Eaton’s Industrial Sector: Targeting focused growth opportunities

Uday Yadav - Chief Operating Officer, Industrial Sector
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Industrial Sector growth – today’s themes

- Focused on addressing the broader megatrends driving our business
  - Our products and customer-oriented solutions are aligned with major megatrends
- Our mechanical and fluid power portfolio is evolving with embedded intelligence
  - Developing technology that is safe, reliable, efficient, connected, and intelligent
  - Leveraging our enterprise-wide and electrical capabilities to position us for the future
- We are positioned to capture growth on Aerospace military platforms
  - Wins on key platforms will drive growth in the military OEM segment
  - Aging fleets and mission readiness requirements provide near-term aftermarket opportunities
The Industrial Sector serves a diverse set of end markets

End-market mix

- **Hydraulics**
  - Construction & mining
  - Agriculture
  - Oil & gas
  - Commercial vehicles
  - Discrete manufacturing
  - Material handling
  - Industrial processing
  - Recreation
  - Filtration
  - Hydraulics aftermarket

- **Aerospace**
  - Commercial transports
  - Regional jets
  - Business jets
  - General aviation
  - Civil rotorcraft
  - Commercial aftermarket
  - Military transports
  - Military fighters
  - Military rotorcraft
  - Military aftermarket

- **Vehicle**
  - Commercial vehicles
  - Passenger vehicles
  - Medium-duty trucks
  - Light-duty trucks
  - Agriculture
  - Construction & material handling
  - Vehicle aftermarket

Geographic mix

- United States 58%
- Rest of World 42%

$7.1B 2016 sales
Industrial Sector overview

**Aerospace**
- Commercial aircraft (65%)
- Military aircraft (35%)

**Hydraulics**
- Mobile equipment (65%)
- Stationary equipment (35%)

**Vehicle**
- Commercial vehicles (50%)
- Passenger cars (50%)

**Key applications**
- Hydraulic pumps, motors & valves
- Fuel pumps & valves
- Conveyance & ducting

**Industry-leading portfolio**
- Commercial aircraft
- Military aircraft
- Mobile equipment
- Stationary equipment
- Commercial vehicles
- Passenger cars

**2016 sales**
- Aerospace: $1.8B
- Hydraulics: $2.2B
- Vehicle: $3.2B

**Megatrends**
- Population growth
- Environmental concerns
- Energy efficiency
- Intelligent & connected
- Demand for superior value solutions

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Megatrends are impacting all of our businesses

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<th>Hydraulics</th>
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Our enterprise-wide capabilities enable us to deliver solutions that address today’s megatrends and reduce total cost of ownership.
Our product portfolio is evolving to support our current and future customer needs

Megatrends

Hydraulics
- Mechanical valves
- Intelligent digital valves
- MOEM electro-hydraulic

Vehicle
- Transmissions
- Powertrain integration
- Hybrid & electric vehicles

Aerospace
- Hydraulic pump
- Digital gauging & fuel management
- Hydraulic power pack

Our leading industrial portfolio combined with our electrical capabilities uniquely positions us to provide best-in-class blended power solutions
Industrial Sector long-term strategic organic growth initiatives

- Modification and upgrade products & services
- Strategic partnerships with industry participants
- Channel expansion with market segment specialization
- Authorized partner services & advantage programs

- Intelligent & connected
- Power efficiency & density
- Advanced applications
- Electrification
- Additive manufacturing

- Mature and modular products
- Regionally adapted applications
Today’s growth topics

1. Intelligent control technology in mobile hydraulic applications

2. Intelligent products within the Vehicle business

3. Positioned to grow on Aerospace military platforms and in the aftermarket through modifications and upgrades
Intelligent control technology improves and optimizes mobile application performance

Mobile controls are a $2B market; growing at ~3% CAGR

- Customers desire solutions that:
  - Enhance efficiency and productivity
  - Lower operating costs
- Adoption of intelligence within the industrial market is accelerating
  - Growing 3 to 4 times faster than the general mobile controls market
- Eaton’s technology optimizes and simplifies design, setup and operation

Eaton’s intelligent control technology is redefining the customer experience
Eaton’s intelligent boom stability control technology solves customer challenges

**Boom stability control**
- Subsystem that minimizes oscillation of large structures
- An adaptive system:
  - Advanced algorithm embedded within intelligent valve solution
  - Processes over 20,000 sensor readings and decisions per second

**Customer challenges**
- Operating costs and reliability
- Performance and safety

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**Boom stability control concrete pump truck**
- Customer benefits:
  - 16% productivity improvement
  - 50% labor reduction
  - 45% reduction in component wear
  - Improved speed to market from months to days/weeks

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**Boom stability control technology reduces oscillation on mobile applications that use extensions**

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Future growth of this technology

Our electrical capabilities enhance our solutions with embedded intelligence and robust/secure connectivity

Intelligent controls
Online technical services & analytics
Remote communication & control

Power of One Eaton

- OMNEX Trusted Wireless products
- Enables remote operator to control the machine at the point of use
  - Improves visibility
  - Personnel safety
  - Machine efficiency
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Our Vehicle product portfolio is evolving with intelligence and connected technology

- **Power creation**
  Improving power creation in a regulated environment

- **Power distribution**
  Efficiently distributing power from creation to use

- **Power optimization**
  Optimizing flow and use of power for diversified applications

- **Procision**
  Engine transmission harmonization

- **Auto-docking assist**
  Autonomous

- **IntelliConnect**
  Predictive services

Designing technology that improves power efficiency, ease of driving, and lowers total cost of ownership
Intelligent transmissions enable enhanced power distribution and optimization

**Intelligent transmission technology**

- An adaptive system:
  - Software connects and communicates with other intelligent systems
  - Senses conditions and optimizes engine performance
  - Makes 100 decisions per second
  - Enables advanced features - health and monitoring prognostics, over-the-air programming, autonomous operation

**Precision dual-clutch transmission**

- Customer benefits:
  - 8 to 10% better fuel economy
  - Lower total cost of operation and improved safety features
  - OEMs are closely compliant with upcoming regulations
  - Launched in 2016 and expecting $120M in mature year sales
  - Key wins: Daimler, Navistar, Blue Bird, IC, Temsa

**Positioning customers for the future with innovative technology**
Providing autonomous solutions by leveraging our core strengths

Autonomous solutions landscape

- Electronic Steering
- Active Braking
- Lane Keeping
- Stop & Go Traffic Assist
- Crash Mitigation
- Adaptive Cruise Control
- Cameras and Image Recognition
- Self-Docking
- "Ultra" Creep Mode
- Urge to Move
- Blended Pedal
- Radar / Lidar
- GPS
- Look Ahead
- Platooning
- V2V / V2I

Our autonomous features are targeted.
Our intelligent transmission technology enables all solutions.

Autonomous auto-docking solution

- Unique IP for commercial vehicles
- Software algorithms sense and control the truck’s movement with minimal sensors
- Reduces customer costs:
  - Prevents trailer and loading dock damage, related downtime
  - Reduces driver training time
  - No additional dock infrastructure

Advanced Driver Assist Systems (ADAS) enabling features
Core Eaton features
Truck of tomorrow

Truck of tomorrow is intelligent, efficient and has smart power distribution

- Eliminating power inefficiencies will be necessary to meet increasing regulations, driving higher electrical demands

Increasing electrical demand trend in Class 8

Estimated electrical distribution efficiency improvements:
- Internal combustion engine: 0.56 gallons/day
- Electric vehicle: 0.5 miles range extension

Eaton is well positioned to address future power distribution & optimization needs
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The military OEM and aftermarket are attractive end markets

Why we like the military:

- Higher market stability vs. commercial
- Resilient to macro economic shocks
- Government funded development
- Changing geopolitical landscape

Eaton’s military growth will be driven by:

- Key wins on ramping platforms: F-35, KC-46A, KC-390, A400M, CH-53K
- Aftermarket growth from aging fleets and mission readiness requirements

Key wins on ramping platforms will drive growth in the military OEM segment

Eaton is actively engaged on several U.S. and foreign military development programs

$6B life of program value awarded for next generation military platforms
U.S. defense budget stabilizing and international defense spending increasing

- U.S. budget stabilizing after a period of strong decline
- Potential for higher U.S. defense spending with new administration
- Regional instability driving growth in emerging markets
- U.S. focused on mission readiness and life extension programs for aging fleets
- Performance, reliability and affordability key to winning in the U.S. military aftermarket

Source: President’s FY17 Budget Request & IHS Jane’s Defense Budgets Report
Life extension programs for aging fleets driving modification and upgrade opportunities

- Many U.S. Air Force platforms projected to see service life >50 years
- Life extensions sustain spares sales, along with higher volumes of end of life part replacements
- Ability to offer product upgrades, increasing safety, reliability and affordability

F - 16

USAF F-16 drawdown estimate 2007 vs. 2016

- Leading-edge flap valve facilitates aircraft maneuverability
- Delayed fleet retirements create opportunities due to 25+ years of operation
- Upgrade to safety critical unit
- Replacement valve has longer life and higher reliability
- Scheduled for implementation on 700+ U.S. aircraft and 800+ international aircraft
Mission readiness of aging platforms remains top concern for U.S. military

- Roughly 50% of Navy’s 600 F/A-18C "legacy" Hornets out of service\(^1\)
- Less than 1/3 of the USMC's F/A-18s are ready to fly\(^2\)
- Backlogs at military depots offer potential to generate spares and repairs growth

Navy mission capable rates

Navy F/A-18 airframe depot backlog

- Engine driven pump powers hydraulics on the aircraft
- Eaton’s pump provides higher reliability vs. existing pumps
- Reduces operational lifecycle costs
- Targeting implementation on 500+ U.S. aircraft and 350+ international aircraft

\(^1\) Senator Roger F. Wicker, Chairman, U.S. SENATE, subcommittee on seapower, committee on armed services, March 25, 2015
\(^2\) Aviation Weekly, February 8, 2017

Source: US Naval Institute News

Source: The Virginian Pilot

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