TOSHIBA OIL & GAS RESUME

- ***Arctic:***
  Siberia, Northern US, & Canada,
  Including the Alberta Oil Sands
- ***Desert:***
  Middle East & Western Texas
- ***Tropical:***
  South America, Mexico,
  Central America, & Pacific Rim
- ***Seaside & Off-Shore:***
  Gulf of Mexico & Persian Gulf

TOSHIBA INDUSTRIAL PRODUCTS:

- Adjustable Speed Drives
- Motors
- Motor Controls
- Instrumentation & PLCs
- Uninterruptible Power Systems

TOSHIBA

Leading Innovation

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TOSHIBA

Leading Innovation

OIL & GAS SOLUTIONS

MOTORS & DRIVES

ONE CALL. ONE SOLUTION.

Toshiba International Corporation offers a complete product lineup of electric motors, adjustable speed drives, and motor starters for your oil and gas applications. These products are manufactured at our one million square foot manufacturing facility, located in Houston, Texas. We are proud to be a single-source solution for our customers. Our Houston facility has extensive knowledge and experience, offering the following services in-house:

- Research & Development
- Manufacturing
- Applications Support
- Customer Service & Project Management
- Product Application & Field Service Training
- Design & Engineering
- Sales & Marketing
- Field Service
- Logistics & Warehousing

ONE STOP FOR ALL YOUR OIL AND GAS NEEDS

Our extensive product offering and large installed base in the oil and gas industry demonstrates our customer's confidence in choosing Toshiba. Since our products are manufactured under one roof, we can offer customized solutions to meet your oil and gas application needs worldwide.

We also have the capability to test our products together, as a complete system, before it goes out into the field — ensuring the highest level of quality, efficiency, and reliability.

MEDIUM VOLTAGE MOTOR SOLUTIONS

Toshiba produces a wide range of medium voltage motors for adjustable speed drive applications from 200 to 80,000 HP, at 2300 through 6600 V, and across-the-line motors to 50,000 HP at 13,800 V. These motors are uniquely designed with specific performance features required for both liquid and gas applications.

- Advanced Design for Maximum Efficiency & Extended Motor Life
- Advanced Drop-In Core Construction Reduces Electrical Noise, Allows for Easy Maintenance, Enhanced Cooling & Low Vibration
- Full API-541 4th Edition Capabilities & All Testing Requirements
- Two-Pole Stiff Shaft & Highly Dampened Critical Speed Designs for Use with Adjustable Speed Drives

5000 HP, 900 RPM Medium Voltage Motor & Ariel Compressor Unit

WEATHER PROTECTED TYPE II MOTOR FOR LIQUID APPLICATIONS

Toshiba's most popular motor offering for liquid applications is the Weather Protected Type II option in 2000 through 6000 HP, 2- and 4-pole, at 4 KV. Higher horsepower, different speeds, and voltages up to 13.8 KV are also available.

- Offers the Highest Evaluated Efficiency in the Industry, Drastically Reducing Power Consumption
- Utilizes Toshiba's Proprietary Core Isolation System Which Reduces Vibration to Extrem
- Low Noise Design; 2-Pole Motors Test at or Below 85 DBA

WEATHER PROTECTED TYPE II MOTOR FOR GAS APPLICATIONS

Toshiba's most common motor solution for gas applications is the Weather Protected Type II option in 2000 through 9000 HP, 1200 and 900 RPM, at 4 through 13.8 KV.

- This Motor Offers the Largest Shaft Dimensions in the Industry as Standard
- Utilizes High Strength 4142 Shaft Material, Allowing the Motor to Easily Handle Torsional Concerns & Current Pulsations Associated with Many Compressors
- Toshiba Shafts are up to 2.25 Inches Larger than the Shafts Offered as Standard by our Competitors
- Motors Come With Torsional And Current Pulsation Data At No Extra Charge

MEDIUM VOLTAGE DRIVE SOLUTIONS

Toshiba's medium voltage drives range from 300 to 10,000 HP and 2.4 to 6.6 KV. Our drives set a new benchmark in innovation, reliability, size, and safety and are fully equipped to handle the stringent requirements of the industry.

Motor Control Center Line-Up

- Air-Cooled Technology Offers a Lower Initial Cost, Longer Life, & Lower Maintenance
- Toshiba's Proprietary Synchronous Transfer Software Allows a Single Drive to Control Multiple Motors Which Results in:
  - » Elimination of In-Rush Problems Associated with Running Motors Across-the-Line
  - » Energy Savings
  - » Unlimited Starts per Hour
  - » Process Control
- Capable of Connecting to any Power Grid with Low Reflected Harmonics/IEEE-519 Compliance
- Can be Applied to Existing Motors & Cables with No Temperature Rise or Bearing Shaft Voltage Increase

T300MVi® MEDIUM VOLTAGE DRIVE

Toshiba's T300MVi medium voltage drive is the most advanced drive in the industry. No other drive in the market features the latest multi-level Pulse Width Modulation (PWM) with Neutral Point Clamping (NPC) technology. This advanced technology allows for a smaller footprint, a reduced component count, and ultimately, lower costs. In addition, it incorporates the latest safety technology, making it one of the safest designs on the market.

- Three Cables In, Three Cables Out
- 24-Pulse Harmonic Cancellation Complies with IEEE-519-1992
- Higher Displacement Power Factor (0.96) than Running Motors Across-the-Line
- Smaller Footprint Through Compact Power Modules, Standard Copper-Wound Isolation Transformer, & Air-Cooling System
- Robust, High-Quality Medium Voltage IGBT Technology, Transistors, & Control Components
- Advanced Electronics to Reduce Component Count
- Additive Multi-Level PWM Output Voltage with No Neutral Shift
- Ten-Year Mean Time Between Failures

MTX® MEDIUM VOLTAGE OUTDOOR DRIVE

The Toshiba MTX NEMA 3R outdoor medium voltage drive is one of the most innovative drive offerings to date. Featuring an advanced enclosure design and power section topology, the MTX is the world's first and only drive specifically designed for outdoor mounting in remote applications or applications where a building does not exist.

- Three Cables In, Three Cables Out
- Distribution-Quality Lightening Arrestors as Standard
- 36-Pulse Harmonic Cancellation Complies with IEEE-519 1992
- Higher Displacement Power Factor (0.96) than Running Motors Across-the-Line
- Provides Easy Monitoring & Maintenance through Advanced User Interface Design
- UL-Rated Raintight (NEMA 3R) Enclosure Prevents Outside Air & Debris from Entering Drive
- Lowers Cost of Ownership from Rated Full-Load Operation at -25°C to 50°C
- Allows for Standard Motors to be Used in Conjunction with Drive Without Special Motor Insulation
- Reduces Drive-Induced Torsional Vibration to Less than 1%