IsoPig®

The "piggable blind flange"

Pipeline Pressure Isolation

Advanced Technology Associated with Internal Pipeline Isolation Plugs

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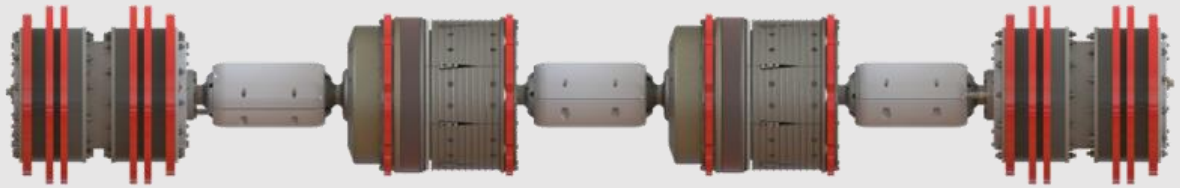
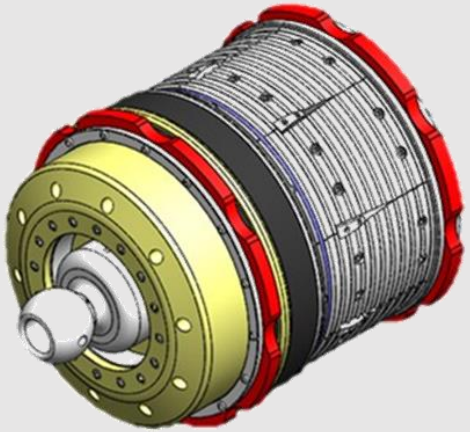
What Are Piggable Isolation Plugs?

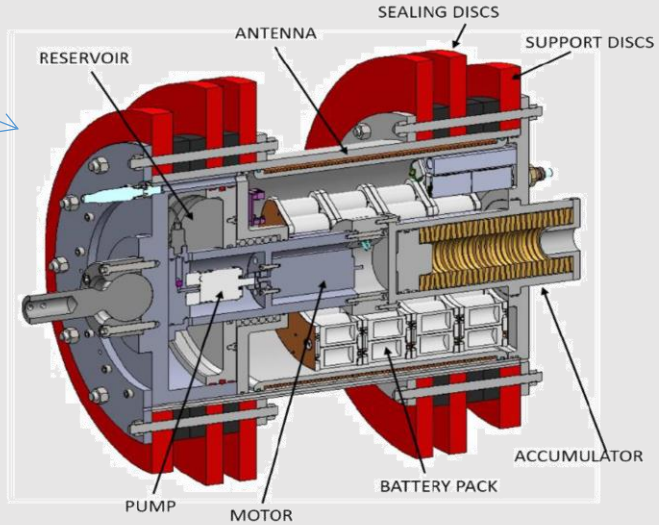


- Bi-Directionally Piggable
- Stopped with Flow at Location
- "Set" - Grips and Packer form a seal and keep tool in position
- Pressure Barrier – allowing line to remain packed and under pressure while work performed
- "Unset" and Pigged out of the line

How Do They Work?

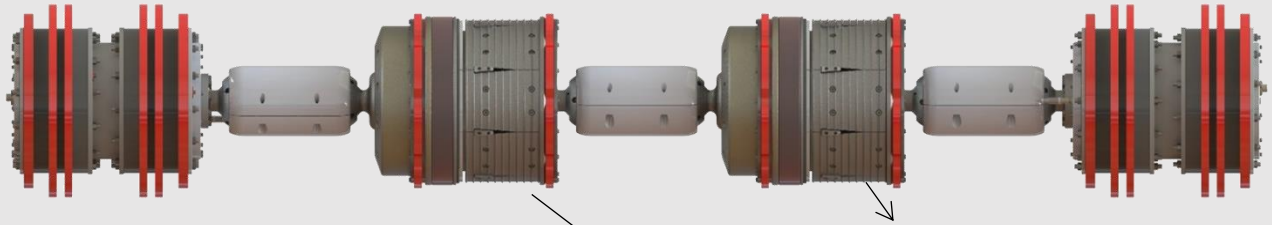


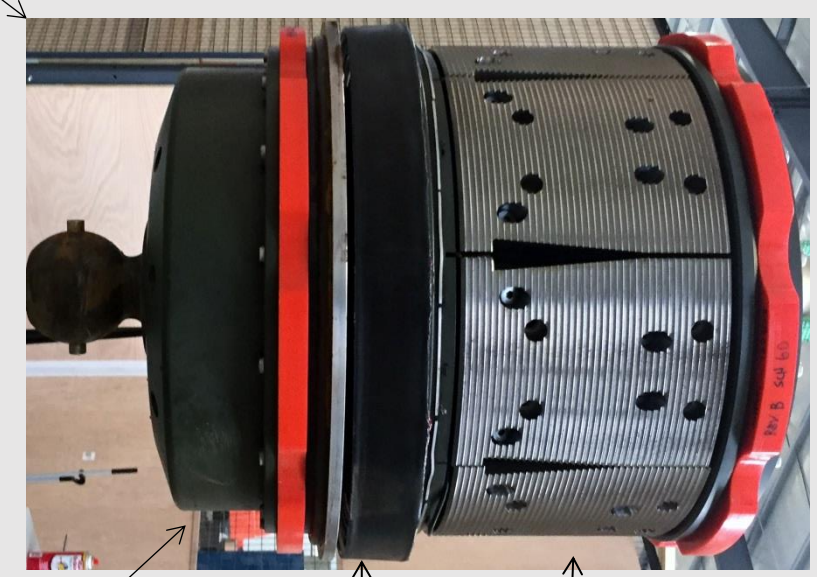
- Mechanical Plug Module
  - Provides the pressure isolation
- Control Module
  - Operates the plug



- Telemetry
  - Communicates Commands
  - Receives Data
  - Monitors Pressures/Temps

How Do They Grip and Seal?





- Activation:

•Grips Extend and Engage Pipe
•Packer Extends and Engages Pipe
•True Energized Seal
•More Pressure, More Activation

What Do Plugs Do?

Plugs provide a pressure barrier from the inside, instead of from the outside. So if you need to modify or repair a pressurized pipeline:

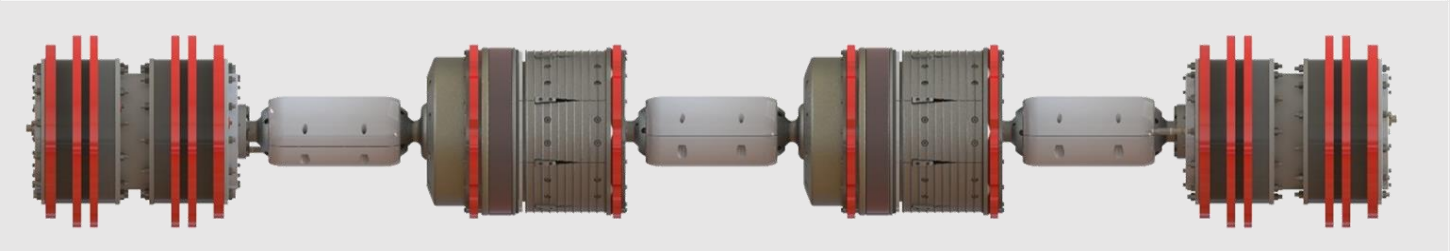
They serve the same purpose as this:

Only what you see is this:

Pressure Isolation Advancements

- 1950 - First hot-tapping machine developed
- 1956 - First line-stop inserted via hot-tap
- Various methods of hot-tap line stopping (freeze plugs, energized seals)
- 1981 - First piggable pressure isolation tool (plug) patented
- 1981 - 1997 - Tethered tools sold and used offshore
- 1997 - Remote control technology / provided as a service
- 1997 - Current - Plugs are the standard for offshore pressure isolation
- 2015 - First high-pressure low-stress plug - allows onshore liquids and gas

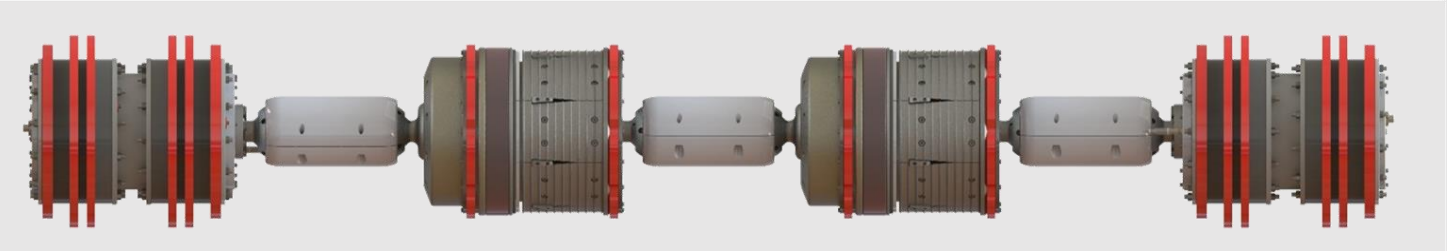
Technology Involved



Typical Piggable Isolation Plug

- Energized Seal
- Through-Wall Communication (real data, real time)
- Leak-free packer technology
- Safety features – more pressure more sealing; default to "set"

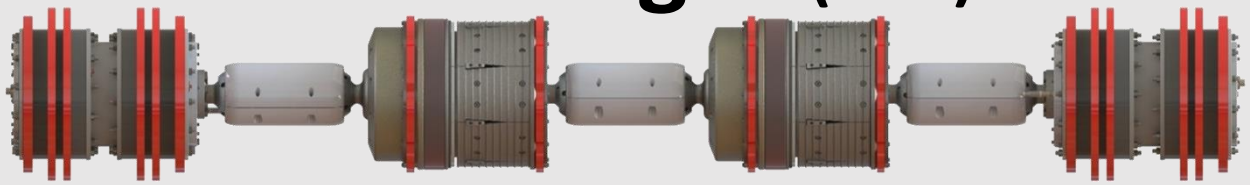
Technology Advancements



Typical Piggable Isolation Plug

- Through Wall Communications
- Low Stress on Pipe (Useable in Onshore pipe)
- Piggability (smaller bends)
- Double Block
- Energized Seal (no leak)

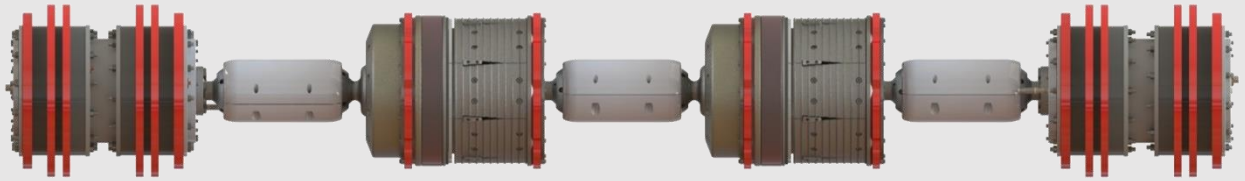
Advantages (Pt 1)



Typical Piggable Isolation Plug

- No added excavation (ROW issues)
- No full encirclement Tee
- No Welding or welders
- No Size-on-Size hole
- Reduced man-days on site (safety and cost)
- No coupon / guide bar pigging issues

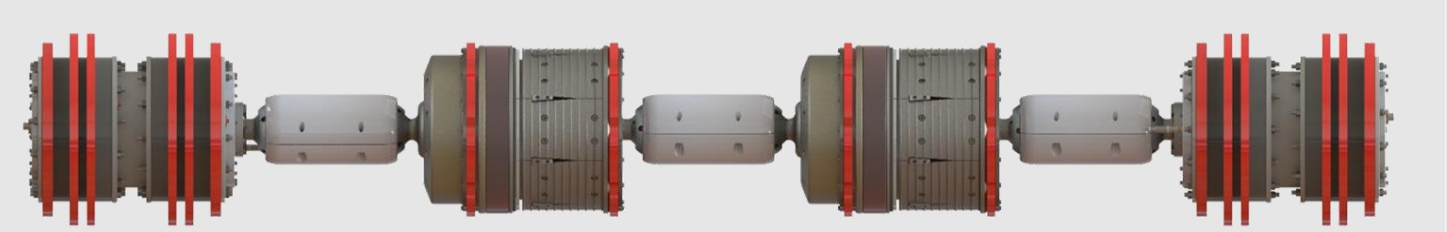
Advantages (Pt 2)



Typical Piggable Isolation Plug

- No leakage / energized seal
- No completion flange (no potential leak path)
- Maintains Asset Value
- No "yellow iron" (cranes, valves, flanges, bolting)

Disadvantages



Typical Piggable Isolation Plug

- Must have a piggable line
- Stress on pipe
- Pressure Equalization / Lack of Bypass

IsoPIG®

The "piggable blind flange"

"No Holes, No Trace, No Waste"

Pipeline Pressure Isolation

Pipeline Isolation: The old way

Pipeline Isolation: The IsoPig® way