

# Visual Inspection of Pipe Supports using the PTZx40 Camera

## Background

Corrosion at pipe supports is one of the more common causes of external piping corrosion and failures. A pipe support is a design element that transfers the load from the pipe to supporting structures (e.g. racks, columns). These are common installations where there are large networks of piping (e.g. petrochemical plants, offshore O&G facilities, etc).

The main reason for external corrosion of piping is water/moisture trapping. Being exposed to the elements, piping is especially vulnerable at pipe supports as they tend to trap water/moisture due to its geometry. To a lesser degree, pipe supports and piping, due to metallurgical differences, at times develop bi-metallic contacts which provides small potential differences that drives and/or accelerates corrosion (Galvanic Corrosion).

The geometry of typical pipe supports makes it difficult to be completely painted over for corrosion prevention and maintenance. Even if achievable, paints tend to degrade over extended periods of exposure to water as they are designed for atmospheric exposure not immersion.

The industry has long been aware of this problem and understood the importance of a system of regular visual inspections of piping at pipe supports to anticipate and prevent corrosion failure



## Inspection Challenge

In the plant environment, piping networks are often complex and run over multiple tiers on pipe racks. These racks range from heights of 5 meters to 15 meters. Piping networks are typically dense with different pipe sizes and myriad of bends. Some piping carries heated products which are dangerous to touch. All these limits accessibility, impeding the ability to gain access to pipe supports for inspections.

The geometry of typical pipe supports also does not lend itself for easy visual inspection. Corrosion usually develops from contact surfaces where water/moisture tends to be trapped. Hence, inspection images will need to be taken from multiple angles.

Currently, visual inspection for pipe support requires inspectors to be physically at the pipe support. Inspection images of pipe support are taken with a consumer point-and-shoot camera. Access to the

pipe support is via rope access or the erection of scaffoldings. This is expensive, time-consuming and requires working at elevated heights which exposes inspectors to fall risk.



### Solution

The PTZx40 Camera from Sensor Networks, Inc. (SNI) features a powerful 40 times optical zoom lens. The pan-and-tilt function coupled with the powerful zoom allows users to remotely control the direction of view and zoom in on details. It was originally designed for inspection of large confined spaces (e.g. storage tanks) but has proven itself to be versatile in numerous other applications.

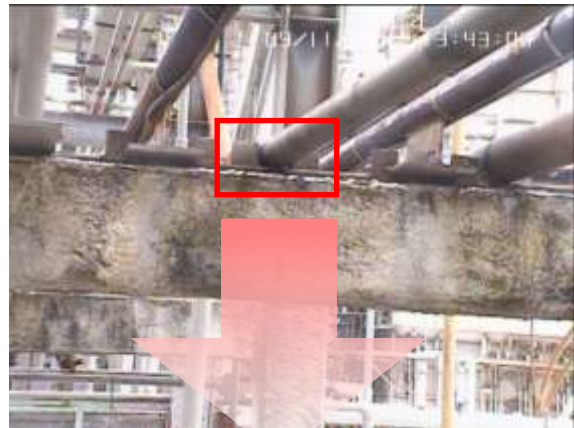
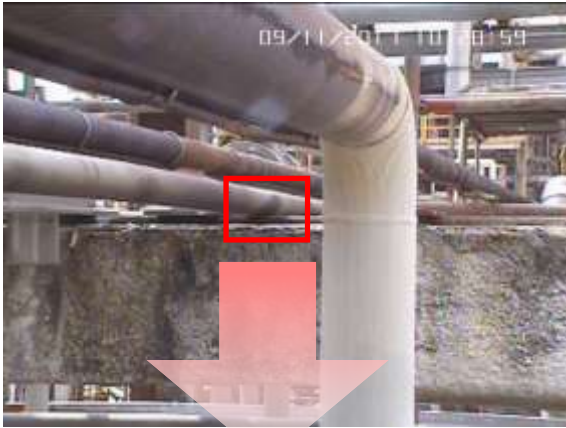
For inspection of pipe supports, the PTZx40 is mounted on a Telescopic Pole or Tower that can be extended and raised up to 9 meters in height. The PTZx40 in this configuration allows for “stand-off” inspections of pipe supports at various heights. The pan, tilt and zoom function allows for inspection of multiple pipe supports in one single vertical deployment. The portable Telescopic Tower can be easily deployed in multiple locations. This increases the efficiency and enables the easy collection of inspection images of pipe supports from multiple angles.



PTZx40 on Telescopic Tower (before extension)



PTZx40 on Telescopic Tower (extended 9m)



*Inspection images: Top shows overview images to give viewer an idea of where the pipe support is located. Bottom shows close-up “zoomed-in” images of the pipe support using powerful x40 zoom.*

### **Result | Further Development**

Deployment of the PTZx40 on Telescopic Tower enables the inspection of pipe supports at heights of up to 9 meters. This eliminates a significant portion of pipe support inspection via rope access or scaffoldings.

Future development of the PTZx with high definition (HD) video sensors in smaller and lighter camera-body packages will allow for deployment at greater elevations. This will enable the inspection of an even larger portion of pipe supports using the PTZx. Also, in development are more deployment aids to allow for use of the PTZx where flat ground is not available for safe deployment of the Telescopic Tower.

**Contact Info:** Vincent Lim, Viscoy Pte Ltd | Singapore, [Contact.us@viscoy.com](mailto:Contact.us@viscoy.com)



176-500 Technology Drive, Boalsburg, PA 16827 USA

1 814 466 7207

[matthews@sensornetworksinc.com](mailto:matthews@sensornetworksinc.com)

1 610 425 2210