



MAINTENANCE & INSPECTION

18 August 2020

Andromeda Systems Inc. has partnered with Honeywell's Voice Solutions to provide voice-directed maintenance and inspection checklists to assist technicians "at the point of performance" to complete tasks and mitigate challenges more efficiently.

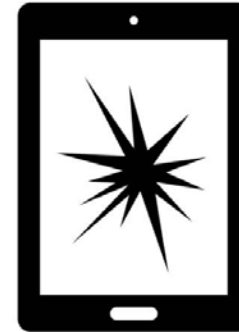
Preventative Maintenance Inspection Challenges



Documenting inspection and maintenance processes are time consuming and error prone.



Workers are continually interrupted with multi-step paperwork and data entry procedures.



Hardware that's not well-suited for dirty, hands-busy environments.



Sensors and smart solutions are expensive to adopt and complex to implement.



Honeywell's Voice Solutions for Maintenance and Inspection



Greater efficiency by removing manual data entry, enhanced compliance and streamlined data collection.



Improved accuracy by eliminating transposition errors and recording information at the time of observation.

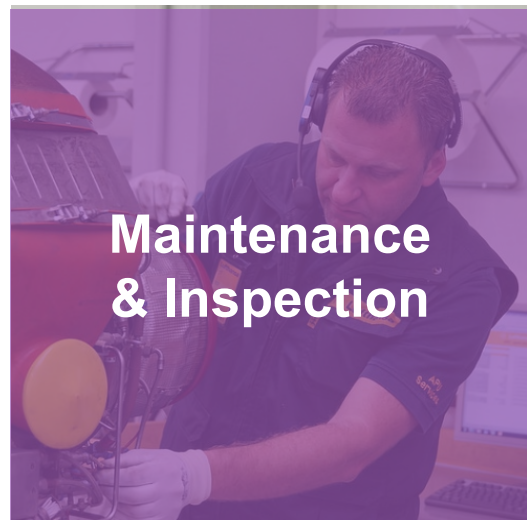


Near real-time visibility into operations information and the ability to quickly adapt to workflow changes.



Increased employee satisfaction and retention as well as reduced training time for new employees.

Honeywell Voice Solutions



Honeywell Voice Users
Almost 1,000,000



Annual Customer Savings
\$20+ Billion



Installed in
60 Countries



Languages Supported:
35



Members of Global Team
2,000+



Designed for diverse work environments; supporting multiple device and deployment options



Field Services

The Dolphin CN80G Designed to withstand the harshest environments and the toughest users, MIL-STD 810G and 2,000 1.0 m (3.3 ft) tumbles. IP65/IP67 ratings against dust/water spray and even immersion.



Mobile Facility

The SRX3 Wireless Headset enhances worker performance via the industry's most advanced speech recognition technology. Built-in HFP client support for Android applications to ensure seamless compatibility

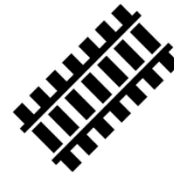
In partnership with Honeywell's Voice solution, ASI is bringing voice-enabled maintenance task performance to high value fleet operations.

Contributing to productivity and accuracy worldwide

Honeywell voice solutions for maintenance and inspection are deployed at over 85 sites with 700 active users across the globe.

Presently, there are more than twenty proof-of-concept and pilot trials currently in progress.

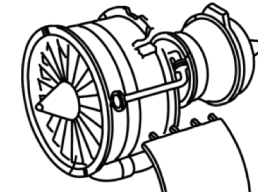
Railway



Avionics



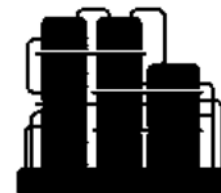
Aerospace



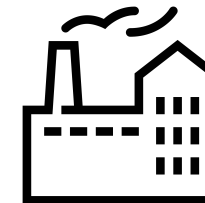
Truck Fleet



Oil and Gas



Manufacturing



Industrial



Industries currently using Honeywell Voice Solutions

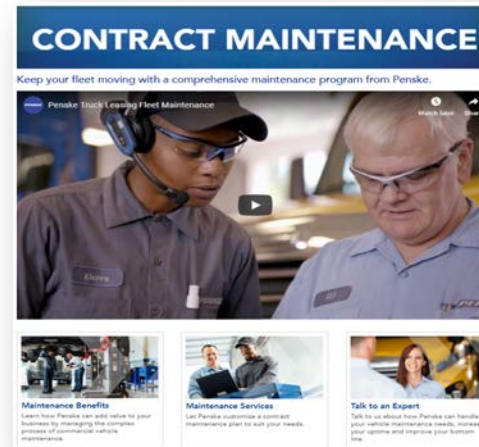
DoD Aviation MRO Inspection

Overhaul | Component MRO | Line
Maintenance | Heavy Maintenance



Truck & Fleet Inspection

Regulatory Maintenance | Preventive
Maintenance | Repairs | Aftermarket
Services



Automotive Inspection

Inspection Checks | Repairs |
Courtesy Checks | Preventive
Maintenance



Customized solutions for products and services to the electric utility, telecommunications, tree care, lights and signs, and contractor markets are in work, along with horizontal market ready solutions (trucking pre/post trip inspection and airport fuel operations).

Achieve Better Compliance and Streamlined Processes



Lufthansa Technik

Maintenance and induction of APUs at one site Live since July 2015. Multiple mechanics trained and using the system

Results: Eliminated all redundant documentation



Hill Air Force Base

Maintenance and induction of APUs at one site Live since April 2015. Multiple mechanics trained and using the system

Results: 25% reduction in inspection time

Realize the value of your data



Ensure consistent performance across sites by comparing step completion times with measured, established standards.



Eliminate shortcuts and quality issues by gaining visibility into anomalies and other QC related issues.



Identify assets that require the most maintenance activity (and resources) from your workforce.



Summarize step results to identify high risk areas in need of improvement to eliminate costly points of failure.



Results that our customers have experienced using voice solutions



Increased Productivity
10-35%



Error Reduction
25-50%



Improved Safety
5-20%



Attrition Reduction
15-30%



Decreased Training Time
up to 50%

Honeywell
 THE POWER OF CONNECTED

ASI Andromeda
 SYSTEMS
 INCORPORATED

ASI OptiAM[®] and Honeywell Voice



Leveraging ASI's OptiAM back end software fleet managers will be able to realize the benefits of hands-free maintenance and inspection and efficiently capture data for continuous performance improvement.



Simple, Intuitive and customizable user interfaces and processes Reduces implementation and training costs.



Seamless System Integration with already existing applications and databases

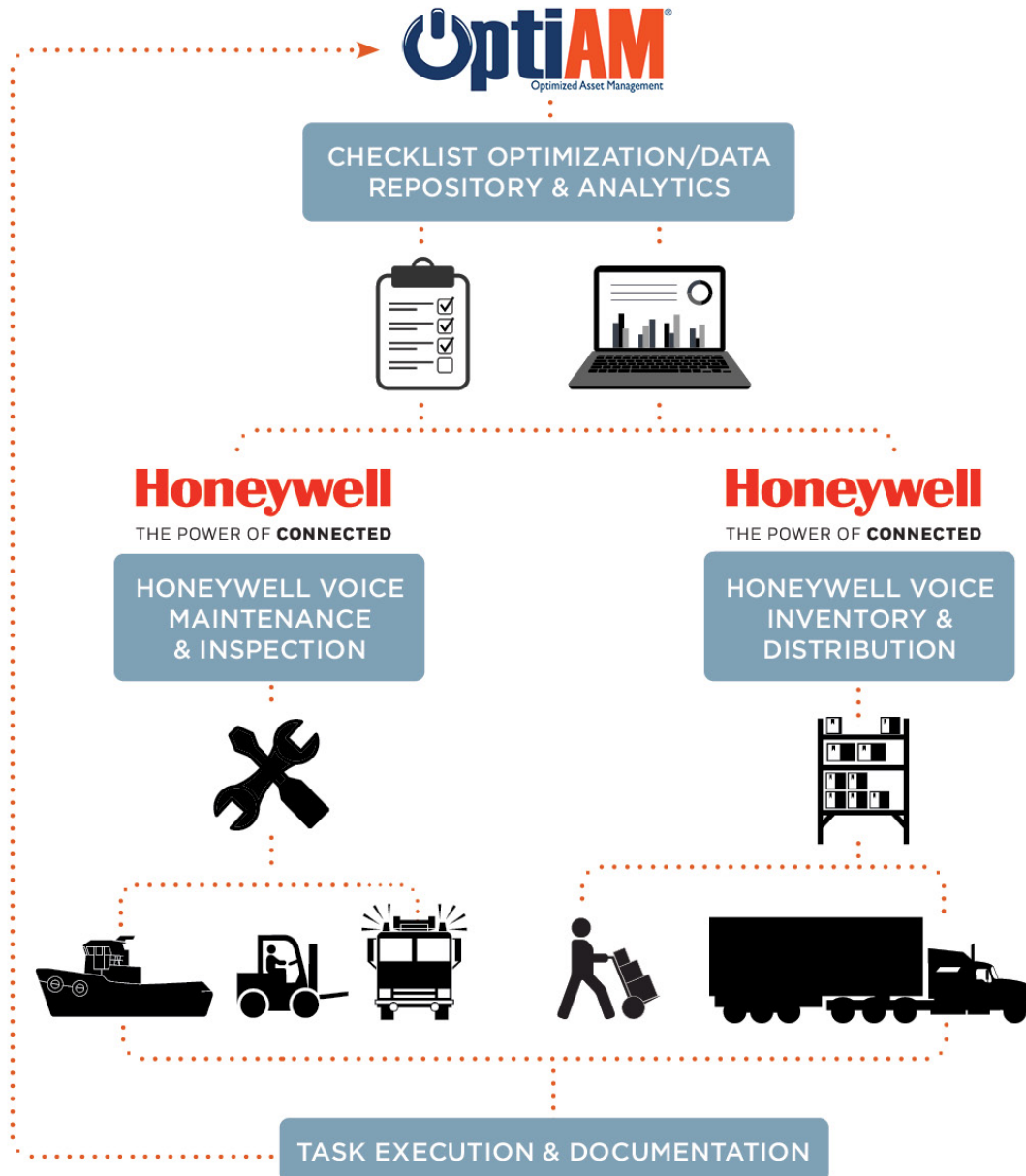


Latest Web-based technology including mobile, Radio Frequency Identification (RFID) and Predictive Maintenance ensures maximum reliability and security



Supports Compliance with industry standards such as ISO-55000, LEED and SAE JA1011

Honeywell Voice and ASI's OptiAM®



How Honeywell Voice Maintenance & Inspection Works

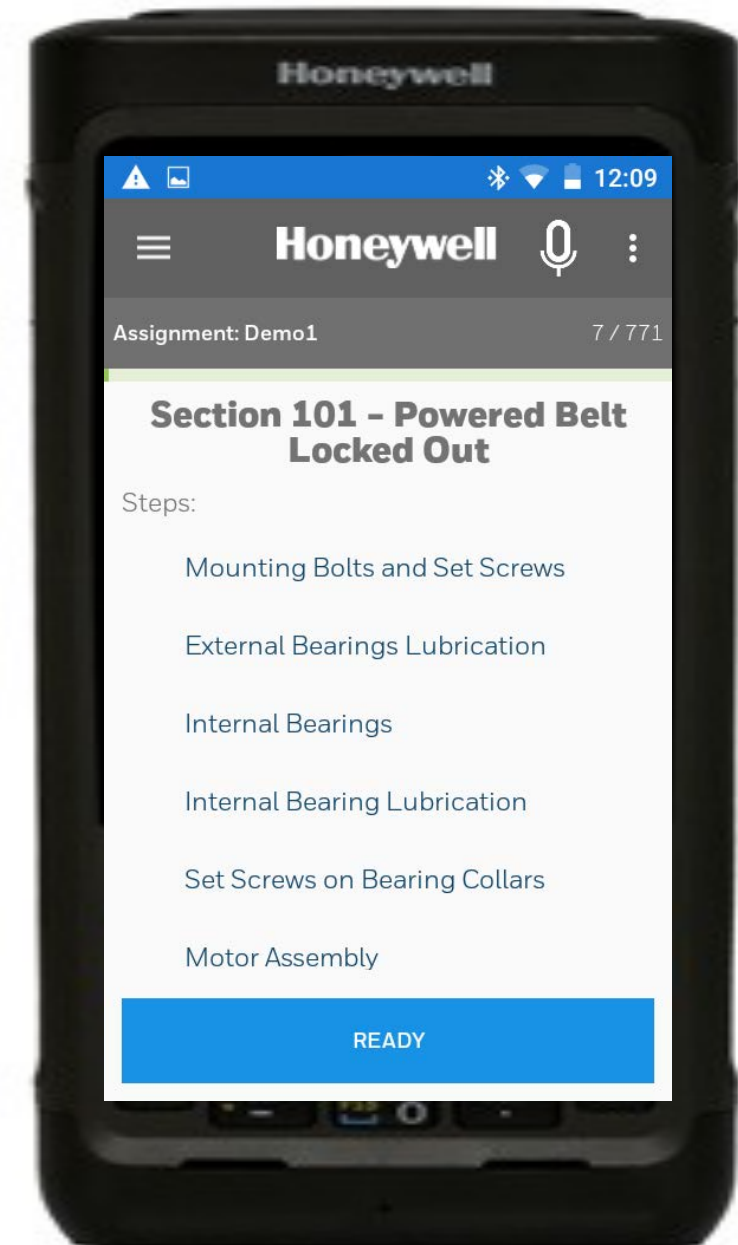
The Voice M&I solution can seamlessly integrate with information from your host data system, such as an ERP or Enterprise Asset Management (EAM) software.

1. Voice M&I directs your technician through the checklists using voice commands and technician responses.
2. The technician interacts with a display to review images or descriptions.
3. The spoken information is converted into text and communicated back to the host data system with real-time updates for your solution.

Activating Voice – Noise Sample

Vocollect works well in high noise environments by isolating the voice of the operator against the ambient environment

- Press the “Microphone” icon to start
- *Noise Sample Audio*
- Voice is now active
- After the “Section” prompt, say “ready” to continue.

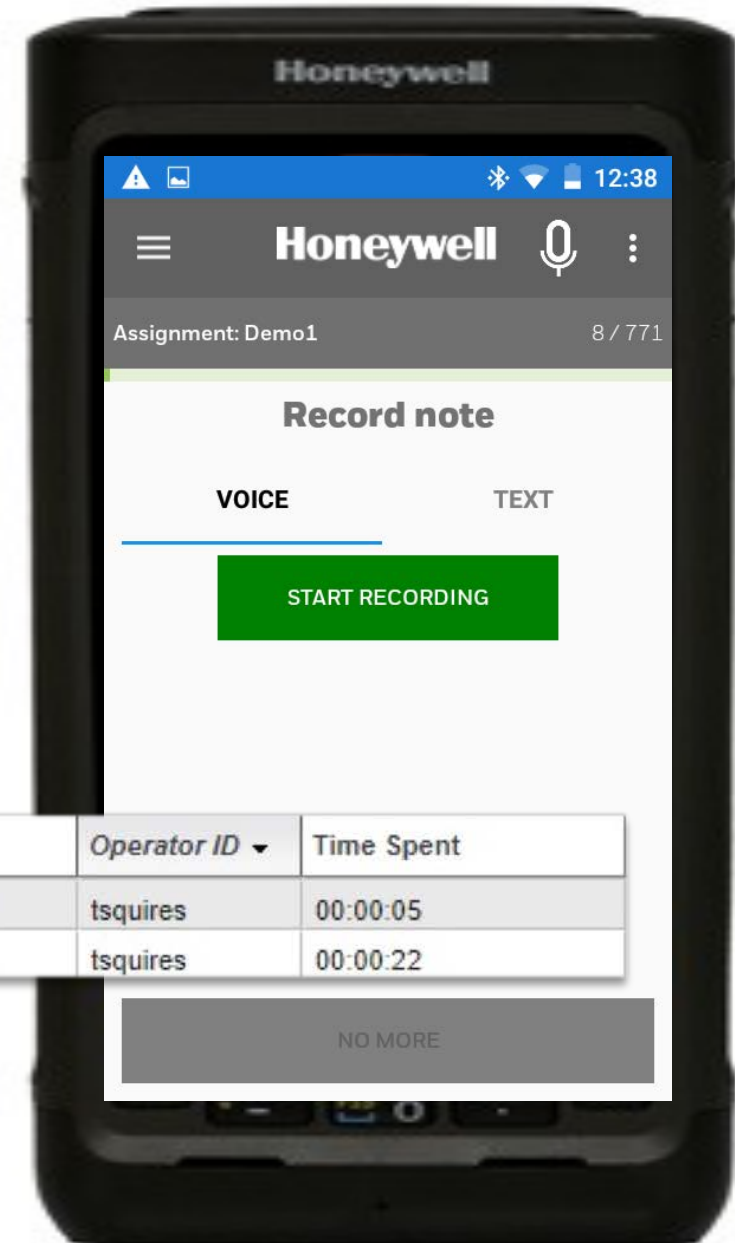


Voice Directed Workflow



Step Description	Results	Status	Operator ID ▾	Time Spent
External Mounting Bolts and Set Screws	correction	Complete	tsquires	00:00:05
External Mounting Bolts and Set Screws_note	tighten set screws	Complete	tsquires	00:00:22

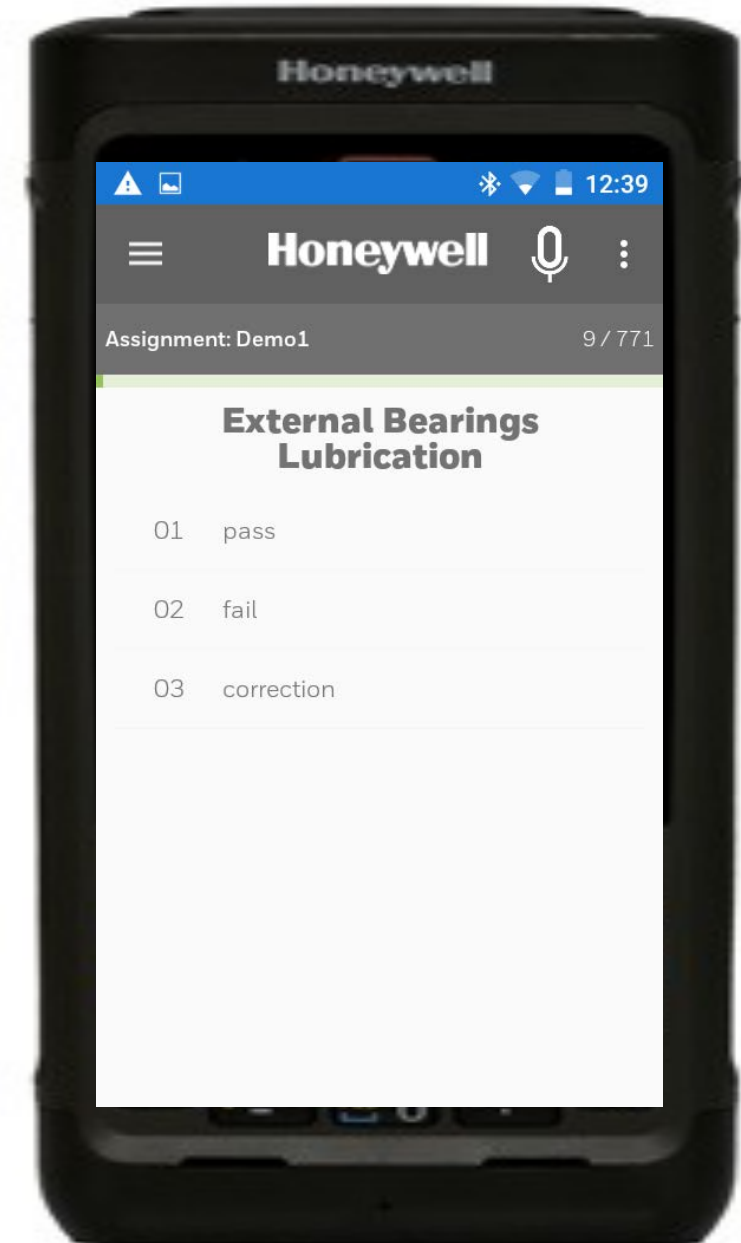
- Results are posted to Vocollect VoiceCheck near real time



Continuing - Voice Directed Workflow

Vocollect can configure steps as mandatory and require a result or set to allow operators to record steps as “Not Applicable”

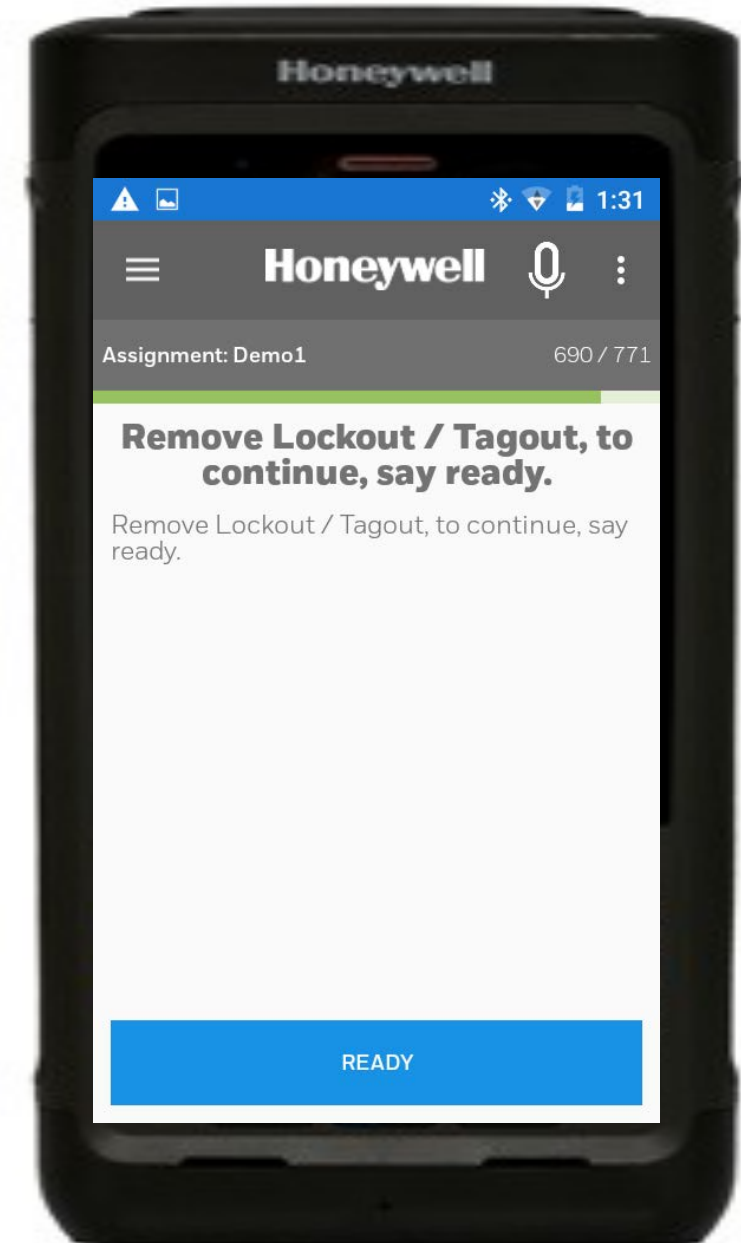
- Vocollect presents the next step
- Operator states “Does Not Apply”
- Vocollect notifies the operator that the step requires a result
- Operator must submit a valid result



Remove Lockout Tagout

Vocollect alerts the operator that all steps requiring the area to be locked out have been completed

- Vocollect audibly alerts the operator, and requires a “ready” response to move to the next step.



Assignment Conclusion and Review

Vocollect prompts the operator to conduct any concluding steps including:

- Pictures
- Parts Used
- Parts to Order
- Review Voice Notes for Accuracy
- Assignment Complete



VoiceCheck Results

Step Description	Results	Status	Operator ID ▾	Start Time	Last Update	Time Spent
Areas	critical path	Complete	tsquires	2/14/19 1:49:06 PM U...	2/14/19 1:51:21 PM U...	00:02:15
Critical Path Sections	101	Complete	tsquires	2/14/19 1:51:22 PM U...	2/14/19 1:51:47 PM U...	00:00:24
Lockout / Tagout		Complete	tsquires	2/14/19 1:51:47 PM U...	2/14/19 1:51:52 PM U...	00:00:04
External Mounting Bolts and Set Screws	correction	Complete	tsquires	2/14/19 1:52:36 PM U...	2/14/19 1:52:42 PM U...	00:00:05
External Mounting Bolts and Set Screws_note	tighten set screws	Complete	tsquires	2/14/19 1:52:43 PM U...	2/14/19 1:53:11 PM U...	00:00:22
External Bearings Lubrication	pass	Complete	tsquires	2/14/19 1:53:11 PM U...	2/14/19 1:53:23 PM U...	00:00:11
Internal Bearings	pass	Complete	tsquires	2/14/19 1:53:25 PM U...	2/14/19 1:53:29 PM U...	00:00:03
Internal Bearing - Lubrication	pass	Complete	tsquires	2/14/19 1:53:30 PM U...	2/14/19 1:53:32 PM U...	00:00:01
Set Screws on Bearing Collars	pass	Complete	tsquires	2/14/19 1:53:33 PM U...	2/14/19 1:53:37 PM U...	00:00:03
Motor Assembly	pass	Complete	tsquires	2/14/19 1:53:38 PM U...	2/14/19 1:54:17 PM U...	00:00:38
Mounting Bolts and Motor Lead Wires	pass	Complete	tsquires	2/14/19 1:54:18 PM U...	2/14/19 1:54:20 PM U...	00:00:02
Reducer	pass	Complete	tsquires	2/14/19 1:54:22 PM U...	2/14/19 1:54:23 PM U...	00:00:01
Reducer Oil Leakage	pass	Complete	tsquires	2/14/19 1:54:25 PM U...	2/14/19 1:54:26 PM U...	00:00:01
Lovejoy Coupling and Set Screw	pass	Complete	tsquires	2/14/19 1:54:28 PM U...	2/14/19 1:54:29 PM U...	00:00:01
Power Unit Brake	pass	Complete	tsquires	2/14/19 1:54:30 PM U...	2/14/19 1:54:32 PM U...	00:00:01
PTO Sprocket Alignment and Wear	pass	Complete	tsquires	2/14/19 1:54:33 PM U...	2/14/19 1:54:35 PM U...	00:00:01
PTO Chain Tension and Lubrication	pass	Complete	tsquires	2/14/19 1:54:37 PM U...	2/14/19 1:54:39 PM U...	00:00:01
Chain Sprocket Lubrication	pass	Complete	tsquires	2/14/19 1:54:40 PM U...	2/14/19 1:54:42 PM U...	00:00:01
Power Unit Chains	pass	Complete	tsquires	2/14/19 1:54:43 PM U...	2/14/19 1:54:44 PM U...	00:00:01
Clean Power Unit Chains		Complete	tsquires	2/14/19 1:54:46 PM U...	2/14/19 1:54:47 PM U...	00:00:01
Drive Sprocket Alignment	pass	Complete	tsquires	2/14/19 1:54:48 PM U...	2/14/19 1:54:50 PM U...	00:00:01
Drive Sprocket Wear	pass	Complete	tsquires	2/14/19 1:54:51 PM U...	2/14/19 1:54:53 PM U...	00:00:01

Summary

The Andromeda Systems Inc. partnership with Honeywell's **Voice Solutions**, voice-directed technology for maintenance and inspection checklists will provide:

- Technicians complete tasks & mitigate challenges more efficiently
- Ensure consistent performance across sites
- Eliminate shortcuts and quality issues
- Can be integrated with existing maintenance management system
- Identifies high risk areas for improvement to eliminate costly points of failure.

Leveraging ASI's **OptiAM** as the backend system for hands-free maintenance and inspection will provide:

- Efficiently capture data for continuous performance improvement.
- Web-based technology including mobile, RFID, and Predictive Maintenance ensures maximum reliability & security
- Simple, Intuitive, and customizable user interfaces
- Reduces implementation and training costs
- Seamless System Integration with already existing applications & databases

