

Progress Rail

Perspective Technology Division

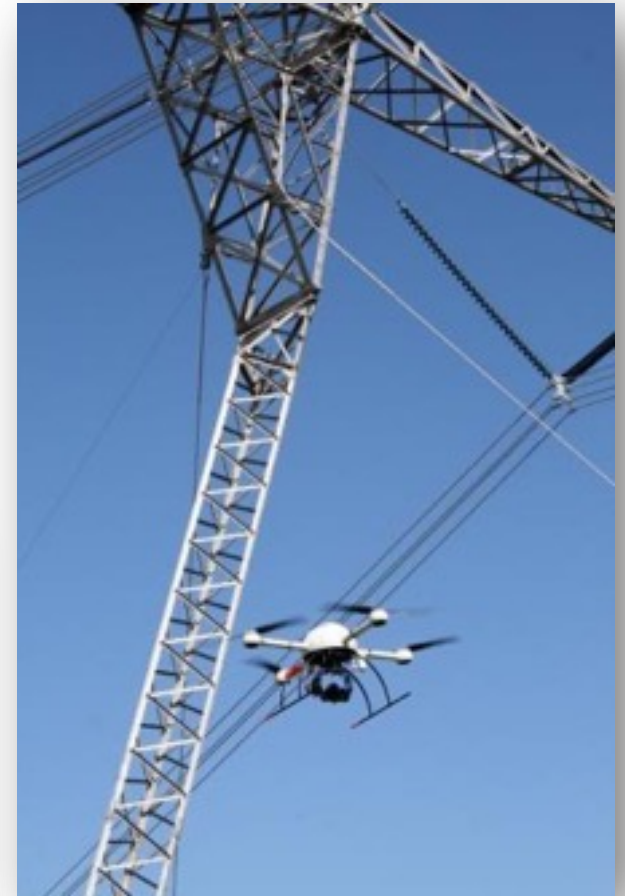
Progress Rail
A Caterpillar Company

Progress Rail

- Progress Rail Services, a Caterpillar company, is one of the largest integrated and diversified suppliers of railroad and transit system products and services worldwide.
- Product technology, reliability and durability, along with legendary aftermarket parts and service support, have been our keys to success.
- The technology and world reach of Caterpillar, combined with the service standard and historical reliability of Progress Rail, ensures our products and services make a growing impact on the world rail industry.

Our Specialty

- Progress Rail Flight Teams possess years of flight experience and have provided UAS solutions for our customers in every environment
 - Bridge and Infrastructure Data Collection
 - Structure Inspections and 3D Modeling
 - Utility Structure Inspections
 - Industrial Boiler & Confined Space Imagery
 - Maritime Flight Operations
 - Solar Field Mapping and Imagery



Focused on Operational Application

- Provides a detailed requirements analysis to successfully integrate UAS to meet our customer's needs
- Provides platform and sensor selection suited to each requirement
- We work with our customers to develop a comprehensive concept for any UAS operation
- Tailors the right UAS program for each customer; we develop efficient & safe flight programs including commercial UAS flight certification



The Progress Rail UAS Fleet

Microdrones™



- Multiple Modalities
- Long Endurance
- Manual & Autonomous Flight
- Utilized throughout the world for infrastructure inspection

Flyability™



- Perfect platform for confined space and indoor solutions
- Durable and reliable
- Progress Rail was first company in U.S. to perform Industrial Boiler Inspections with this UAS tool

Freefly™



- Capable of top and bottom mounted cameras to collect imagery from any angle
- Multiple Modalities
- Dual sensor capable

The right UAS for the right job. Unlike other UAS service providers - we don't limit ourselves to one tool

Demand and Supply Balance

Near Term Commercial Requirements (Line of Sight, Small UAS)

- Commercial sUAS are flying laptops - high level of software/hardware know how, minimal maintenance and sustainment skills
- Three labor categories in current business strategy
 - Pilots - requires high level of certification, in the future becomes a commodity
 - Visual Observer/Data Management - high level of skills focused on sensors and data management
 - Team Leader - understands and supervises all critical tasks, but also has business and operational smarts
- Data Analysis and Management is a supporting function we are looking to automate or procure commercially

Demand and Supply Balance

Long Term Requirements (Beyond Line of Sight, larger weight classes)

- More complex aircraft requiring similar approach as manned aviation
- Pilots - anticipate requirement for FAA Pilots with manned license or similar requirements
- Sensor Operators - dedicated sensor operator
- Team Leader and Mission Planner
- Maintenance Technician - Avionics, Small Engineer, Sensor, ground control and launch/recovery systems

Current Gaps and Challenges

- Conditions have been set
 - Regulatory environment just coming into effect
 - Commercial market still taking shape
 - Standardization of systems (aircraft systems, navigation and flight control, data management, deliverables) will be a function of market demands
- Still an uncertain labor market
 - Limited data on demand for services and utilization
 - Soft price points (directly related to compensation)
- Best source of labor right now is the military and the hobbyist community - most experience and diverse set of skills



Ideas to Improve

- Current - sUAS - focus training in domain specific areas
 - Most sUAS applications will be just an extension of currently used tools and techniques
- Future - Beyond Line of Sight
 - Maintain ties to larger aviation community
 - Multi-disciplinary approach
- Appropriate state regulatory requirements difficult to gauge
 - North Carolina vs. West Virginia



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