

SkyeBase

Inspection Case Study



PHASE**ONE**

In addition to significantly reducing inspection time and cost, UAV based inspection immensely reduces the risks as no inspection team personnel needs to be working at height in dangerous conditions.

Using drone technology for Flare Stack Inspection: Getting the smallest details from a safe distance

SkyeBase, an inspection service provider from Belgium has a wealth of experience helping asset owners and maintenance managers to deploy and perform 100% uptime inspections with drones and sensors to manage critical assets. SkyeBase is operating in line with VCA Petrochemical, ISO9001:2015 and EU drone legislations.



Faster, safer and more efficient inspections

The flare is a vital part of the safety system in an oil and gas production facility. Hence it is of utmost importance that flares are working faultlessly. To ensure optimal working conditions, flares are regularly assessed and inspected for defect analysis. These reports can then be archived for comparison with future inspections for an even more accurate survey and reliable monitoring of any potential issues.

UAV inspections offer unprecedented visual access to hard-to-reach areas during flare stack inspections whilst also dramatically reducing costs as the processing plant and flare system can remain fully operational, thereby helping to prevent major events, such as scheduled shutdowns or unusual flaring events.

The flare stack inspections deployed by SkyeBase uses UAV technologies capable of capturing a full 360-degree perspective of the asset, while also allowing to focus on specific areas such as the flare tip, radiation shield, pilot ignition systems, pipework, gantries and handrails, while also giving a general overview of the flare stack condition.

In addition to significantly reducing inspection time and cost, UAV based inspection immensely reduces the risks as no inspection team personnel needs to be working at height in dangerous conditions.

Summarising the benefits:



Significantly saving time

No need for a production shutdown.



Reduce risk

Using UAVs reduces risks for high up-related working accidents by avoiding specialized technicians to directly inspect flares.



Greatest detail and more accuracy

The whole flare is photographed in high definition. Recording the entire flare while enabling a clear view of elements and anomalies allows for a more detailed analysis.



Cut costs

UAV-based inspection significantly reduces inspection time and thus time spend on-site.

Flare stack inspection: the project details

In December 2021, SkyeBase was tasked by a multinational oil and gas company to conduct an inspection for the structural evaluation, condition assessment and technical analysis of live flare stacks located in the port of Antwerp.

By taking overview photos from a distance, they can be analyzed in the office afterwards. This greatly reduces downtime, site time and increase quality and efficiency. Due to the high quality of the images, a safer distance can be taken from certain critical assets. This increases safety and makes risk analysis for flights easier. Below is an example of a flare inspection in the port of Antwerp (December 2021).

It is also possible to inspect damages on millimeter level. Assets can be viewed more closely and in greater detail. This allows faster identification of areas of concern for routine maintenance and reduces the cost of downtime.

By taking the same picture at the same location and the same angle every time, assets can be monitored very efficiently, even in difficult external conditions. Hence re-accessed and continuously monitored regarding defect analysis. These reports can then be archived for comparison with future inspections for an even more accurate survey and reliable monitoring of any potential issues.





Mapping and 3D modeling

A high-resolution camera has more pixels and a larger sensor. This makes it possible to fly higher and take fewer pictures for the same accuracy. In this way, the flight time is reduced, and our site presence is shorter. When flying in a similar way the quality is significantly higher.

Below an overview of GSD at the same altitude. (Ground Sampling Distance, the lower the number, the higher the accuracy)

| Height | DJI zenmuse P1 (43Mp, 35mm) | PhaseOne P3 (100Mpx, 35mm) | PhaseOne P3 (100Mpx, 150mm) |
|--------|--------------------------------|-------------------------------|--------------------------------|
| 40m | 0.50 cm/px | 0.43 cm/px | 0.10 cm/px |
| 80m | 1.00 cm/px | 0.86 cm/px | 0.20 cm/px |
| 100m | 1.26 cm/px | 1.08 cm/px | 0.25 cm/px |

High resolution images can also be used to create 3D models. With a shorter data capture time, more points can be created for the point cloud. The general benefits offered by 3D models include

- Localization of damage,
- Volume measurement,
- Generation of plans,

making assessments much easier.

Advantages of Phase One's P3 Payload solution

The P3 with its 100MP camera has the advantage of doing inspections and mappings on site much faster and from a higher and safer distance. This significantly reduces potential downtime and risks associated with manual inspection. Due to the high resolution, images contain much more detail, and point clouds have a much higher accuracy.

P3 Payload Recommended Phase One solution



Learn more at
geospatial.phaseone.com/drone-payload

About Phase One

a pioneer of digital imaging sensors and airborne systems for the Geo market and the largest provider of aerial cameras based on a long tradition for outstanding image quality and reliable sensors. Founded in 1993, Phase One is a pioneer of digital photography. Phase One has developed core imaging technologies and a range of digital cameras and imaging modules, providing the world's highest image quality in terms of resolution, dynamic range, color fidelity and geometric accuracy. As such, Phase One has grown to become the leading provider of high-end imaging technology across many demanding business segments, such as aerial mapping, industrial inspection and cultural heritage digitization, as well as serving the world's most demanding photographers. For more Information, visit www.phaseone.com

About SkyeBase

SkyeBase is the total inspection service provider & inspection platform developer that helps asset owners and maintenance managers to deploy and perform 100% uptime inspections with drones and sensors to manage their critical assets. This with the goal of reducing costs and working more efficiently, ecologically and safely with maximum use of smart software supported by AI to obtain actionable data analysis. SkyeBase operates according to VCA Petrochemical, ISO9001:2015 and EU drone legislation. (www.skyebase.be)

For more info, contact:

Phase One

Carsten Wiese: +49 173 6917419 | cwi@phaseone.com

SkyeBase

Jean-Louis Weemaes: +32 (0)478-930.994 | jean-louis.weemaes@skyebase.be

