

## CASE STUDY

# AES Streamlines Asset Management with Integrated SAP and Measure Ground Control Solution

Through Measure's custom solutions, including an integration with SAP Enterprise Asset Management (EAM), AES has shortened the turnaround time for wind turbine inspection analysis from 2 to 3 weeks to 2 to 3 days. With automated notifications sent to SAP, AES can address major damage faster, improving overall asset performance.

## Background

The AES Corporation is a Fortune 500 global power company that provides affordable, sustainable energy to 14 countries through a diverse portfolio of distribution businesses as well as thermal and renewable generation - such as wind - facilities.

In 2017, AES started a drone program with a goal of leveraging drone technology at scale for the \$33 billion in total energy assets AES manages worldwide. AES formed a partnership with Measure, a drone services and software company, to help them develop and scale this program.

Measure partners with AES by providing aerial inspections, including data processing for solar, wind, coal and gas, and transmission and distribution assets; as well as pilot training, advisory services, and drone program management software, Measure Ground Control™.

AES uses Ground Control to manage people and equipment, schedule and plan flights, fly and collect data, track and report activity, and analyze data using integrated data platforms.



During a pilot training at AES's wind farm in Palm Springs last year, AES engineers surfaced the idea of using drone inspection data to create work orders by integrating with their Enterprise Asset Management software, SAP.

Measure's development team worked closely with asset managers at AES to develop an integration between Ground

Control and SAP that allows AES to manage defects and repairs in a more efficient and seamless way.

# Use Case - Wind Turbine Inspection

## How it Worked - Before

AES used Ground Control to schedule wind turbine inspections. Once the data was collected with drones, it was sent to Measure by uploading to a secure shared drive or by shipping an SD card. Measure's data team would sort, process, and analyze the data. After one to two weeks, AES would get the results back via a web portal, at which point, a planner would sort through the data and manually enter work order notifications into SAP. The process took two to three weeks between data collection and work order.

See Figure 1 on the next page (pg. 3), which illustrates this workflow.

## Pain Points

There were two primary pain points for AES in the process: the lack of control over the data workflow and the manual process of entering notifications from the data analysis tool into SAP.

### Pain Point 1: Data Workflow

The first bottleneck in the process was the cumbersome data workflow, which required AES to send out the data and it to be sorted and annotated by Measure's data team and then returned to AES via a web portal. This long and complicated process could result in a delay in the onset of repairs.

### The Solution: Integrated Data Sorting and Analysis Tools

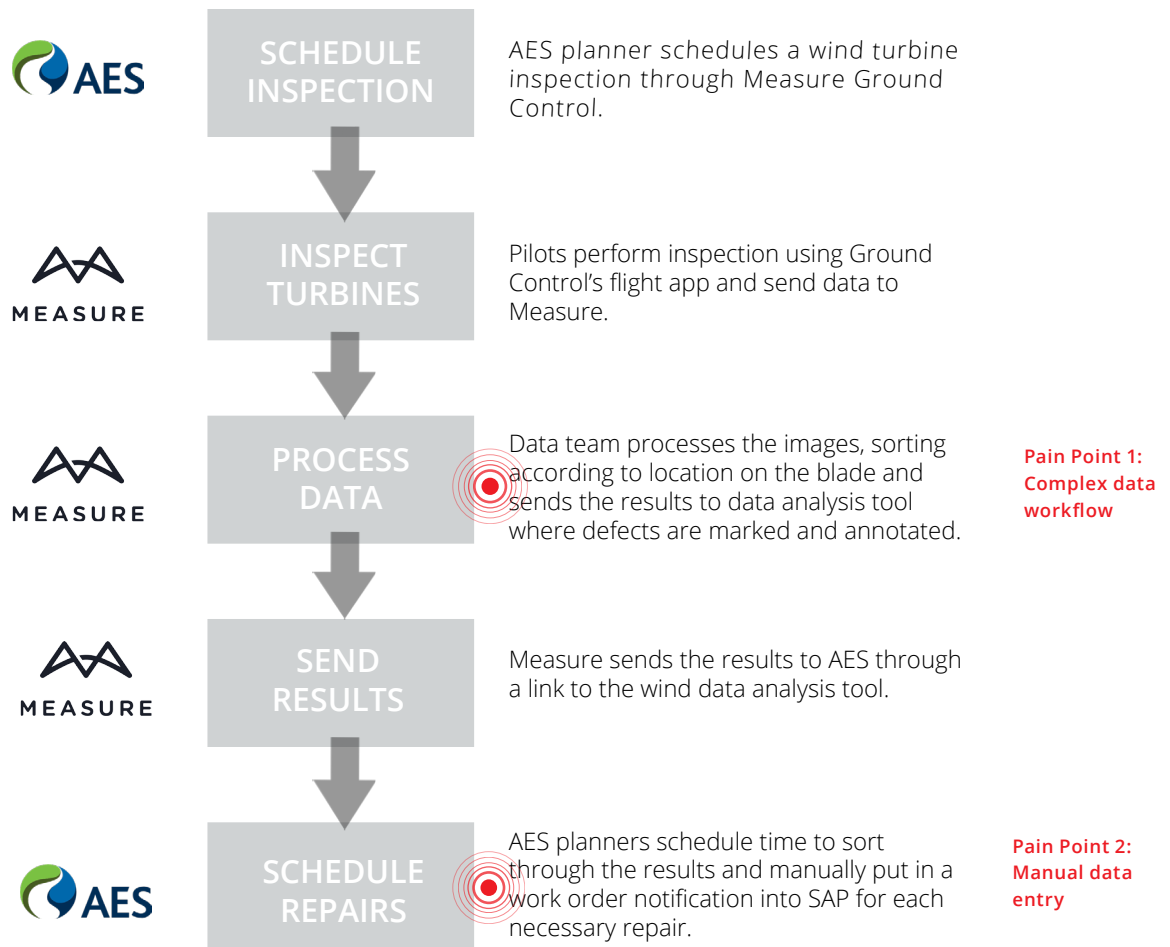
Measure's solution to this pain point was two-fold:

- 1) develop an efficient way for customers to sort data from wind turbine inspections. and
- 2) integrate the data analysis tool into Ground Control for seamless access, giving AES more control over the process.

Using the Ground Control flight app, pilots collect data in a systematic way, so that the hundreds or even thousands of images they collect are ready to be sorted with no manual intervention. For best results, pilots use a feature in the Ground Control flight app called "Blade Inspect" when performing a turbine inspection. Blade Inspect helps improve ease of capture and data quality through optimal camera, aircraft, and controller settings.

**FIGURE 1**

# Wind Turbine Inspection Workflow: Before



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Analysts upload their raw data files into Ground Control's web portal and select Measure's patent pending wind sort algorithm. The wind sort feature automatically organizes images according to each turbine and blade with a series of spatial and textual methods.

When Ground Control is finished sorting the data, it sends the results to the integrated data analysis tool and sends a notification to the manager that the results are ready for analysis.

By allowing AES to upload the data and access it directly within Ground Control, Measure gave AES more control over the process and the flexibility to work with their own timeline. AES analysts and asset managers can access their full data set, locate each inspected turbine on a map, zoom-in to view high-resolution images, and classify and annotate those images.

## **Pain Point 2: Manual Entry into SAP**

The second pain point was the taxing manual process of entering work order requests into SAP after reviewing defects. When a defect was determined worthy of a repair, the analyst would type that information into the notification form in SAP.

## **The Solution: Automatic Notifications sent to SAP + Shopping Cart Checkout**

To solve for this pain point, Measure developed an integration between Ground Control and SAP that automatically creates a notification in SAP whenever specified defect criteria have been met.

For example, AES requests that an automatic notification be created whenever a Level 4 or 5 defect is detected. As soon as the analyst marks a defect level 4 or 5 in Ground Control, a notification is automatically created in SAP and includes necessary information for the work order, such as asset name, location, blade number, and a quick access link to view the asset defect found in the imagery.

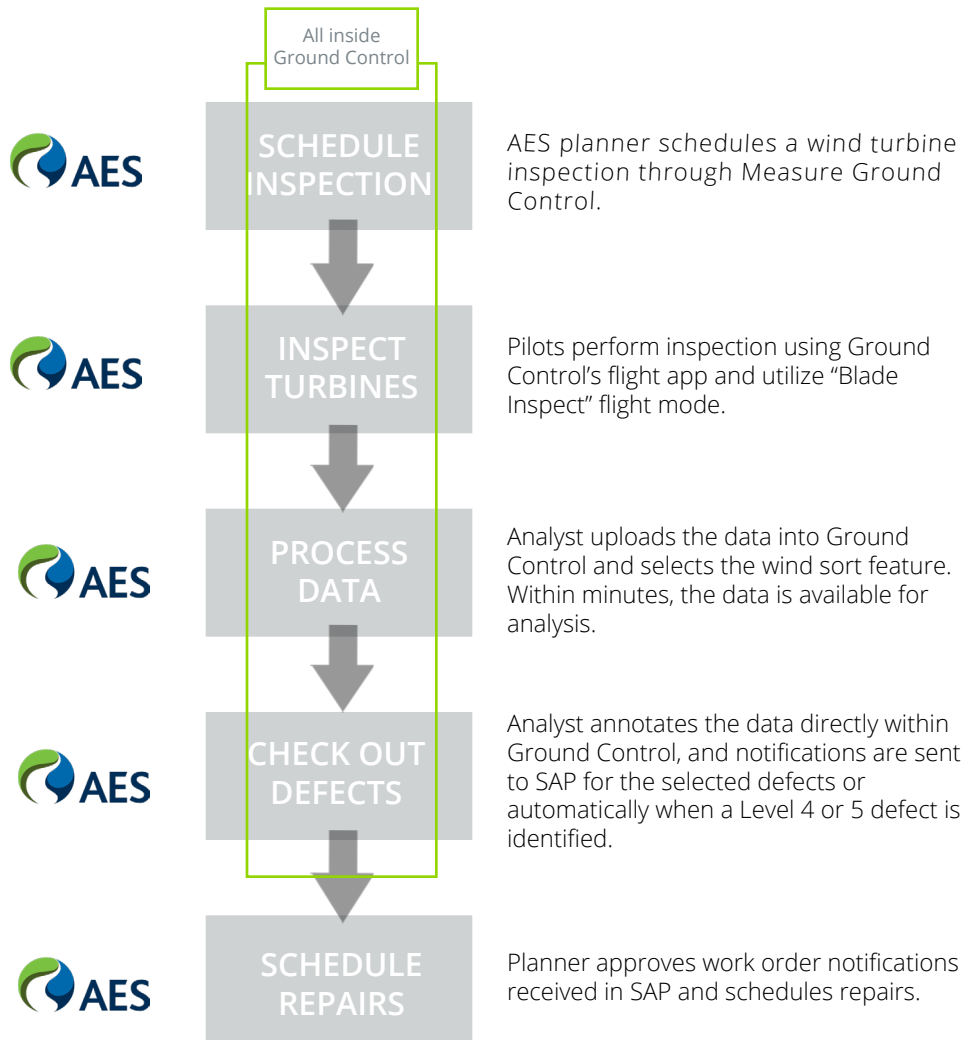
In addition to the automated notifications for Level 4 and 5 defects, analysts can select additional defects they'd like to push to SAP by adding them to a "shopping cart" and sending them to SAP via a "checkout" process. Once they submit the order, notifications are created in SAP and can be viewed on the Work Orders listing page in Ground Control.

See Figures 2 and 3, which illustrate the new workflow and showcase the process in Ground Control.

**With these two solutions, the manual process of reviewing reports and entering work order notifications into SAP has been completely eliminated.**

**FIGURE 2**

# Wind Turbine Inspection Workflow: After

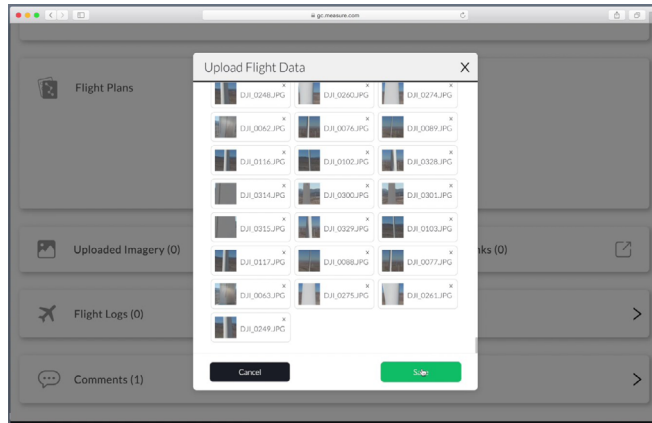


*Added benefit: SAP sends notification and work order updates back to Ground Control for use in subsequent inspection validation.*

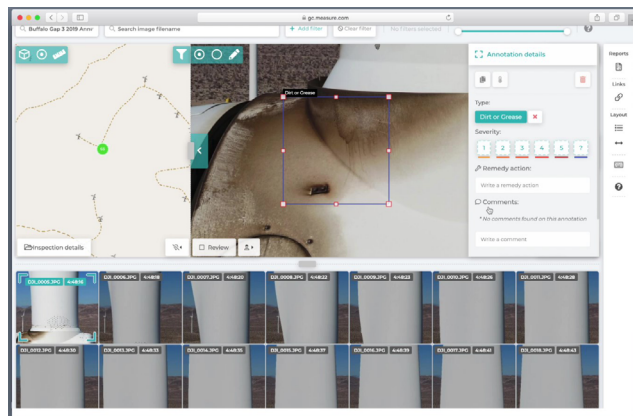
FIGURE 3

# Measure Ground Control Integration

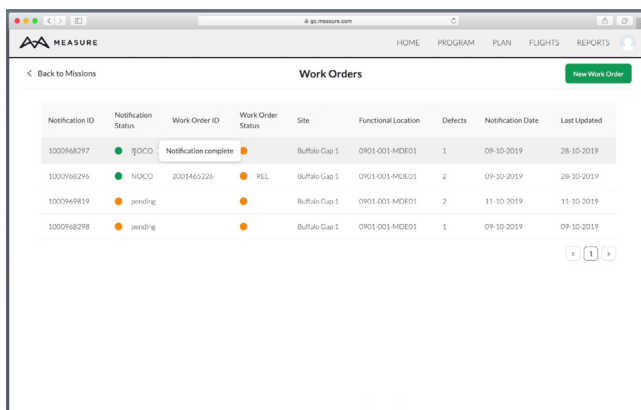
View video of the entire process [here](#).



Sort Data



Annotate Defects



Notification ID	Notification Status	Work Order ID	Work Order Status	Site	Functional Location	Defects	Notification Date	Last Updated
1000968297	Notification complete			Buffalo Gap 1	0901-001-MDE01	1	09-10-2019	28-10-2019
1000968296	NOCO	2021465226	REL	Buffalo Gap 1	0901-001-MDE01	2	09-10-2019	28-10-2019
1000969819	pending			Buffalo Gap 1	0901-001-MDE01	2	11-10-2019	11-10-2019
1000968298	pending			Buffalo Gap 1	0901-001-MDE01	1	09-10-2019	09-10-2019

Notify SAP

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## Benefits

The benefits of this integration are three-fold:

- ✓ AES now has control over the entire wind turbine inspection process from scheduling the inspection to scheduling repairs.
- ✓ Integrating Ground Control's data collection, sorting, and analysis tools with SAP has shortened the turn around time for wind inspection results from an average of two to three weeks to two to three days.
- ✓ With automated notifications to SAP, AES can address major damage faster, improving overall asset performance.

"We have someone who's looking at notifications all day, for assets across the globe. The sooner we can get defect information into his hands, the better we are equipped to limit the loss associated with that defect," says Andrew Brody, Performance Engineer at AES's 158-turbine wind farm in Palm Springs.

**"With this integration, we have not only streamlined the operation and cut down on the time from inspection to repair, but we've gained control over the entire process."**

"What we've built is a scalable hub where we can sort and process data for complex industrial assets and are able to push and pull imagery, annotations, and assets in any direction," explains Grant Furick, VP of Digital Products at Measure. "This Enterprise Asset Management (EAM) integration is a huge milestone for Measure Ground Control as it allows us to help our users manage defects in a seamless way and identify changes and trends on the same assets over time."

Ground Control Enterprise offers custom integrations with SSO, GIS, and ERP systems. To learn more about how Ground Control can improve your operation, [get in touch](#).