WORLD LEADER IN FLIGHT CONTROL SYSTEMS AND CRITICAL CONTROL PRODUCTS

Moog is the world’s premier designer, manufacturer, and integrator of flight control systems for military and commercial aircraft. We are positioned today on virtually every aircraft in the marketplace.

COMPETITIVE ADVANTAGES:

- 2020 sales over $1.2B
- 5,000 employees worldwide
- Unparalleled expertise in flight control system design and integration
- Leading edge technology in flight controls, engine controls and active vibration control
- Primary and secondary flight control systems using hydraulic, mechanical, electromechanical and electrohydrostatic actuators
- World-class manufacturing facilities staffed with a skilled, experienced and team-based workforce
- Focused, highly-responsive global aftermarket support organization

REPRESENTATIVE PROGRAMS

COMMERCIAL AIRCRAFT AND BUSINESS JETS


REPRESENTATIVE PROGRAMS

MILITARY AIRCRAFT AND HELICOPTERS

CRITICAL CONTROL APPLICATIONS AND PRODUCTS

- Engine and cockpit controls
- Active vibration control
- Weapon bay door drives
- Specialty control and wing fold actuation
- Flight control computers
- Navigations aids

SYSTEM INTEGRATION

- Hardware/software integration
- Verification and validation
- Sub-system qualification
- Iron bird testing

SERVICES

- Commercial and Military Aftermarket
  - Maintenance, repair and overhaul
  - Power by hour
  - Technical support
  - Extensive repair development
- Advanced Manufacturing and Repair
  - Traditional
  - 3D Additive Manufacturing
    » Design, production, inspection and post processing
- Sustaining Engineering
  - Lab testing, analysis, fabrication/manufacturing, environmental and assembly testing, etc.
- Integrated Logistics Services
  - Turnkey MRO, supply chain management, warehousing and inventory management
  - Import/export control and compliance
SPACE AND DEFENSE GROUP
OVERVIEW
EXECUTIVE SUMMARY
Corporate Snapshot

• Founded in 1951 by Bill Moog
• Headquarters in East Aurora, NY
  − Over 300 Acre Facility
• Global Company
  − 25 Countries
• Over 11,800 Employees Worldwide
• $2.9 Billion in Revenue (FY 2019)
• Aerospace, Defense, Industrial
• Precision Control Systems Solutions and Component Provider
This document does not contain Technical Data or Technology as defined in the ITAR Part 120.10 or EAR Part 772

Worldwide Presence
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Competent Workforce

MANUFACTURING: 43%

ENGINEERING: 37%

SALES / MARKETING / PROGRAM MANAGEMENT: 7%

ADMINISTRATIVE AND CORPORATE SERVICES: 13%
Balanced Revenue Stream by Segment

As of 11/02/2019

- **Aircraft Controls**: 45%
- **Industrial Systems**: 32%
- **Space and Defense**: 23%
Financial Performance

**REVENUE (Dollars in Millions)**

- **2015**: $2,526
- **2016**: $2,412
- **2017**: $2,498
- **2018**: $2,709
- **2019**: $2,905

**EARNINGS PER SHARE**

- **2015**: $3.35
- **2016**: $3.47
- **2017**: $3.90
- **2018**<sup>*</sup>: $2.68
- **2019**: $5.11

<sup>*</sup>2018 adjusted EPS of $4.57 excludes the impact of charges associated with exiting the wind pitch control business and special impacts from the U.S. Tax Act.

As of 11/02/2019

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Aircraft Group

- Integrated Flight Control Systems
- Critical Control Applications
- Aftermarket Services & Support
Industrial Group

- Motion Control Slip Ring & Marine, Products, Solutions and Services
- Industrial Machinery
- Energy
- Test and Simulation
- OEM Medical Device Components
Space and Defense Group

- Precision Motion Control for Military Ground Vehicles, Naval Ships and Missiles
- Weaponization of Air, Land and Sea Platforms
- Motion and Fluid Control Solutions for Launch Vehicles and Spacecraft
- Spacecraft Avionics and Payload Electronics
- Surveillance and Video Tracking Systems for Military and other Markets
Moog Inc. Executive Organization

John Scannell
CEO

Jennifer Walter
VP and Chief Financial Officer

Paul Wilkinson
VP and Chief HR Officer

Mark Trabert
VP and President Aircraft Group

Maureen At hoe
VP and President Space and Defense Group

Pat Roche
VP and President Industrial Group
Space and Defense Group Leadership

MAUREEN ATHOE
President

JANET BYRNE-SAFIER
Power and Data Products

TIM PAWLAK
Space Sector

JIM RIEDEL
Defense Sector

RON BENCKOWSKI
Engineering

PAUL DEASY
Business Process Management

JERRY IRVING
Human Resources

MICHAEL SCHAFF
Finance
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Space and Defense Locations

U.S. LOCATIONS
- Huntsville, AL
- Gilbert, AZ
- Chatsworth, CA
- Mountain View, CA
- Santa Barbara, CA
- Golden, CO
- Melbourne, FL
- Orlando, FL
- Northbrook, IL
- Albuquerque, NM
- East Aurora, NY (HQ)
- Niagara Falls, NY
- Orrville, OH
- Johnson City, TN
- Salt Lake City, UT
- Blacksburg, VA
- Galax, VA

EUROPE LOCATIONS
- Böblingen, Germany
- Cork, Ireland
- Reading, UK

AUSTRALIA LOCATION
- Melbourne, Australia
Space and Defense Revenue

FY 2019 Sales
$581M

- Defense: 46%
- Space: 37%
- Power and Data: 17%

As of 11/02/2018
Satellite Controls

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- Mechanisms
- Avionics
- Vibration Control
- Propulsion
Spacecraft Controls

- Chemical and Electric Propulsion
  - Chemical Rocket Engines
  - Valves, Regulators and Flow Controllers
- Avionics
  - Command and Data Handling
  - Power Management
  - Motor Controllers
  - GPS Receivers
- Positioning Mechanisms
  - Rotary and Linear Actuators
  - Gimbals for Antenna and EP Thrusters
  - Solar Array Drive Assemblies
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Launchers

- Actuation
- Avionics
- Vibration Control
- Propulsion
- Power
Launchers

- Structures and Payload Accommodation
- Avionics, Power and GNC
- Actuation Systems
- Propulsion
- Environmental Control
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Defense – Air

- Precision Missile Steering and Seeker Motors
- Divert and Attitude Control
- Gun Turret Control Systems
- Weapon Stores Management Systems
- Helicopter De-Ice System Slip Rings
- EO/IR Target Acquisition Components
Air Defense Systems

- Missile Steering and Seeker Controls
- Offensive and Defensive Hypersonic Solutions across Stages 1, 2, and 3
- SMS for Guns, Rockets and Precision Guided Munitions
- EO/IR and De-ice Slip Rings
Defense – Land

- Turreted Weapon Systems and Integration
- Stabilized Motion Control for Turrets, Launchers, Expeditionary Radar and Sighting Systems
- Remote Weapon Operation and Fire Control
- Conversions and Upgrades
- Turret, Radar and Gimbal Components
- Counter-UAS Solutions
RIwP (Reconfigurable Integrated-weapons Platform)
Defense – Sea

- Submarine Quiet Actuation Control
- Unmanned Undersea Vehicle (UUV) Quiet Propulsion and Actuation
- Torpedo Steering Control
- Turret Motion Control and Stabilization
- Weapon Stores Management Systems
- EO/IR, Radar and Turret System Components
Naval Defense Systems

- Propulsion and Controls for UUV
- Subsea Quiet Actuation for Nuclear Submarines
- Surface Ship Weapons and Stabilization
- Sonar
Surveillance and Sensor Integration

• System Integration for Military, and Commercial Applications
• Camera Systems and Enclosures
  − Short, Mid and Long Range
  − Thermal and Custom Solutions
• Pan and Tilt Positioners and Components
• Tripods and Poles
• Video Tracking Cards and Systems
• Counter-UAS Solutions
Security Systems

• Fully Integrated Solutions Including:
  − Cameras, Tripods, Positioners, Video Trackers and More
Power and Data
Power and Data, Motion Control Components

- Multi-Component and System Level Solutions for Electro-Optics/Infrared Sensors
- Aircraft Servos and Utility Actuators for UAVs
- Communication Networking Ethernet Switches, Media Converters, Optical Transceivers
- Motors, Resolvers, Slip Rings for Solar Array Drive Assemblies, Armored Vehicle and Remote Weapon Station Turrets
Summary

- Critical Applications When Performance Really Matters
- Worldwide Manufacturer
- Dedicated, Talented, Ambitious People Across All Disciplines
- 60+ Years of Heritage in the Aerospace and Defense Markets

Commitment to our customers, partners and employees