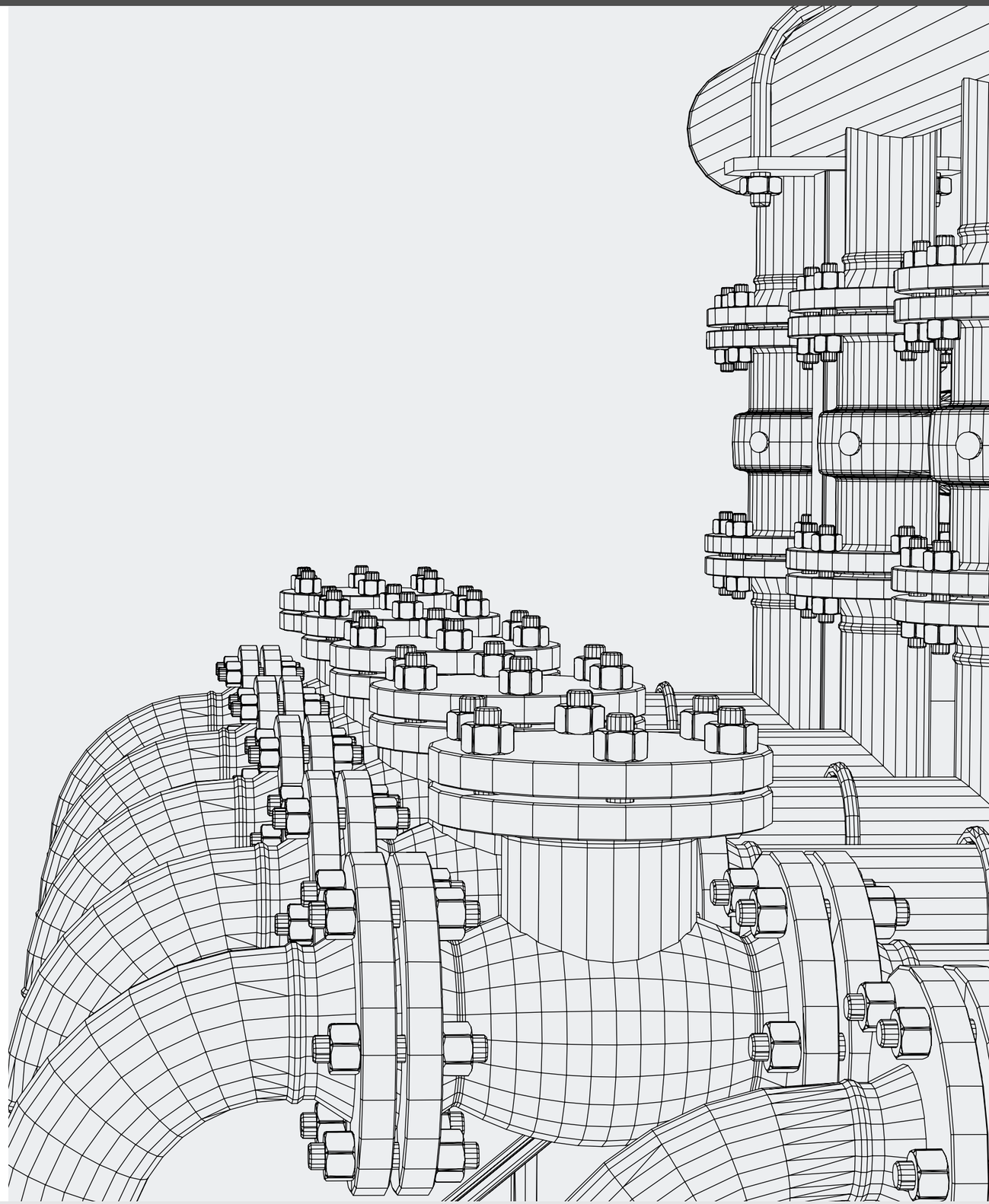
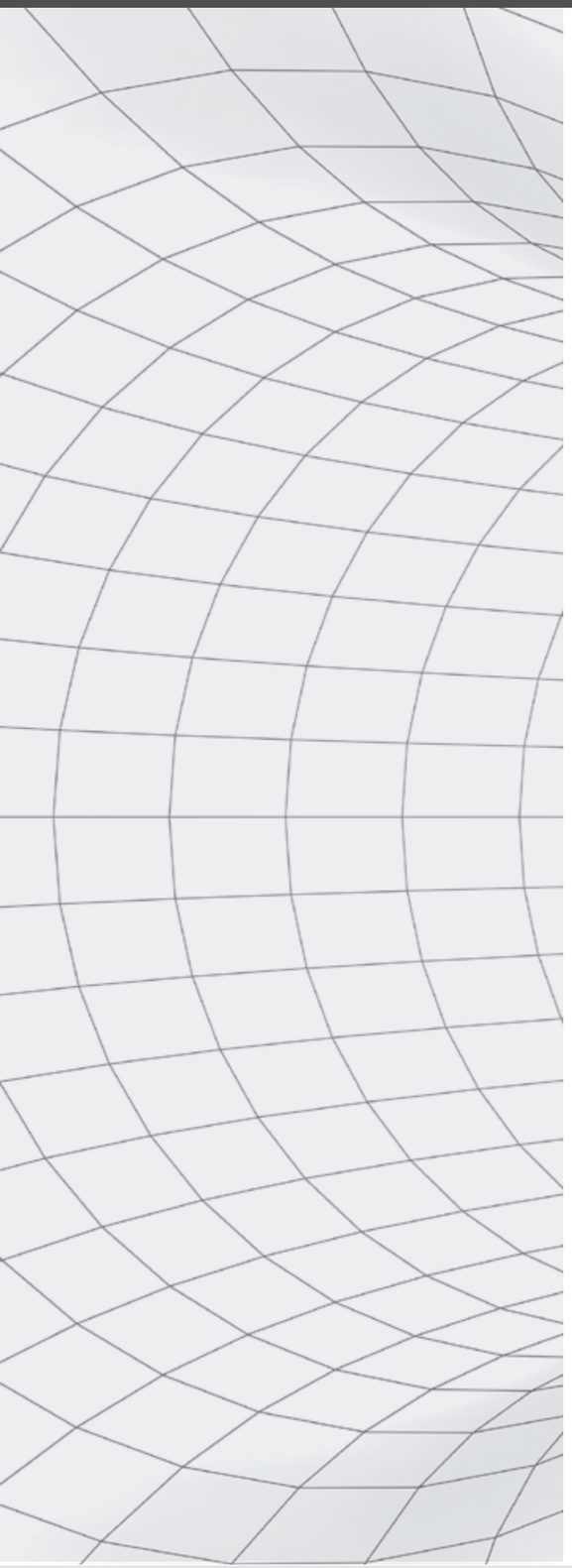
TECHNICAL TOOLBOXES

The Solution Buyers' Guide

Midstream Engineers

Table of Contents





How to Use This Guide

Technical Toolboxes created the Solution Buyers' Guide for Pipeline Engineering to help decision-makers find better solutions for engineering cases and workflows. The midstream pipeline industry provides vital infrastructure assets, and it requires some specialized IP assets of its own.

While the oil and gas industry tends to be conservative, it is both regulated and highly competitive. To survive in the midstream business of oil and gas pipelines, you have to push continuously for improvements. The most effective way to maximize your competitive advantage is to invest in quality and productivity while staying within the lines of compliance. The software tools that engineers use to design pipelines and determine safe operations form a significant part of that need.

Meanwhile, surveys of the industry show that many engineers still rely on improvised solutions to calculate pipeline designs and repairs. It may have been adequate in past decades when all your competitors did the same thing, but outdated methods cannot compete with the capabilities and efficiency of a best-in-class pipeline engineering solution. This buyers' guide explains the factors to consider when exploring your options for dedicated midstream engineering solutions.

"The Corrosion Solution Buyers' Guide builds on the collective knowledge and experience of the Technical Toolboxes team."

The Dimensions That Matter

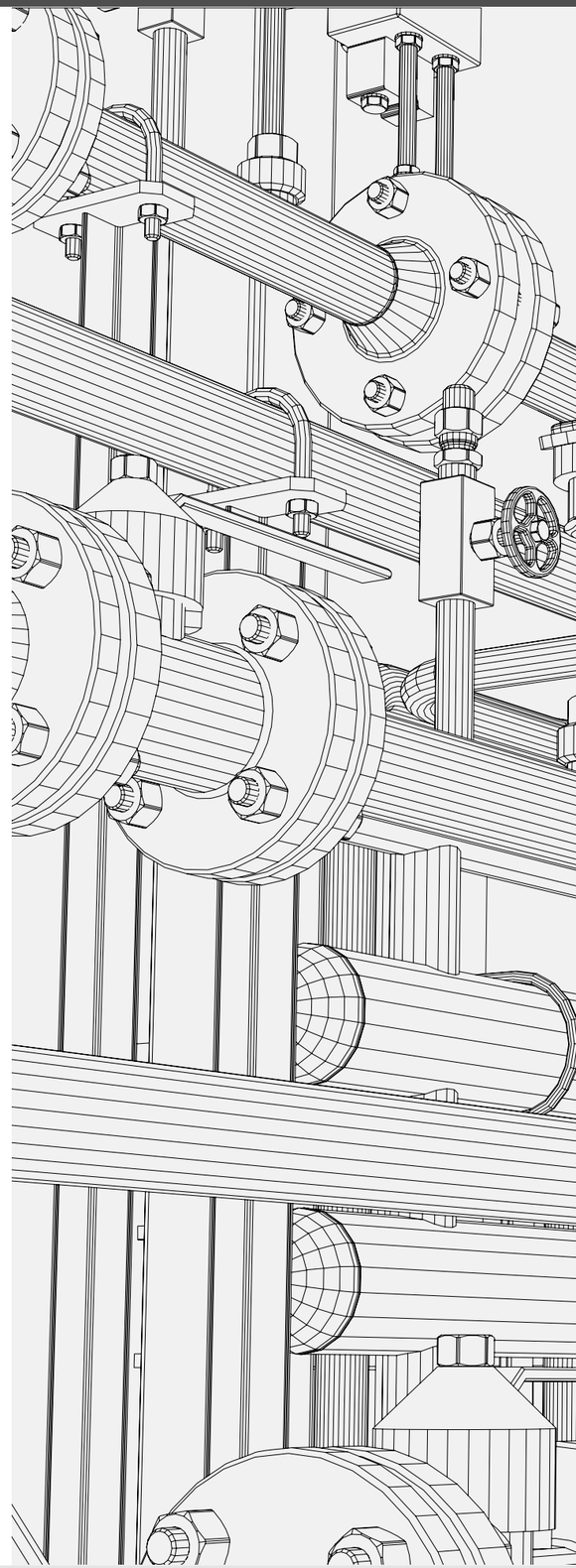
Software solutions for midstream pipeline calculations involve more than technical aspects. The industry imposes strict rules and regulations, and as a business, you always have to consider the imperative to strive for greater safety and efficiency. It is not just about competitiveness, although it is that, it is also about understanding and addressing multiple perspectives.

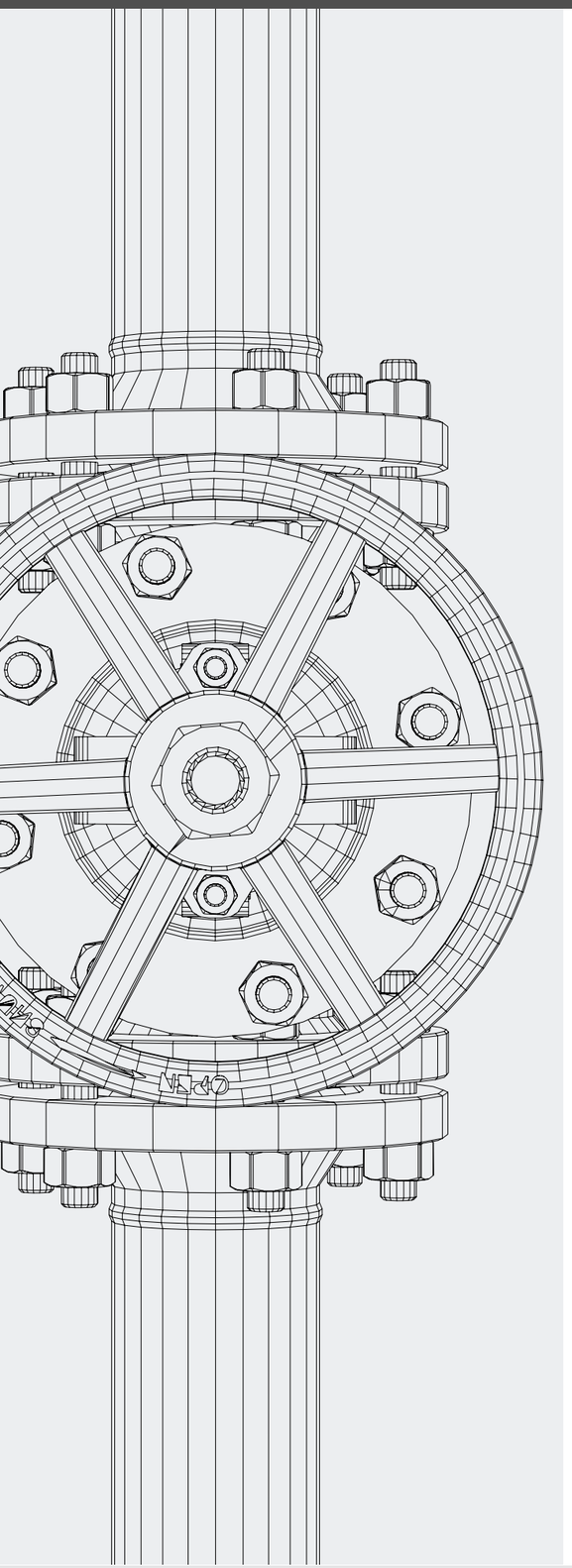
Engineering managers and company executives need the view from the mountain top as well as the details from the trenches. Your engineering team members want a solution that provides efficient workflows. Your managers need to monitor business data about operations. Additionally, pipeline designers can more easily find the best routing and construction options when they can access the possibilities of the big picture, as well as local survey data.

Given the nature of the industry, your midstream pipeline engineering solution should provide the tools to respond to unexpected events. When an accident puts a wrench in your work routine, the difference between survival and sinking is having the resources to respond.

The threats and opportunities faced by midstream engineering decision-makers today form six discrete dimensions:

1. **Standards**
2. **Data Management**
3. **The Big Picture**
4. **Tools for Everyday**
5. **Collaboration**
6. **A Toolbox for Every Eventuality**





1. Standards

Standards and regulations define the midstream pipeline business. Failed audits and infractions result in skyrocketing costs due to lost time, change orders, and regulatory fines. Standards encompass government regulations from PHMSA, DOT, NEB, etc. and recommended practices issued by such industry bodies as NACE, ASME, API and others. They also include the internal Standard Operational Procedures that companies use to conduct daily engineering business.

Spreadsheets are powerful general-purpose calculating tools that have transformed business management. However, in regulated technical settings, like midstream oil and gas, they do not have the flexibility of a dedicated solution, nor do they have the security. Your engineers need a framework of tools that makes it easy to stay in compliance with national, industry, and company rules. Your solution must address all of these levels to generate correct solutions and compliant workflows.

The level of consistency in calculations is often a matter of who writes the formulas. With the best of intentions, engineers alter spreadsheets to suit their immediate needs, and errors accumulate as changes divert the process away from company SOPs. Naturally, if you have more than one small engineering team, the potential for conflicts and errors multiply with scale. Legacy methods mean engineers may have to learn different SOPs and software systems for each new unit they join.

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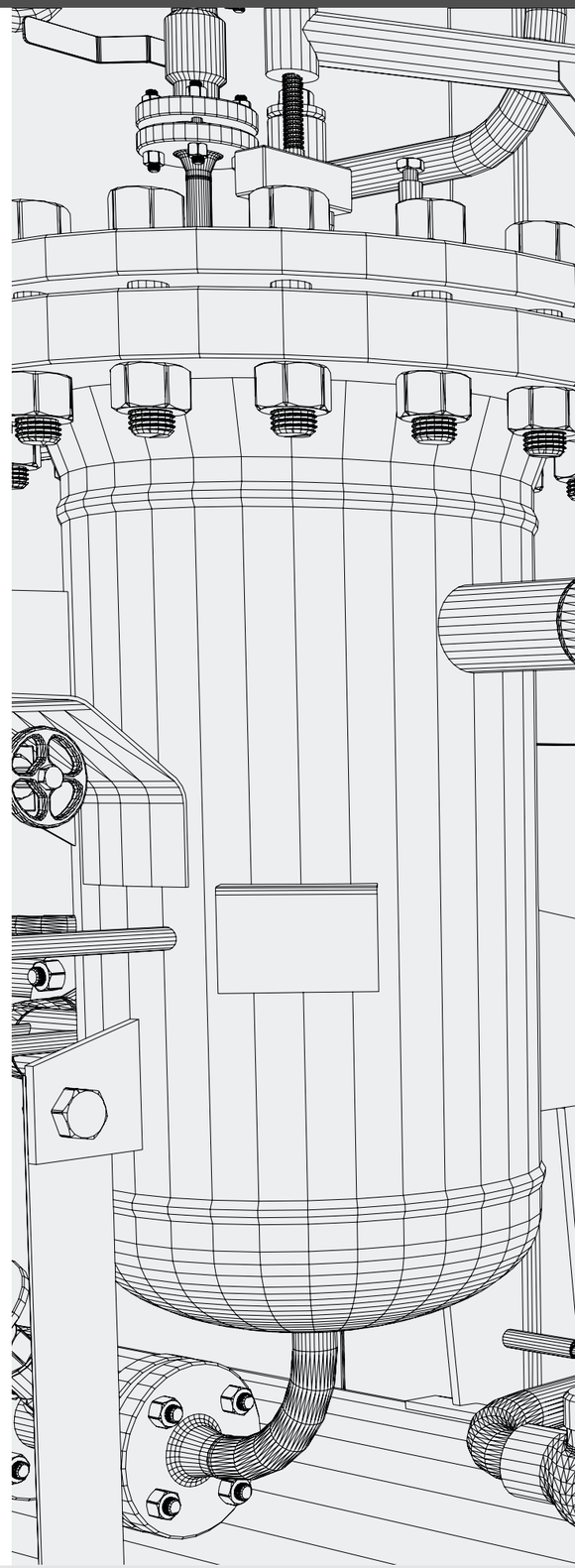
“Outdated solutions tend to lack consistency in their controls...”

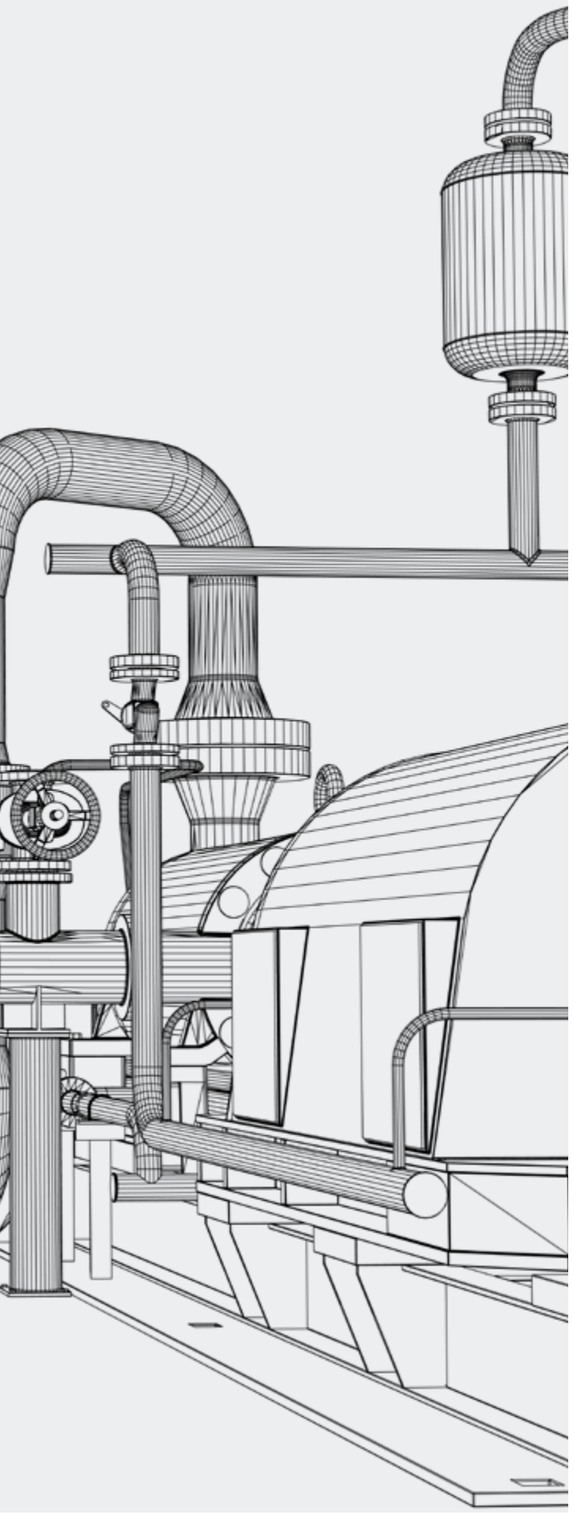
2. Data Management

According to survey results, many companies still use spreadsheets or in-house software to perform analyses. Legacy methodologies increase the risk of errors and limits how engineers engage with other teams and departments. Outdated solutions tend to lack consistency in their controls and create friction in how you manage case histories. Your engineers may have all the required technical skills to manage software projects, spreadsheets, and data gathering. However, these activities are distractions from their revenue-generating roles in your organization.

The solution you choose should provide all of your authorized users the access they need without any delays or conflicts. It helps you leverage the work of others, whether the sources are data collection systems, a data management/IT/GIS group, or other engineers (on the same or different teams). When engineers can call on completed calculations as data points, they can avoid duplicating the time and work already spent gathering and checking it. Similarly, when engineers can leverage data directly from asset databases, they can avoid duplicating efforts in data mining and data entry, allowing more time for improving designs and run time.

Naturally, if you have more than one small engineering team, the potential for conflicts and errors multiply with scale. Legacy methods mean engineers may have to learn different SOPs and software systems for each new unit they join. A dedicated solution that integrates data management automation tools allows you to minimize the work to achieve the maximum result. Such a solution should give you the ability to do data gathering and quality assurance one time and retain the information for as long as you need it. Additionally, it should provide all of your authorized users the access they need without any delays or conflicts.





3. The Big Picture

Data visualization is an excellent feature that delivers new perspectives in an easily consumable format. Interpreting data is often easiest as a picture laid out before you. Whether you are designing, constructing, operating, or repairing a pipeline, the big picture helps you make informed choices that will accelerate project schedules and reduce costs.

A dedicated pipeline engineering solution should use the data gathered in the field to give you the big picture. An intuitive solution that enables you to call up specific lengths of a pipeline by clicking on the map communicates understanding fast. When you can view case histories and update them by interacting with the map, it reduces the work to identify stretches of corrosion or analyze encroachment and crossing requests. Additionally, it minimizes the workload of data driven decisions across the life-cycle of the pipeline, from cradle to grave.

In the design phase, capturing geographical data as part of the big picture supports a multi-disciplined approach to planning. It helps you balance all the factors and options that compete for your attention as you select a future pipeline route. You can improve your pipeline projects ROI by reducing your reliance simplifying assumptions that waste the valuable time of engineers. They spend less time combing through the matrix of non-unique solutions to determine pipeline routes and designs. The result is significantly reduces cost and risk over the 50-plus year life of the pipe.

Regulations, technical feasibility, company, or individual preferences go a long way towards narrowing the list of options, but you have to consider other factors such as the financial impact too. A clear view of the big picture helps you narrow the list of viable options. Examples include:

- Whether to avoid or mitigate AC interference from powerline right-of-ways
- The combination of pipe grade and wall thickness
- The size, type, number, and configuration of compressors and pumps at booster stations
- Whether to go over, under, or around an obstacle
- Depth of trenches and types of fill

A dedicated midstream solution that integrates these factors, as part of the big picture, enables holistic asset management and data driven decisions to become a part of your culture.

> “A best-in-class midstream solution gives you more than just an automated substitute for spreadsheets.”

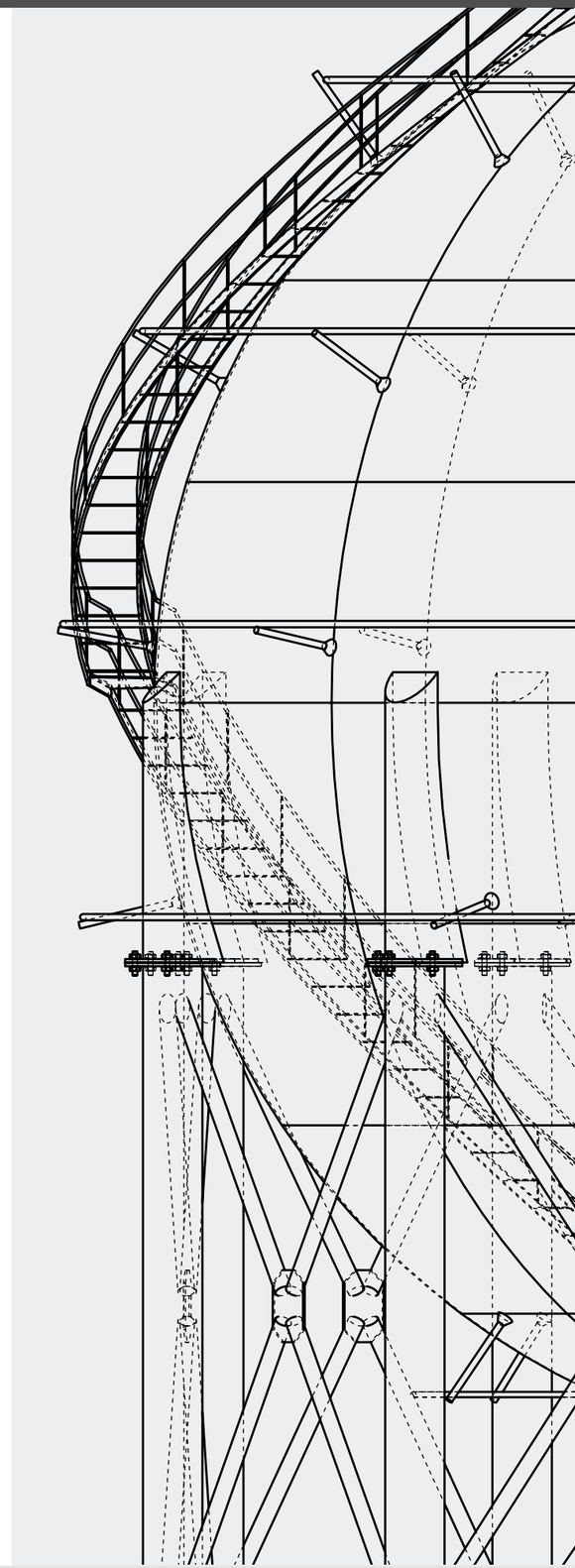
> “Engineering teams that analyze and determine pipeline crossings may look at hundreds or thousands of crossing requests per year.”

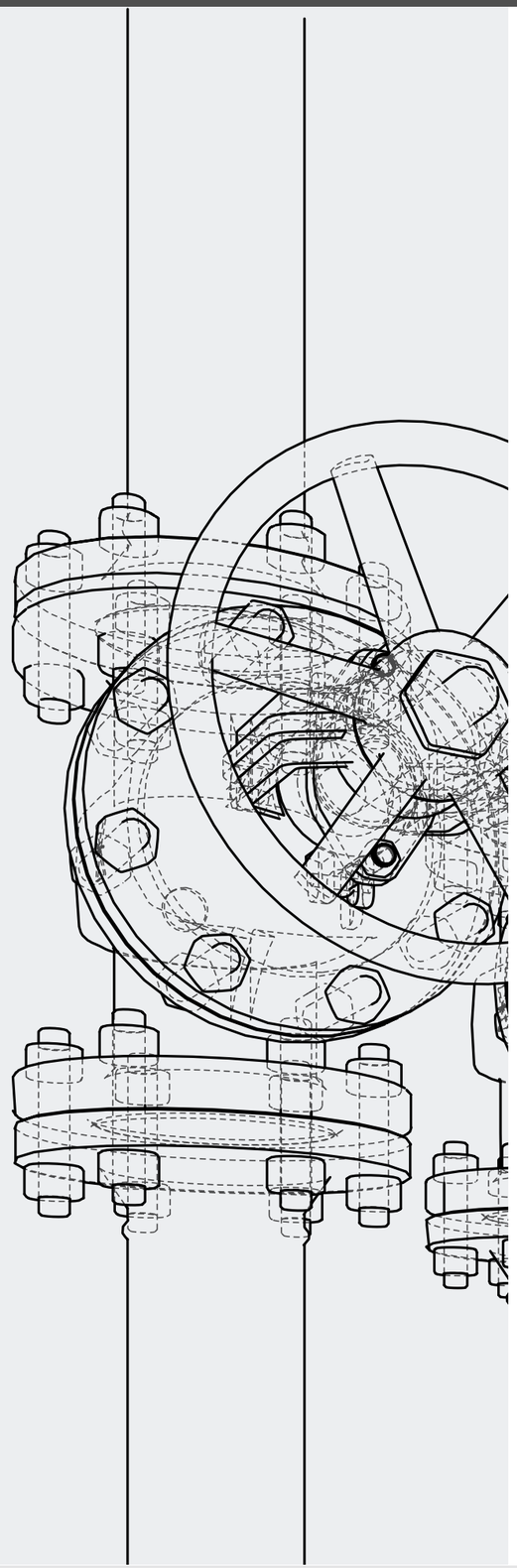
4. Everyday Engineering Tools

Depending on the nature of your business, the roles of your engineers, and the tempo of operations, you may only use a few calculation tools or formulas daily. However, even routine, everyday operational decisions can lead to endless what-ifs. Your everyday workflows should also give you access to data from past cases and calculations so you can leverage it more efficiently and consistently. When your solution automates the day-to-day workflows, it frees your engineers for more valuable tasks.

For example, there are scenarios like allowing heavy machinery to drive along or across the right-of-way, that carry risk. Each point at which decision-makers have to switch different applications, every shortcut, simplifying assumption, or reliance on imperfect recollections of past issues, introduces risk.

Engineering teams that analyze and determine pipeline crossings may look at hundreds or thousands of crossing requests per year. When companies adopt a dedicated midstream solution, the typical result is that one engineer can do the work that had previously tied up a team of six that had used manual methods. With it, your engineers can spend more time focused on discovering new business opportunities for the company. The same concept applies to other day-to-day operational needs.





5. Collaboration

According to a recent article in the Harvard Business Review, over the last two decades the conventions and methodologies of business and management have steadily been growing more collaborative. To remain competitive, companies, their departments, and individual solution-users must have the most efficient workflows possible as well as unfettered access to case histories. You can only achieve such efficiencies and integration through investment in collaborative resources.

According to the HBR piece, these are informational, personal, and social assets such as knowledge and skill, access to stored information, and the user's time and energy. In pipeline design and operations, decision-making is often a collaborative process. Engineers and managers need to confer with stakeholders and colleagues. However, that is not always a smooth and productive process. It can be a drain on ROI. Collaborators require a standard frame of reference to work together successfully.

Leveraging the knowledge and work of others is a critical part of midstream engineering. Applying automation to parts of that interaction facilitates more effective cross-functional collaboration. In turn, that changes the types of conversations you have and leads to better decisions. It reveals the traps hidden within your simplifying assumptions.

For example, assuming metal loss is minimal in a crossing determination could lead to disaster. Seeing the case history and condition of the pipe helps to prevent such errors. It could be the results of inline inspection runs done by other teams and remaining-strength calculations that make the difference. If your software automatically shows you the work of other teams or organizations, you can investigate the implications of your assumptions before you take action.

> "To remain competitive, companies, their departments, and individual solution-users must have the most efficient workflows possible..."

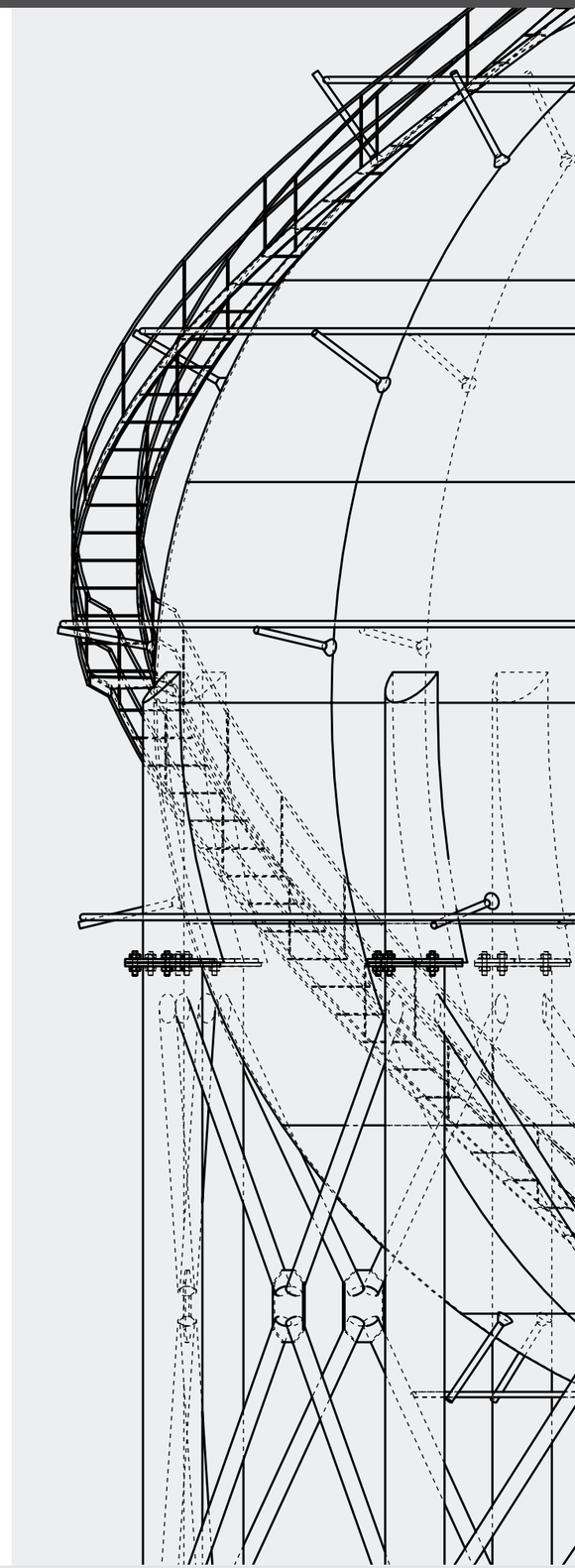
“... having a solution on hand that spans the life-cycle of pipeline assets enables you to be flexible and nimble in taking on new projects...”

6. A Toolbox for Every Eventuality

Accidents and unexpected events are not as common in the oil and gas industry as they once were. However, they do still happen. Additionally, a project or change initiative sometimes fails, and engineers or project managers have to perform an investigation to find out why. It helps to have the tools available to respond to unexpected events, to determine the causes, and decide on corrective actions.

In the event of a failure or accident, conventional practice is to form an investigating team. The size of the team will depend on the difficulty of finding the data. On those occasions, when you are confronted by the unexpected and forced to respond, having a dedicated toolbox can be the difference between a protracted revenue interruption and a swift return to full production. Additionally, it demonstrates your goodwill and professionalism, which gives you the intangible benefit of increasing your reputation and standing among your peers, and with industry regulators.

For service providers, having a solution on hand that spans the life-cycle of pipeline assets enables you to be flexible and nimble in taking on new projects without having to learn new software systems. This reduction in change management efforts can pay huge dividends in project acceleration and ultimately in profitability.



The Case for Technical Toolboxes

Technical Toolboxes solutions for midstream pipeline engineers bring together the information resources that facilitate collaboration and greater engineering efficiency. We integrate disparate legacy practices and standards into unified company-wide SOPs. Technical Toolboxes participates actively as a member of many influential professional organizations. Our engagement within the industry gives us all of the necessary insights. With over 400 midstream companies and 4000+ North American pipeline engineers using our solutions daily, Technical Toolboxes understands the midstream business from regulations and best practices for practical application of theory, to data management, to workflow optimization and technical engineering decision making processes.

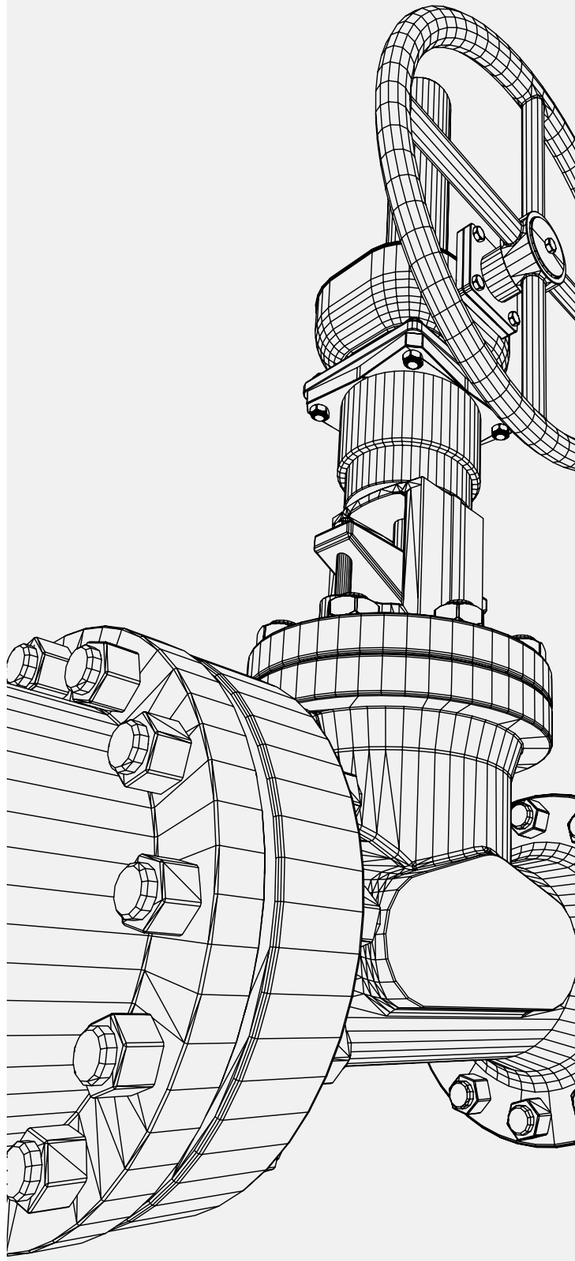
Pipeline Toolbox

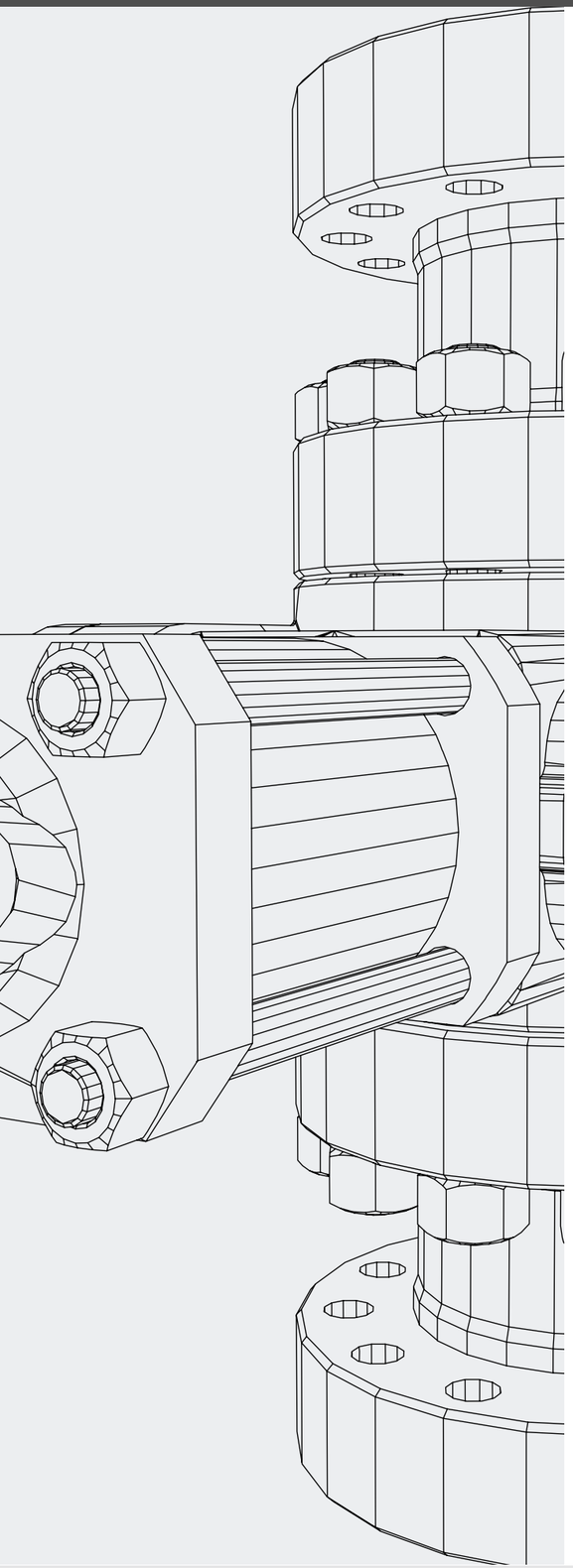
Our midstream pipeline solution, Pipeline Toolbox (PLTB), contains more than 250 applications. Engineers use Pipeline Toolbox to solve many of the daily questions that arise in pipeline design, construction, operations, and integrity. Now, Pipeline Toolbox integrates into the Technical Toolboxes HUBPL platform. It paves the way for automating integration and analyses to reveal insights into the design and operational fitness of your assets and infrastructure solutions. HUBPL filters your calculations through all industry and regulatory standards to ensure your information is compliant.

Today's pipeline engineers must be able to access reliable data at a moment's notice. Spreadsheet systems do not cut it at the corporate scale. Manual data entry introduces the risk of human error into pipeline calculations, as individual users can inadvertently change data. In-house solutions lack the capabilities and industry standards of dedicated solutions. Additionally, these systems take days or even weeks to calculate the necessary data for design, installation, repairs, or audits.

The Enterprise Edition of PLTB includes the applications for both gas and liquid pipelines. It is an industry-leading dedicated solution, ensuring that all engineers are seeing the same data and can make calculations at critical moments throughout all stages of the pipeline lifecycle. Gas-only and liquid-only versions are available.

The long list of midstream and supply chain service companies that rely on Pipeline Toolbox include Fortune 500 oil and gas pipeline operators to enhance their pipeline engineering performance. With 250+ analyses, PLTB on the HUBPL allows you to load the data set, avoid fat-finger errors, and understand specific cases.





Smaller companies in the industry may lack the resources to build pipeline data management solutions in-house. Pipeline Toolbox helps them be more flexible and competitive by saving time and cost. The IT departments of well-resourced medium and enterprise-scale companies also benefit by using Pipeline Toolbox. Implementing a commercially-available dedicated solution like Pipeline Toolbox helps them achieve better ROI and do it more quickly.

Pipeline HUB

The release of the Pipeline Hub (HUBPL) represents a milestone in the Technical Toolboxes' product line-up. It is the newest element in our mission to enable clients to reduce risk, advance project schedules, and increase profitability. As the industry embraces digital transformation, the legacy applications are evolving from manual calculators into sophisticated, integrated, holistic analysis tools. This new platform paves the way for automating integration and analyses to reveal advanced insights into the design and operational fitness, as well as the status of assets and infrastructure.

For more than 20 years, Technical Toolboxes has been a leading software provider supporting midstream engineering needs. The HUBPL connects our library of engineering standards and tools to your data at all stages of the pipeline lifecycle. Products such as Pipeline Toolbox, PRCI RSTRENG®, and PRCI AC Mitigation Toolbox set the industry standard, and are deployed by more than 400 leading midstream operators and service providers. Now, the HUBPL further expands your engineering resources with map integration. This visual environment helps to bridge communication gaps within teams and generate insights to enhance pipeline design and operations.

"The Enterprise Edition of PLTB includes the applications for both gas and liquid pipelines. "

> “Technical Toolboxes offers products designed by pipeline engineers for pipeline engineers, integrity engineers, and operations managers. ”

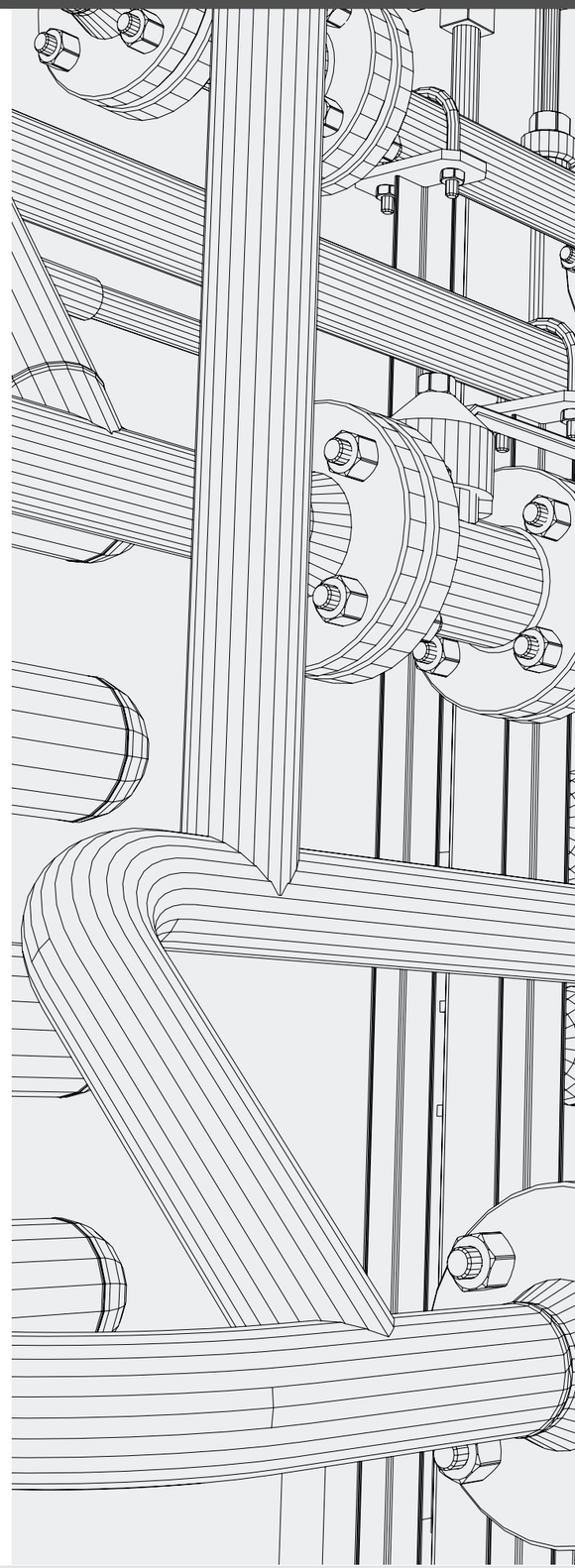
Next Steps

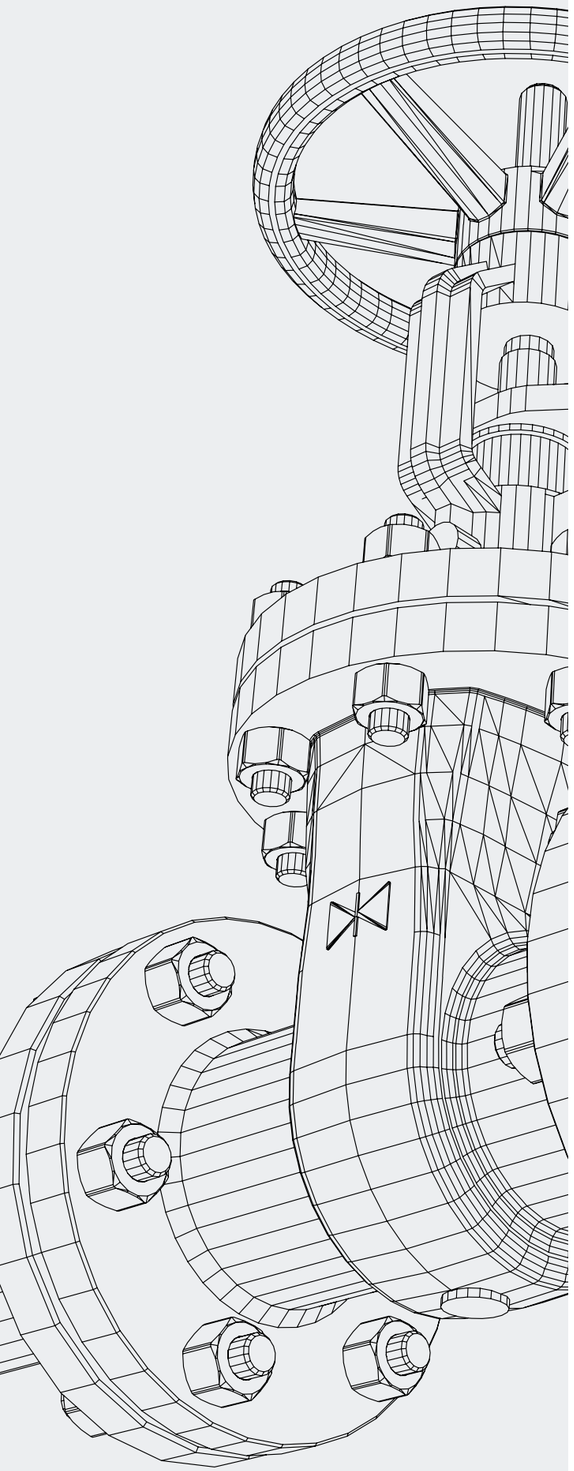
Technical Toolboxes offers products designed by pipeline engineers for pipeline engineers, integrity engineers, and operations managers. Our pipeline engineering solutions help you manage your key asset data while you maintain the quality, productivity while meeting industry standards and company SOPs in daily operations.

A solution from Technical Toolboxes gives users the ability to build workflows and implement standard formulas to achieve high-quality results consistently. At the same time, you will have the peace of mind to know that, should the unexpected occur, you will have the right tools at hand to respond promptly and effectively.

Technical Toolboxes allows you to stand back to see the big picture. You will also have ample capacity to examine the details of any engineering problem collaboratively and make smart decisions. Most of all, you will be able to deploy your engineering teams in ways that make the best use of their skills and knowledge. They will spend more time taking care of business and finding new opportunities for you.

If you are seeking the best midstream software solution for your pipeline engineers, contact Technical Toolboxes today. We will answer your questions, arrange a no-obligation software demonstration, or set up a free trial.





Our Midstream Solutions in Summary

Technical Toolboxes solutions give you the tools to:

- Quickly perform engineering calculations through design, construction, operations and integrity phases of the pipeline lifecycle
- Create improved engineering workflows and implement standard formulas and reduce your data management workload
- Understand your pipeline network's Big Picture by overlaying key asset, GIS, and inspection data on geographical map displays
- Improve your day-to-day productivity significantly
- Collaborate on multi-team projects
- Respond to unexpected events and deliver answers, which substantially improves the quality of the results that you produce

Click here to learn more about Technical Toolboxes and receive a 30-day free trial

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Hydrotest PowerTool
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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.