specializing in complex trading requirements and dynamic forecasting and scheduling

Example Customer:

Global OEM

MOREY manages a complex supply chain of over 200 product identities with life-cycles spanning 30+ years for a leading U.S. based Heavy Equipment OEM.





MOREY

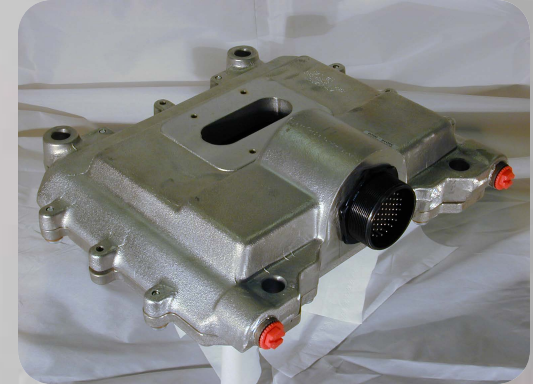
Demand Management

Flexibility in supply-chain



Example #1
Rugged Display

- Over 9 week period demand increased to 1100%, 83% and then 41%
- All three changes were given with <1 week notice
- All products built and shipped on time



Example #2
Rugged Engine Controller

- 7 major fluctuations in demand all within 1 week
- Demand increases ranged from 60% to 100%



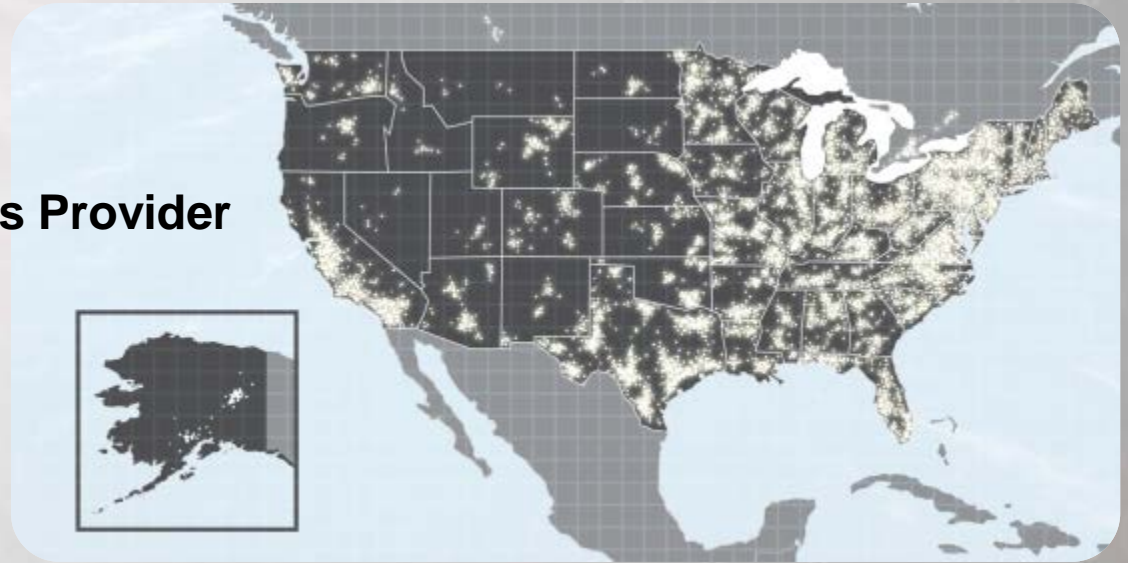


MOREY

Fulfillment Capability

North America

Example Customer:
Fleet Management Solutions Provider



12 Month Period

(4-10 thru 4-11)

- 1679 unique order origination locations
- 2602 unique ship to locations
- 29 unique product identities





MOREY

Fulfillment Capability

Global

Example Customer:
Heavy Equipment OEM



12 Month Period

(4-10 thru 4-11)

- 160 unique order origination locations
- 406 unique ship to locations
- 280 unique product identities
- Shipments to over 30 Countries



- Product Life Cycle Management
 - Product support 30+ years
 - Obsolescence mitigation
 - Last-Time & End-of-Life builds
 - RoHS Compliance

Legacy Body Controller



Legacy Engine Controller

