UAV INSPECTION AND DATA ANALYTICS

For Industrial Markets

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LEVERAGING CORE STRENGTHS ACROSS A DIVERSIFIED PORTFOLIO

Honeywell
THE POWER OF CONNECTED

Aerospace
Phoenix, AZ and Rolle, Switzerland
$14.8B in Sales

Home and Building Technologies
Atlanta, GA
$9.8B in Sales

Performance Materials and Technologies
Morris Plains, NJ
$10.3B in Sales

Safety and Productivity Solutions
Fort Mill, SC
$5.6B in Sales
Honeywell UAV Teams
MARKET VERTICALS

RENEWABLES

OIL + GAS

UTILITIES

AIRCRAFT INSPECTION
WHAT WE’VE DONE TO DATE

- 100+ FLARE INSPECTIONS
- 1,000+ ACRE SOLAR FIELD INSPECTIONS + DATA ANALYTICS
- GLOBAL CUSTOMERS + PARTNERS
- SUB-STATIONS AND POWER-LINES INSPECTIONS AND DATA ANALYTICS
SERVICES AND TOOLS
HONEYWELL COMMERCIAL UAV SERVICES & TOOLS

DRONE AND PILOTS
- Specific drone utilized and tailored to your industry segment
- Airspace management and coordination
- Autonomous flights
- Certified and trained pilots

WEB PORTAL
- Enhanced data visualization and reporting
- Searchable and standardized data from every inspection at your fingertips
- Pictures, annotation and mark-up capabilities
- Mission planning, data tagging, photo classification and annotating
STEPPING STONES

UAVs HELP CREATE SAFETY + SAVING

STEP 1
Mission software improves job planning efficiency

STEP 2
Drones in the air, boots on the ground reduces worker exposure to slip/fall hazards

STEP 3
Web portal software increases efficiency through data analytics and recall for planning
INSPECTIONS
UTILITIES INSPECTIONS
HONEYWELL COMMERCIAL UAV SERVICES & TOOLS FOR SUBSTATIONS, POLES & LINE

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DATA ANALYTICS FOR UTILITY

CRACK DETECTION

VEGETATION MANAGEMENT
(POINT CLOUD)

GIS DATA INTEGRATION

MORE CAPABILITIES IN FUTURE RELEASES
RENEWABLE (SOLAR) INSPECTIONS
SOLAR WORK PROCEDURE

Collect **GEOGRAPHIC DATA**

Automatically generate **FLIGHT PLANS**

Automatically **TAKE OFF**, take photos, and return

**IMAGE PROCESSING** and analysis

Inspection **REPORT**

4+ Solar Farms Inspected
INFRARED INSPECTION

- **POSITION**
- **SIZE**
- **SHAPE**
- **TEMPERATURE DIFFERENCE**
OIL & GAS (FLARE) INSPECTIONS
SOLUTION | COST

UAVs can inspect flare stacks from a safe distance that DOESN’T REQUIRE shutting off the flame/flare

NO DOWNTIME for the stack

NO EXPENSIVE CRANE RENTAL or coordination
Honeywell has onsite engineers that will control the payload during UAV flight inspections. Manufactures and fabricates flare tips. Have the domain knowledge and end-to-end supply chain to detect problems and supply solutions.
Figure 3: Crack on Main Spider

Superficial cracking was found on the steam spider closest to the North East pilot. The depth of the cracking is unknown. Further testing will need to be done.

Figure 4: South Pilot

The South Pilot was found in good shape. No immediate issues. Ultrasonic imaging shows that the pilot is working as it was designed.
FLARE DETAIL FROM INSPECTION
DATA ANALYTICS FOR INDUSTRIALS

CRACK DETECTION

VEGETATION MANAGEMENT

GIS DATA INTEGRATION

MORE CAPABILITIES IN FUTURE RELEASES (Corrosion, bolted joints etc)

Customized solutions Images collected through any means
USE-CASE / CUSTOMER DEVELOPMENT OPPORTUNITIES

VOLUMETRICS

CONFINED/ENCLOSED SPACES

EXTERIOR PLANT INSPECTIONS
WHY HONEYWELL?

HONEYWELL PROVIDES CUSTOMERS

STRENGTH OF SIZE
Fortune 75 Company

RESEARCH + DEVELOPMENT EXCELLENCE

ENGINEERING RIGOR + PROTOCOLS

TOP TALENT ACQUISITION
On-staff and on-retainer best data scientists, software engineers, and other engineering talent

CORE ENGINEERING CAPABILITIES
And subject matter expertise across four main strategic business units
BUSINESS MODEL

HONEYWELL UAV SERVICES OFFERS TAILORED CUSTOMER SOLUTIONS

CUSTOMER DIY DRIVEN, HONEYWELL SUPPORTED

- Honeywell consults customer on drones
- Honeywell provides inspection service app and web portal for analytics and storage
- Customer purchases drone and conducts own inspections

END-TO-END INSPECTION SOLUTION

- Honeywell acts as inspection vendor, in addition to providing inspection app, software, storage and analytics
QUESTIONS?