

The background of the slide is a photograph of industrial infrastructure. It features several large, silver-colored metal pipes that curve and run diagonally across the frame. In the lower-left background, a red metal structure, possibly a crane or part of a drilling rig, is visible against a clear, bright blue sky. The overall scene suggests a high-pressure industrial environment, likely related to oil and gas extraction or processing.

The Hydrotect Solutions Buyers' Guide

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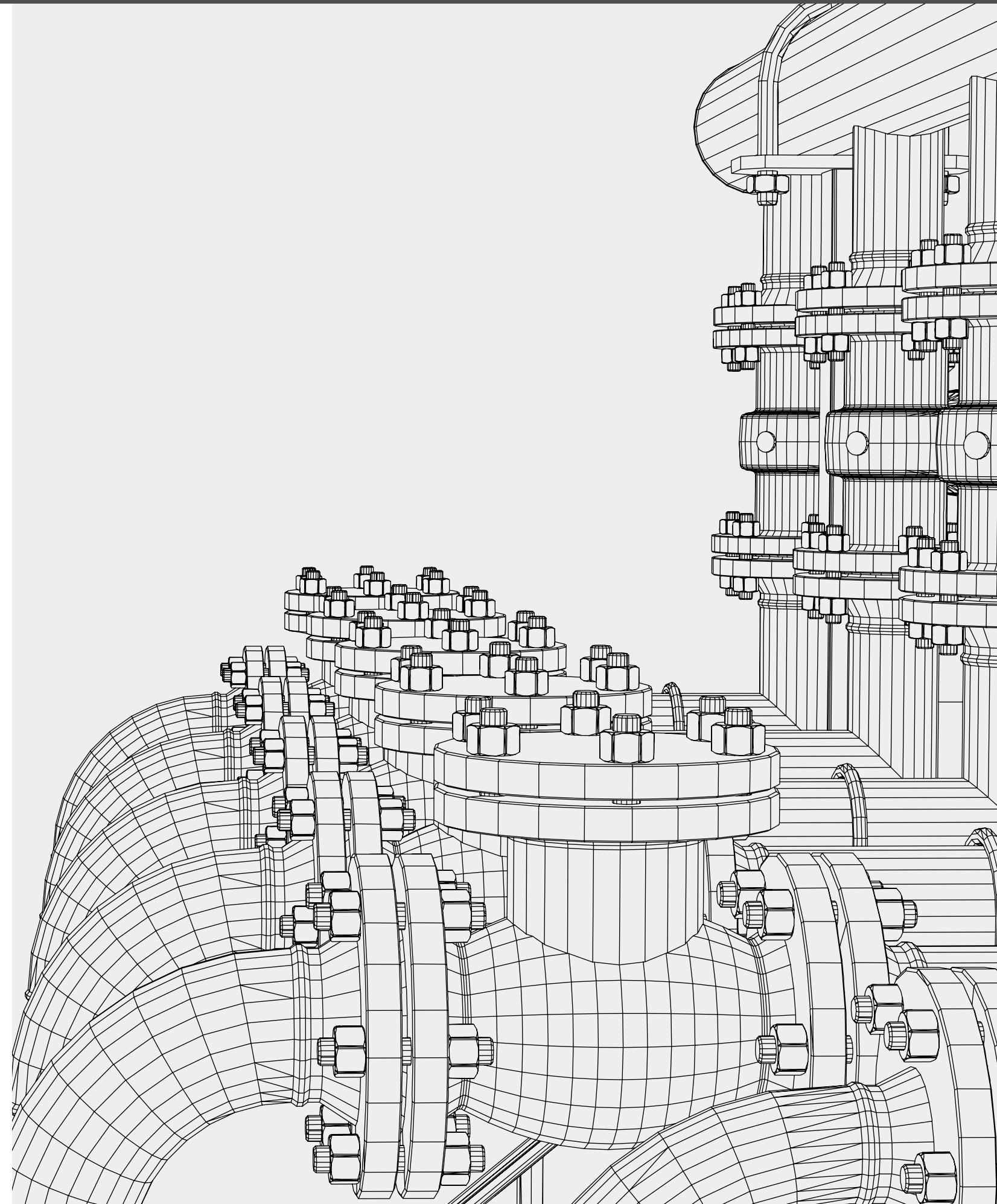
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Introduction

Technical Toolboxes created the Hydrotest Solutions Buyers Guide for senior pipeline engineers and company managers responsible for selecting engineering solutions. Pipeline engineers use Hydrostatic Pressure Testing, or Hydrotesting, to assess pipeline integrity for cracking, mechanical, welds, and other related pipe defects in gas and liquid pipelines.

This Hydrotest Solutions Buyers Guide assumes that the reader has a solid understanding of the principles and practices involved in hydrotests. It discusses the factors in play and explains the benefits of the Hydrotest PowerTool from Technical Toolboxes. Very few commercial applications generate project plans and reports for action in the field. The Guide describes how the PowerTool provides the best-in-class solution.

"It discusses the factors in play and explains the benefits of the Hydrotest PowerTool from Technical Toolboxes."



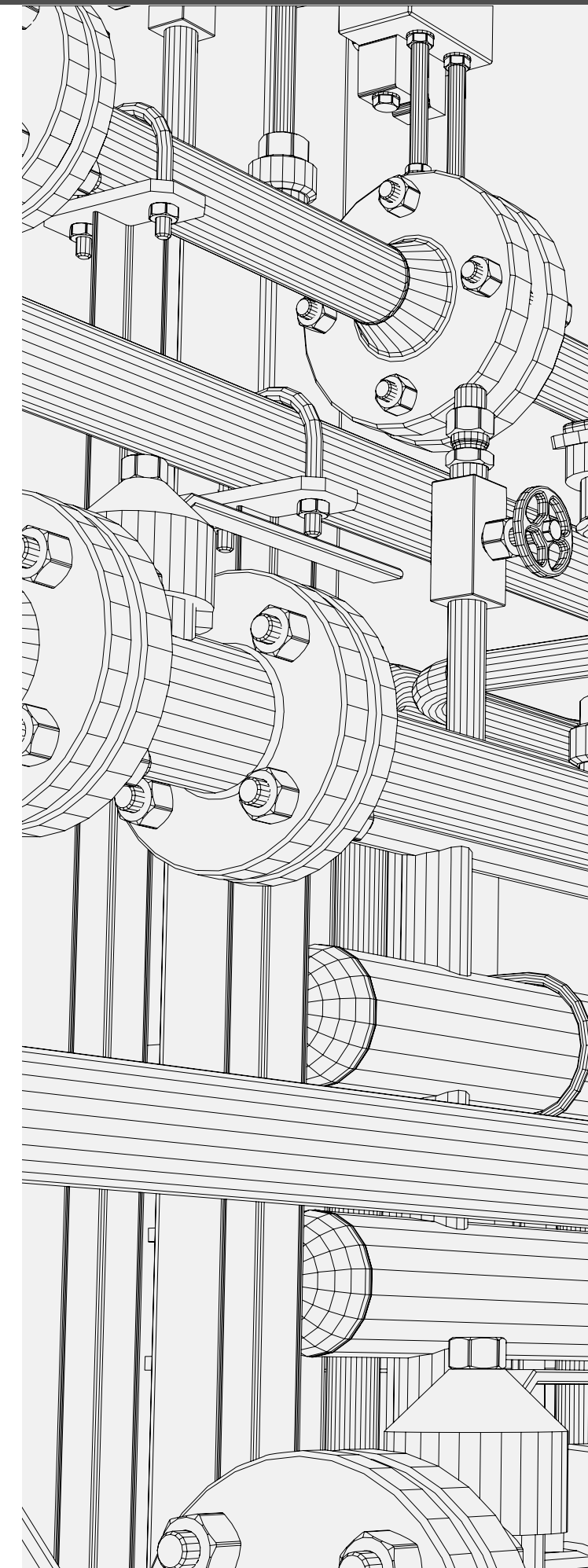
Reasons to Hydrotest

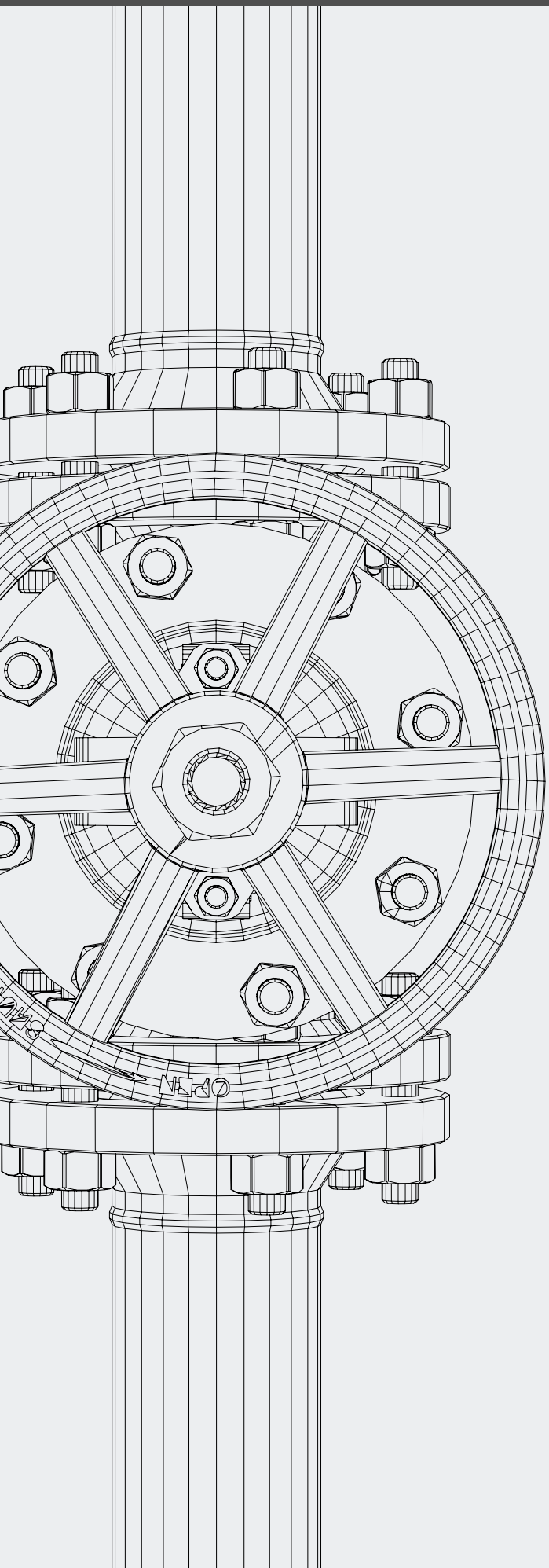
There are three scenarios where Hydrotest provides diagnostic value:

- New construction pipeline verification
- Existing pipeline verification/recertification of MAOP
- Investigating defects caused by accidents

The New Regulatory Environment

Hydrostatic Pressure Testing is a valuable diagnostic tool for pipeline and integrity engineers. PHMSA's terminology sums up the regulators' expectations that record-keeping must be Traceable, Verifiable, and Complete (TVC). The change has put pressure on engineers to produce and maintain documentation. As defined in CFRs 192 and 195, the new PHMSA regulations mandate that all pipeline case documentation address TVC recommendations.





Hydrotest for New Construction

Engineers need planning and reporting for non-destructive hydro-testing to deliver the most efficient process and avoid failures or repeats that would waste time and inflate OpEx. Hydrostatic pressure testing provides integrity confirmation for new pipelines while a pipe is still accessible. In the design and construction stage of pipeline projects, engineers need to know best practices for testing and validating new pipes.

Existing Pipeline Recertification

With TVC requirements in place, auditors will expect to see the documentation for cases and calculations for your calculations and analyses. If you cut corners by making too many simplifying assumptions, accidental releases or poor record-keeping could lead to fines for your company.

When you acquire existing pipelines, they may have substandard paper trails due to having passed through multiple ownerships over the years. Decades-old pipes may have no more than notes penciled-in on tattered paper maps and fall far short of TVC case histories. In such cases, engineers turn to hydrotests to evaluate and re-certify pipelines and bring records up-to-date.

“Hydrostatic pressure testing provides integrity confirmation for new pipelines while a pipe is still accessible.”



“Engineers use Hydrotest to find cracks and other damage that demand immediate repairs.”

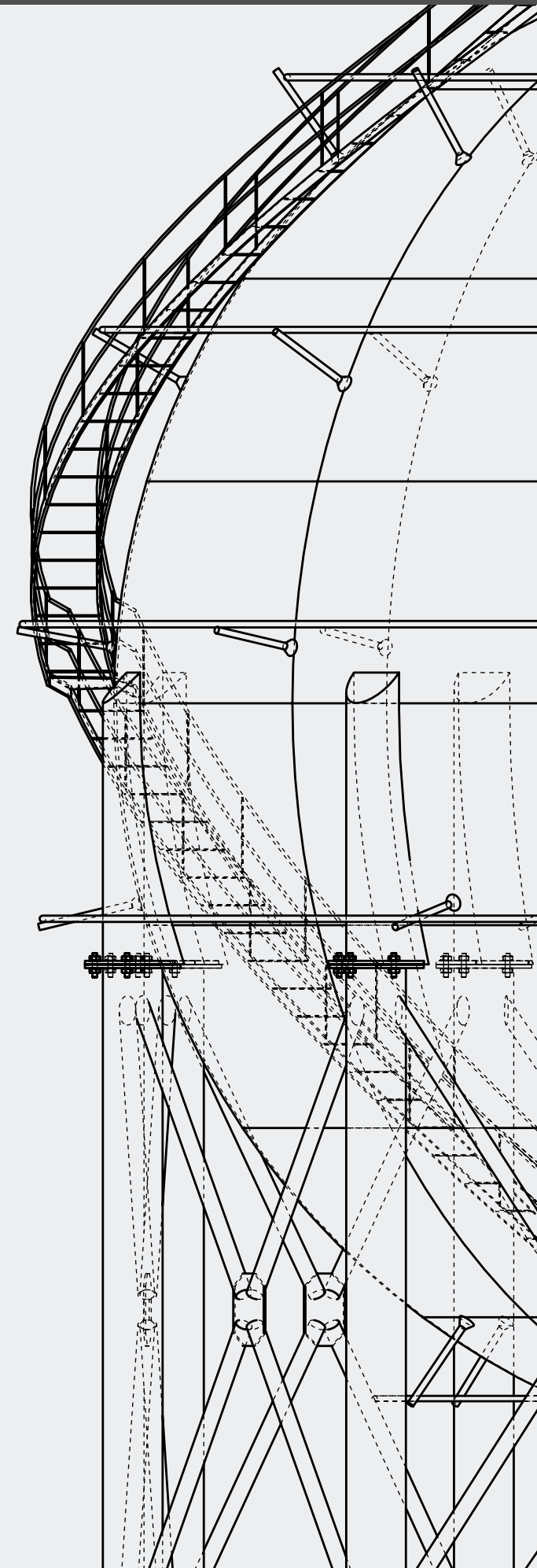
Damage Investigations

In the field, accidents are unfortunate operational facts. Errors in crossing calculations lead to pipe stresses as heavier-than-anticipated vehicle loads that cross vulnerable pipes. During trenching operations, backhoes strike and dent pipes unexpectedly. Engineers use Hydrotest to find cracks and other damage that demand immediate repairs.

Handling Water from Hydrotest

Water management in hydrotesting is a practical consideration that involves the time and energy of engineers. Failure to adequately plan and document how you intend to source and dispose of water used in a hydrotest can lead to costly repairs and remediations.

If you choose the wrong water source, pH, hardness, or bacteria content can damage the pipeline. Any carelessness could result in having to replace miles of pipe. After the test, improper water disposal could lead to fines or clean-up costs. Practical issues like these need to be included in the hydrotest plans that go to higher management for review.



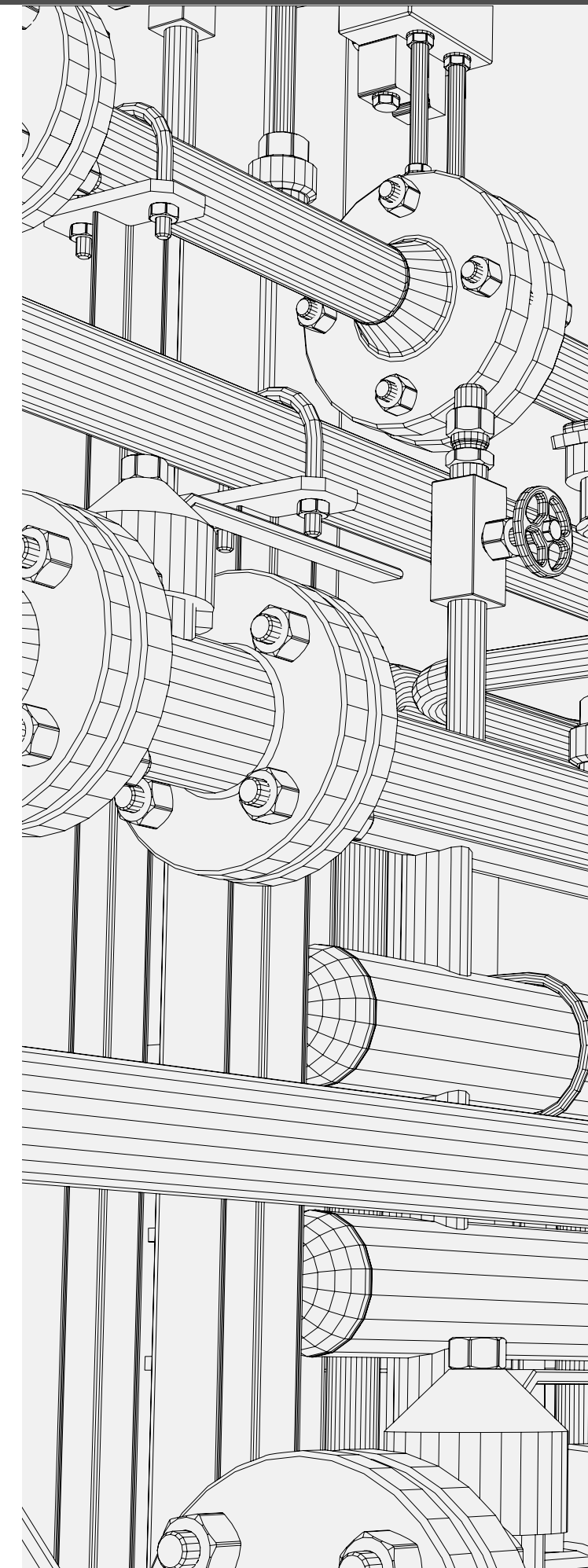
The Factors in Hydrotest

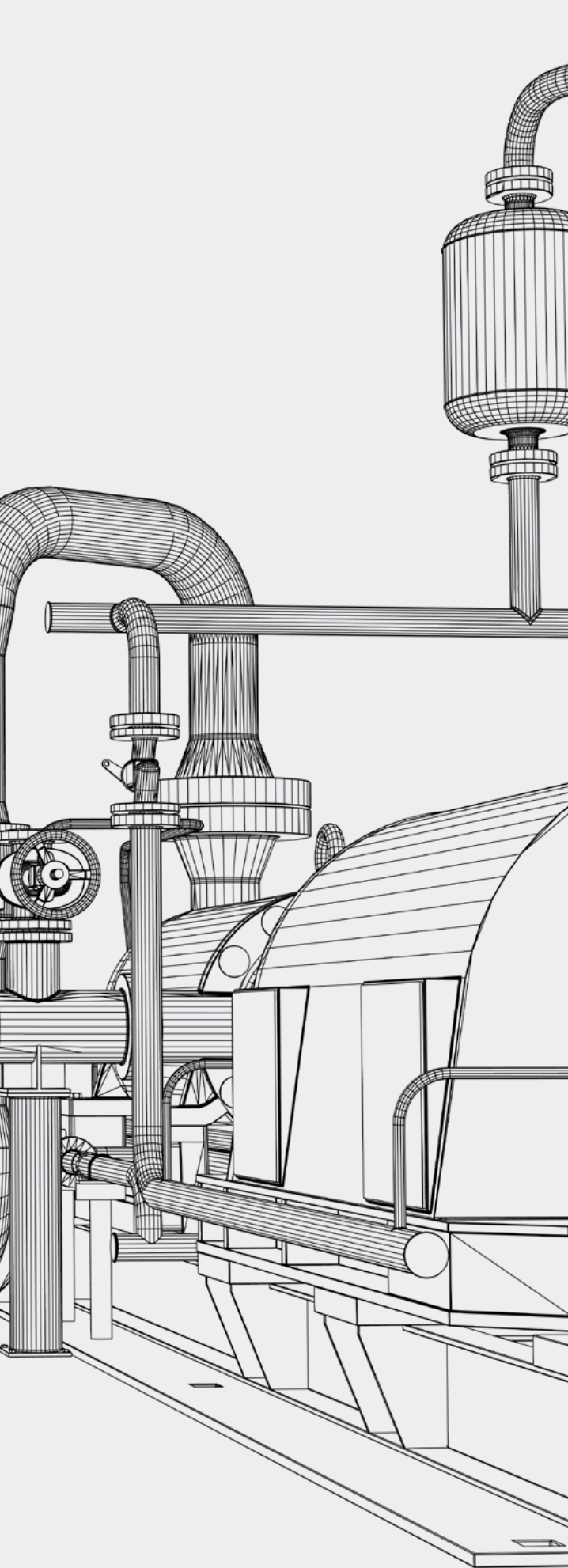
In practical engineering terms, the framework resolves into five dimensional-factors:

- Quality Control
- Productivity
- Practicality
- Standards
- Safety

Quality Control

The planning at the start of a Hydrotest project determines the quality of the solution. It concludes by analyzing the pressure data gathered during the test. Your hydrotest plan must model all elements of the asset accurately. The plan should consider the Maximum Allowable Operating Pressure (MAOP) of all components along the pipeline, such as valves and taps, and the wall thicknesses of pipe sections and effects of elevation, friction, and other factors.





Productivity

In planning a hydrotest, productivity is always an important consideration. The investment of engineering time produces a return in the form of plans and recommendations. The product is relatively fixed, putting pressure on teams to minimize the time spent to deliver a Return on Investment. To cut costs, pipeline engineers often resort to simplifying assumptions to save time and cost. To balance the additional risk of this practice, engineers frequently extend margins for error, which adds OpEx and reduces efficiency. Lastly, communication to the field is a top challenge to overcome, and a hallmark of a great plan is being an effective communication tool for field personnel to utilize.

Practicality

Engineers prefer non-destructive testing such as Inline Inspection (ILI) because it preserves assets and can be a low-effort option. However, ILI isn't always practical, or sufficient to comply with regulations. Hydrotesting offers a more practical and sufficient alternative that validates pipelines and minimizes risk. Hydrostatic pressure testing also qualifies as non-destructive, providing it executes on a comprehensive, disciplined plan that produces useful data and keeps pressures within safe limits.

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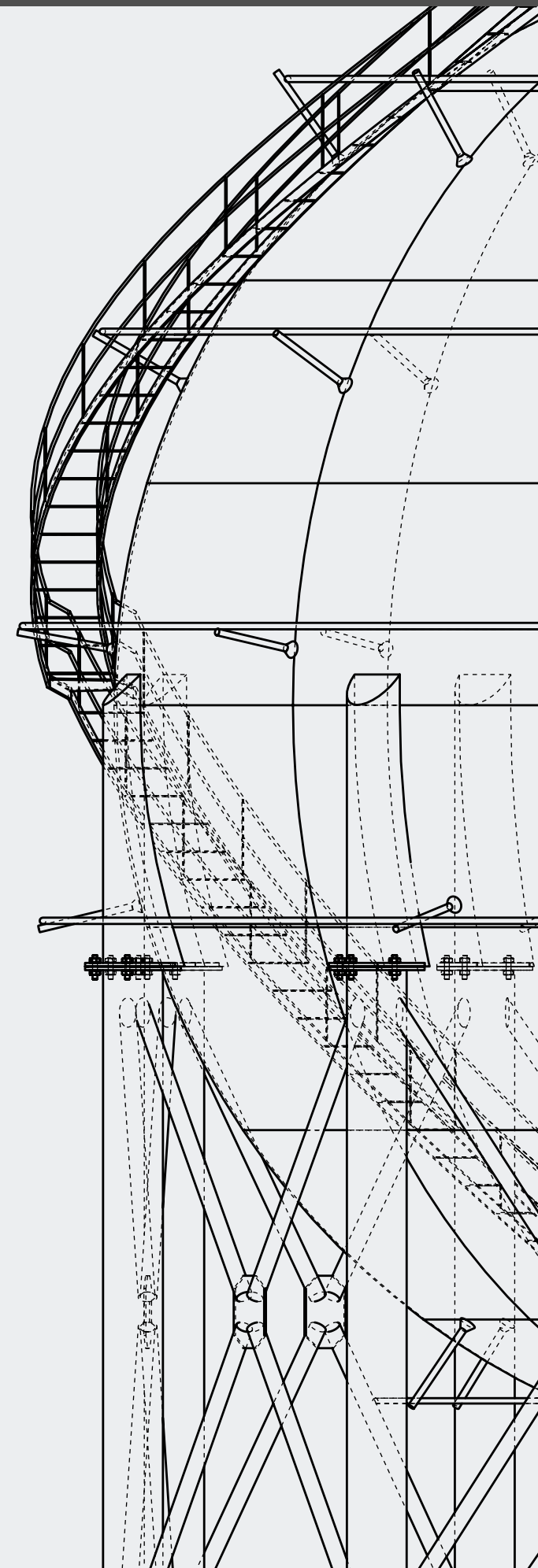
“An effective planning tool will enable engineers to make data driven decisions efficiently, and communicate to the field effectively.”

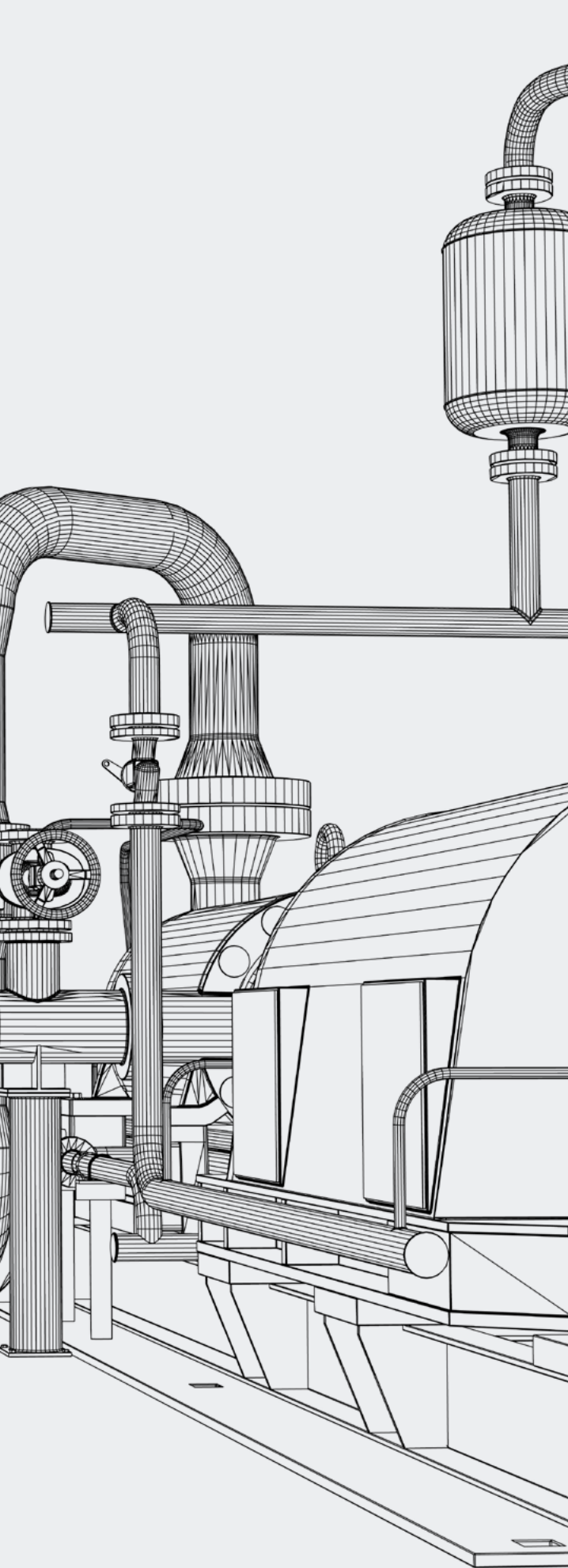
Safety

Risk of damage that causes expense, injury, and legal liability. Any miscalculation of MAOP for any components within the section under examination can lead to pipe failures, expensive clean-up, fines from regulators, and endless lawsuits by injured parties. These errors are preventable and lead to increased CapEx and OpEx. An effective planning tool will enable engineers to make data driven decisions efficiently, and communicate to the field effectively.

Standards

Pipeline engineers navigate a labyrinth of internal and external standards. The regulatory environment is a fundamental determinant of midstream oil and gas quality, productivity, and safety. Your company's success depends on working productively and producing quality output that meets or exceeds many different standards, including being TVC compliant.





Solutions on the Pipeline HUB

With the Pipeline HUB (HUB^{PL}) from Technical Toolboxes, pre-formatted workflows for pipeline engineering calculations and analysis are an exciting reality. The HUB^{PL} is an integrated data environment that facilitates engineering productivity and brings record-keeping up to TVC standards. It brings together many applications such as the Pipeline Toolbox, HDD PowerTool, corrosion and AC Mitigation tools, as well as visual map integration with ArcGIS on one screen. Additionally, you can leverage the power within your asset databases and case histories with the hierarchy navigation panel.

“The HUB^{PL} is an integrated data environment that facilitates engineering productivity and brings record-keeping up to TVC standards.”



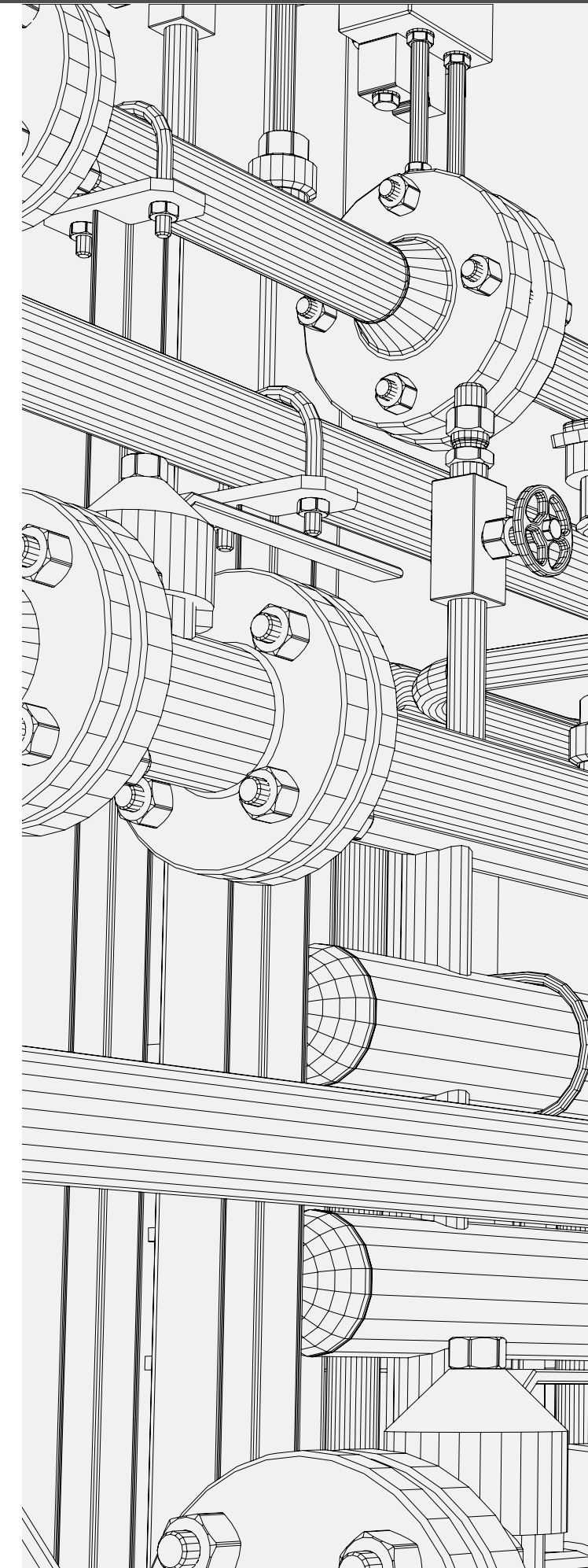
Hydrotest PowerTool

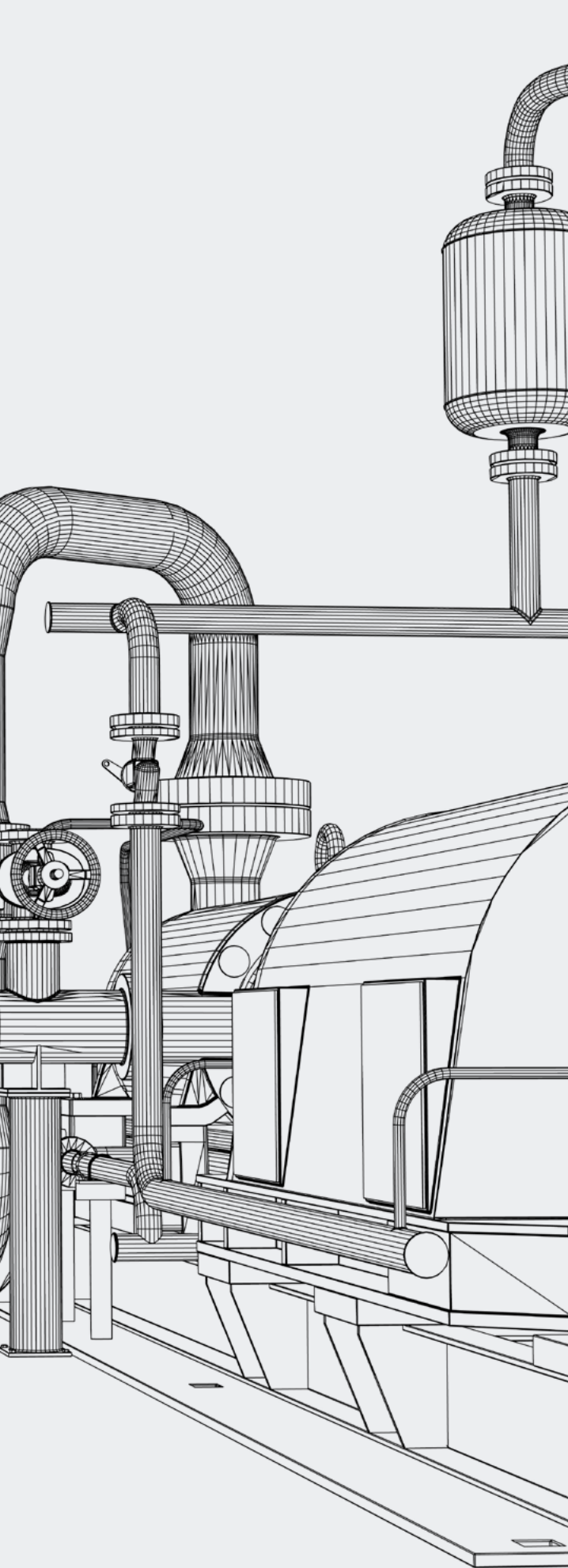
The Hydrotest PowerTool is the most efficient and productive tool for planning your pressure tests. Users input volume and pressurized or unpressurized state, noting the water sources and other factors, and send it up to higher management for review.

The PowerTool consolidates everything you need to one report, so you have an optimized plan to conduct the testing operation. It determines the pressure range from the low point to high, and the weakest points for tolerance any overpressure can be costly and destructive. Notably, it identifies the zone between the lower limit for diagnostic purposes and the pipe section's maximum safe pressurization limit.

The Hydrotest PowerTool leverages its database storage and tools from the Pipeline Toolbox. The software allows you to differentiate between discrete factors. It is a pre-built set of actions that maximizes data quality and productivity while addressing each test's practical considerations.

For example, integrity testing for older pipelines can be challenging. It requires careful analysis and planning. Variations in MAOPs for components, deterioration, and erosion may be overdue for maintenance, with different wall thicknesses with high/low-pressure limits. Dividing testing sections help avoid valves and flanges or other components, which add complexity when there are variations in their ratings. Once you know all the pressure limits, you can select the sections for each test. The Hydrotest PowerTool addresses all these considerations and more.





Conclusions

Hydrostatic Pressure Testing is an essential tool to validate pipeline integrity if you are involved in pipeline design, construction, and compliance qualification. Very few commercial applications generate a comprehensive project plan and report that is suitable for action in the field. The Hydrotest PowerTool is the one solution that meets the safety and regulatory demands of today.

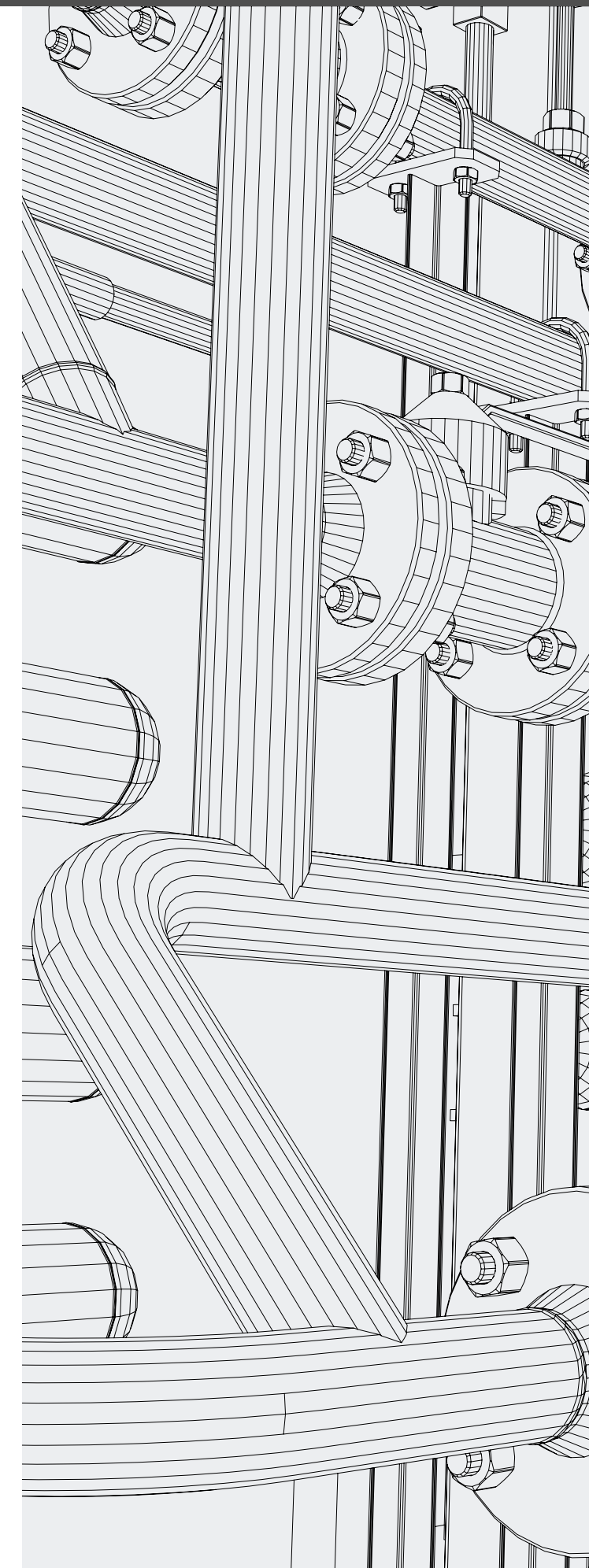
- Quality Control for all pipeline data
- Productivity for maximum ROI
- Practicality for efficient Hydrotest planning and reporting
- Safety to protect your reputation, assets, and community
- Maintain the highest Standards for accountability and TVC record-keeping

“The Hydrotest PowerTool is the one solution that meets the safety and regulatory demands of today.”



Next Steps

- Ask us how the solution can help you
- Arrange a no-obligation demo
- Download the PLTB ROI Guide





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About Technical Toolboxes

Technical Toolboxes is a leading provider of integrated desktop and cloud-based pipeline software, online resources, and specialized training for pipeline engineering professionals worldwide. We deliver oil and gas industry training courses covering a breadth of topics with industry-recognized instructors. Compare the performance that Technical Toolboxes technology and training can make in pipeline engineering performance and you'll see a measurable difference. Our fit-for-purpose pipeline engineering software platform will help you reduce risk, lower the total cost of operations, and accelerate project schedules. Hundreds of companies rely on our certified, industry-standard technology to enhance their pipeline engineering performance.