



## Watson Industries Application Notes

### Pipeline Telemetry

Routine pipeline maintenance is done by placing a solid cylindrical device, called a “pig”, in the pipeline. To monitor the physical profile of the pipeline, a gyroscope package is installed in a pig. As the gyro sensor travels along the pipeline, it records data indicating its orientation and motion. When the pig exits the pipeline, the data is compared to a previous profile to look for significant differences that could indicate a problem with the pipeline.



Using an automated gyro sensor to perform routine inspections is typically more cost effective than visually inspecting the entire pipeline. This allows for more frequent inspections that enable maintenance personnel to proactively respond to any problems that are detected.

Watson Industries produces a gyro sensor that is well suited to this application. The Dynamic Measurement System (DMS) outputs data on the inertial displacements and orientation of the pipeline pig including relative heading.

#### **Technical Challenges:**

An inertial gyro sensor package inside of a pipeline presents several challenges. The sensor must be accurate at all attitudes, since the pig is free to rotate as it travels down the pipeline. The DMS can also occasionally experience highly dynamic conditions that require gyros with a range that is wide enough to track all the motions involved. Another problem with the pipeline environment is that there is no velocity data available to correct for centrifugal forces encountered in transit, so extremely stable gyros are necessary.

The Watson Industries Dynamic Measurement System has the high quality, accurate gyros you need to meet the challenges posed by the pipeline environment. Our VSG-series of gyroscopes have the accuracy and stability specs to meet the needs of this demanding application. They can also easily accommodate the rate ranges necessary for pipeline telemetry.



#### **Watson Industries, Inc.**

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## **Watson Experience:**

Watson Industries been involved in the development and production of inertial gyro products for this application since 1990.

## **Requirements:**

- Stability
- Wide dynamic range
- Low power (Battery Operated)

## **Applicable Products:**

- DMS-E604
- DMS-S605

## **Typical Options:**

We are able to accommodate your custom needs. Shown below is a listing of our most common custom modifications.

- Custom specifications – For certain applications, customers require specifications that are different from our standard units. Watson Industries engineering is willing and able to accommodate these needs.
- Input Voltage – Many different input voltages can be accommodated.
- Output Format – Communications Protocols RS-232, RS-485, RS-422, USB, Syncro.
- Data Format – We have made many products with custom formatted data outputs.
- Sensor Ranges – The ranges for most of our sensors can be expanded or reduced to meet your requirements.

Options specific to this application:

- Packaging – We are able to customize the packaging of our sensor to conform to the size of your housing.
- Internal Power Supply
- Internal Data Logging



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