Pigging Pipelines

The workhorses of pipeline maintenance

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Pig Launchger & Receiver

Pig launchers and receivers are specialized devices in pipeline systems used to insert and remove maintenance tools ("pigs") without interrupting product flow. Launchers, located at the start of a pipeline section, insert pigs into the line. Receivers, at the end, remove them.

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Types of PIGs Tools

1 Cleaning Pigs

Cleaning pigs are designed to remove debris, scale, wax, and other deposits from the pipeline walls.

Foam Pigs:

-Made of polyurethane foam.
- Highly flexible and can navigate pipeline bends.
- Effective for light cleaning and liquid removal.
- Can be used for product separation in multi-product pipelines.
- Available in various densities for different cleaning intensities.

Brush Pigs:

- Equipped with wire or plastic brushes
- More aggressive cleaning action than foam pigs
- Effective for removing soft to medium-hard deposits
- Can be customized with different brush types and arrangements
- Often used in combination with other cleaning elements

Scraper Pigs:

- Feature metal scraper blades or discs
- Designed for removing hard scale, rust, or stubborn deposits
- More aggressive than brush pigs
- Can be equipped with magnets to collect ferrous debris
- Require careful selection to avoid damaging pipeline coatings

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2. Sealing Pigs

Sealing pigs are designed to create a tight seal within the pipeline.

They are used for various purposes:

- Separating different products in multi-product pipelines.

- Creating a barrier for hydrostatic testing.

- Dewatering pipelines after testing or cleaning operations.

- Applying internal coatings or corrosion inhibitors

Features of sealing pigs:

- Multiple sealing discs or cups to ensure a tight seal.

- Often made of polyurethane for durability and flexibility.

- Can be designed for bi-directional use.

- May include bypass ports for controlled fluid flow

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3 Gauging Pigs

Gauging pigs are used to assess the internal geometry of the pipeline.

They serve several purposes:

- Detecting dents, ovality, or other deformations
- Identifying potential obstructions
- Verifying the pipeline's internal diameter
- Preparing for smart pig runs by ensuring the pipeline can accommodate the inspection tools

Solid Plate Gauging Pigs:

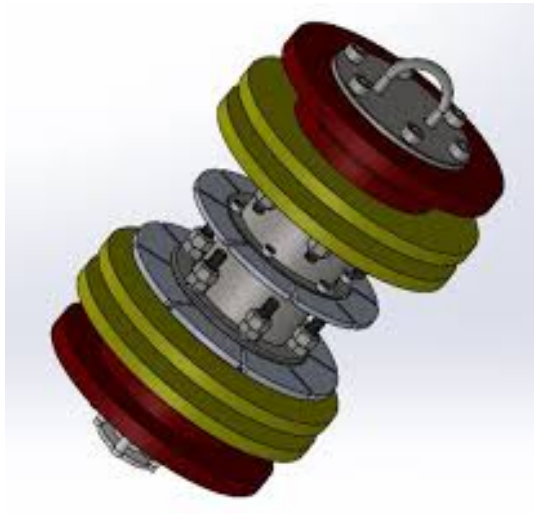
- Feature a metal plate slightly smaller than the pipeline's nominal diameter
- Any damage to the plate indicates a restriction in the pipeline

Articulated Gauging Pigs:

- Use hinged plates or caliper arms to measure the pipeline's internal diameter
- Can provide more detailed information about the pipeline's geometry

Electronic Gauging Pigs:

- Equipped with sensors to measure and record the pipeline's internal dimensions
- Provide more comprehensive data but are more complex and expensive



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4 Inspection Pigs (Smart)

Smart pigs, or In-line Inspection (ILI) tools, are crucial for comprehensive pipeline assessment:

Technology: They use advanced technologies such as ultrasonic sensors, magnetic flux leakage detectors, and other sensors.

Data Collection: Smart pigs collect detailed data on the pipeline's condition as they travel through it.

Detection Capabilities: They can identify issues such as:

- Corrosion
- Cracks
- Deformations
- Wall thickness variations

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4 Inspection Pigs (Smart) Cont...

Preventive Maintenance: By detecting potential problems early, smart pigs help prevent critical issues and extend pipeline life.

Regulatory Compliance: ILI is often required to meet industry regulations and safety standards.

Non-Intrusive: ILI allows for thorough inspection without shutting down the pipeline or cutting into it.

Comprehensive Assessment: Smart pigs can provide a complete picture of the pipeline's condition, including GPS mapping of problem areas.

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Conclusion

Pigging, especially using smart pigs for in-line inspection **Is a critical process in pipeline maintenance and safety.**

It allows operators to clean, assess, and maintain pipelines efficiently, ensuring their longevity and safe operation.

There are many options and uses and types of tools; please consult an expert for an appropriate tooi selection.

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