

A welder wearing a brown leather jacket, a silver face shield, and yellow gloves is working on a large black pipe. The welder is using a torch to create a hot tap on the pipe. The background is a dirt field.

# Hot Tap Toolbox Success Stories



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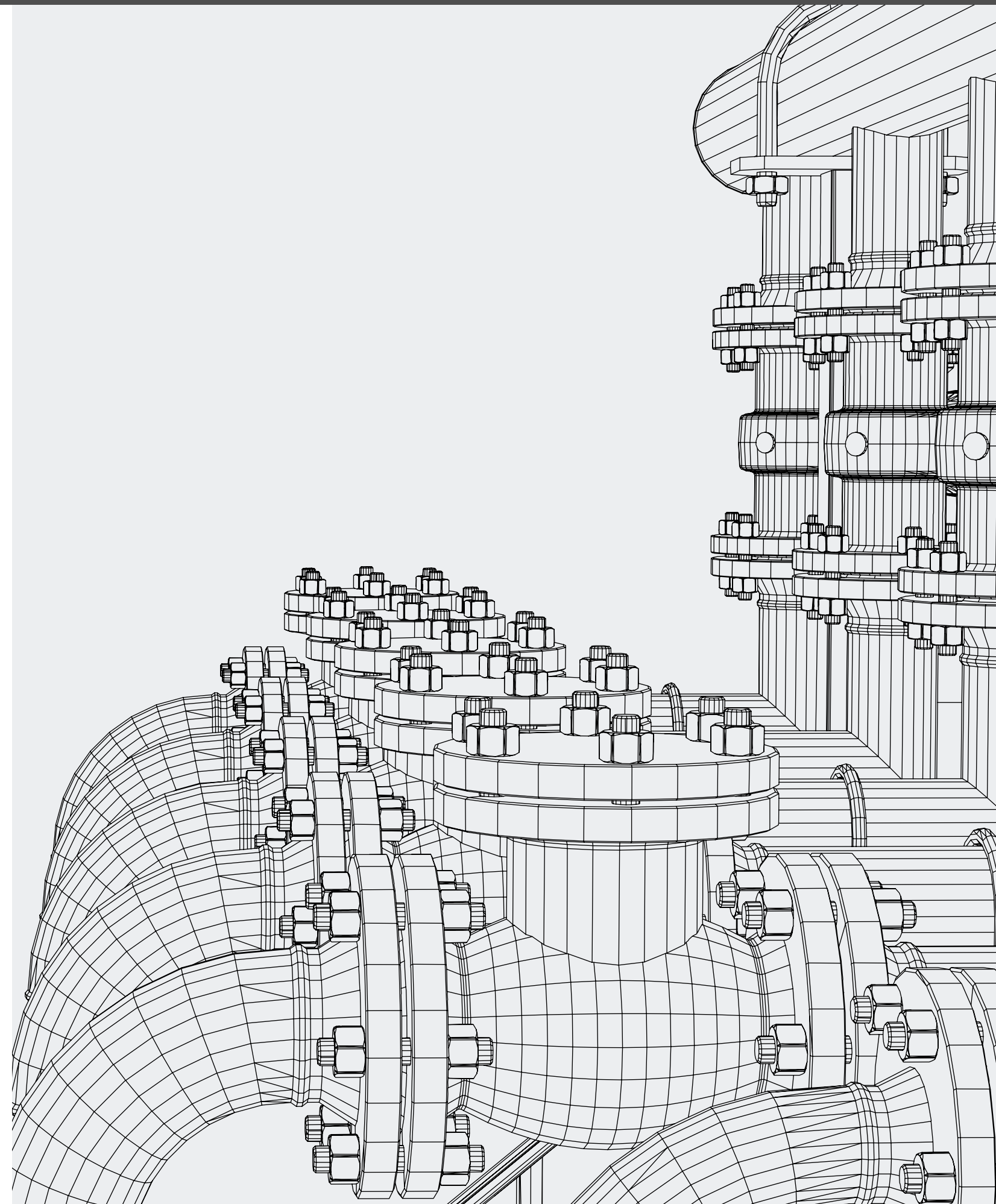
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## Who Should Read This?

Midstream oil and gas sector operators understand that safety is of the utmost importance. Hot tap specialists and in-service welders on pipelines work around the challenges faced in high-risk operation while also needing to increase efficiency when possible.

Operating in this sector requires that your company perform at optimal levels. To do this, you need the tools that are essential to performing an analysis on the safety of a job while avoiding costly maintenance shutdowns. Therefore, if your organization needs to mitigate the risks that revolve around in-service welding to divert or maintain live oil and gas pipelines while preserving customer service levels and guaranteeing product flow, you should be interested in this content.

Pipeline engineers face a multitude of challenges, including having to balance operational efficiency and safety, while also managing overhead. We interviewed various PRCI Hot Tap Toolbox (HTTB) users in the North American midstream oil and gas sector regarding their involvement in managing assets using our software. While their specific function and job title differed, their situations and experiences provided a set of similar circumstances and scenarios that resulted in a convergence of success stories.

**“Pipeline engineers face a multitude of challenges, including having to balance operational efficiency and safety, while also managing overhead”**



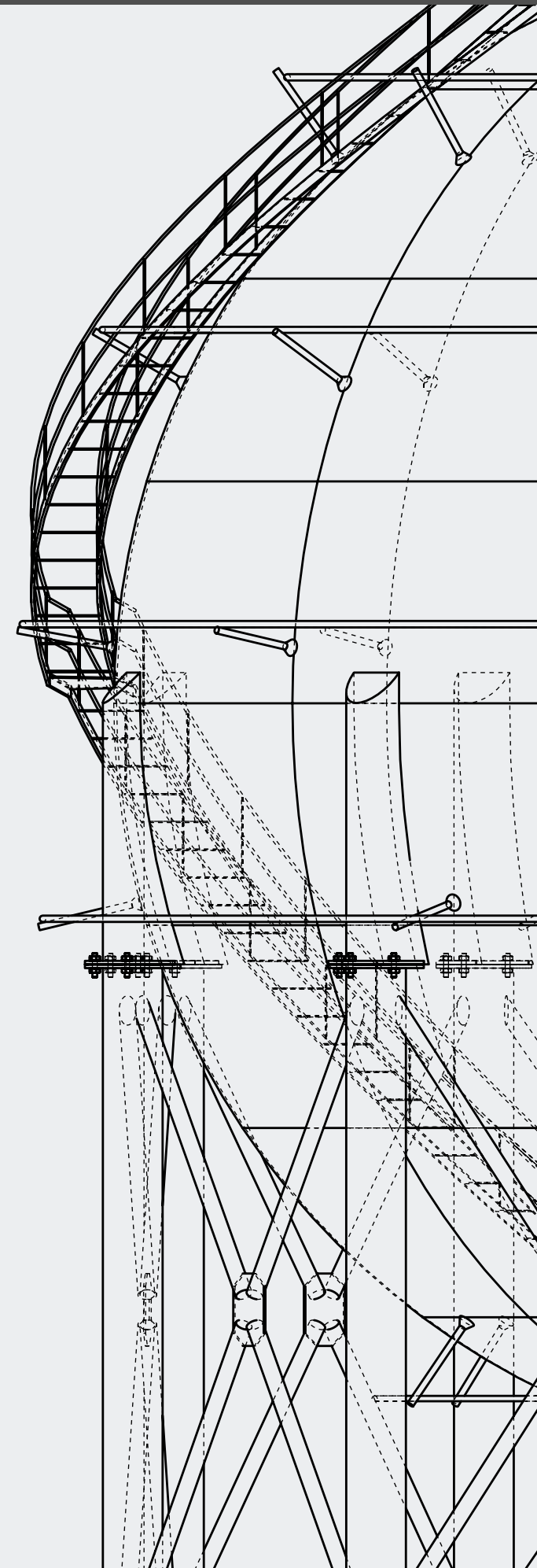


“Variables such as welding parameters, the base material’s heat conductivity, and chemical composition are indispensable for the safety of the process.”

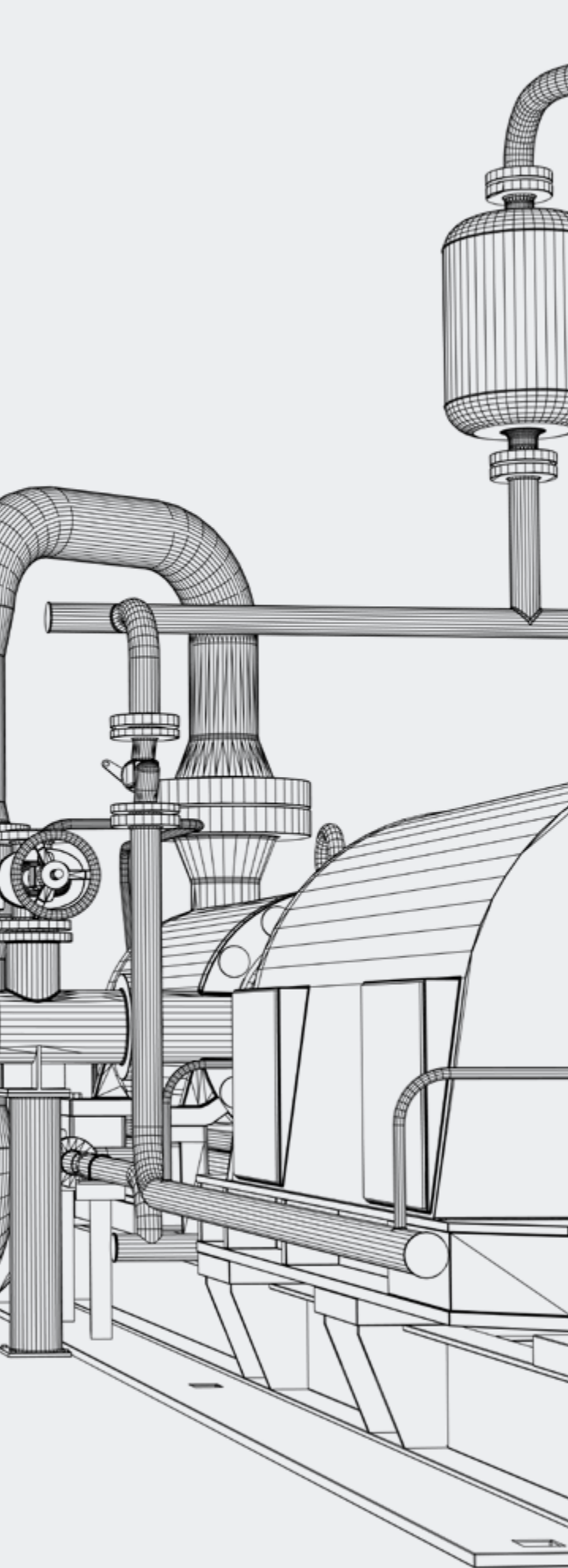
## Background

When managing and maintaining pipeline assets in the oil and gas sector, time management and efficiency directly affect the profitability of organizations involved in such activities. However, neither of these factors can offset the need for worker safety and pipeline integrity. Therefore, tools that mitigate the risks associated with heat-affected zones, hydrocarbons, inaccurate welding models, among others, prove to add value.

The process of welding a flange onto an operational pipeline possesses inherent susceptibilities, including the possibility of burn-through and hydrogen cracking. To avoid these dangerous scenarios, engineering calculations must include factoring in welding heat input, pipeline conditions, welding electrode selection, and welding speed, among others. Understanding variables such as welding parameters, the base material’s heat conductivity, and chemical composition is indispensable to the safety of the process.







The practice of selecting in-service tools for engineers requires considering operational safety, industry standards, cost management, and data-driven decision-making that also aligns with organizational needs. Consequently, said tools need to ensure that an operation stays within the safety limits that prevent an innately risky procedure from becoming dangerous. Additionally, the software tools must conform with a set of industry standards like API 1104, API 1107, ASME Section IX, BS4515, BS6990, and CSA Z662 while also balancing risk with operational expenses.

PRCI Hot Tap Toolbox (HTTB), based on a time-proven model that conforms with industry best practices, not only mitigates and accounts for the aforementioned risks and variables, but also reduces costs and increases efficiency. The tool does this by allowing users to adjust parameters based on the reality of their current situation while also avoiding unnecessary pipeline shutdowns that arise from specifications that are potentially obsolete. Using data-driven modeling, engineers can control and mitigate risks, drive down costs, conform to industry standards, and generate successful outcomes.

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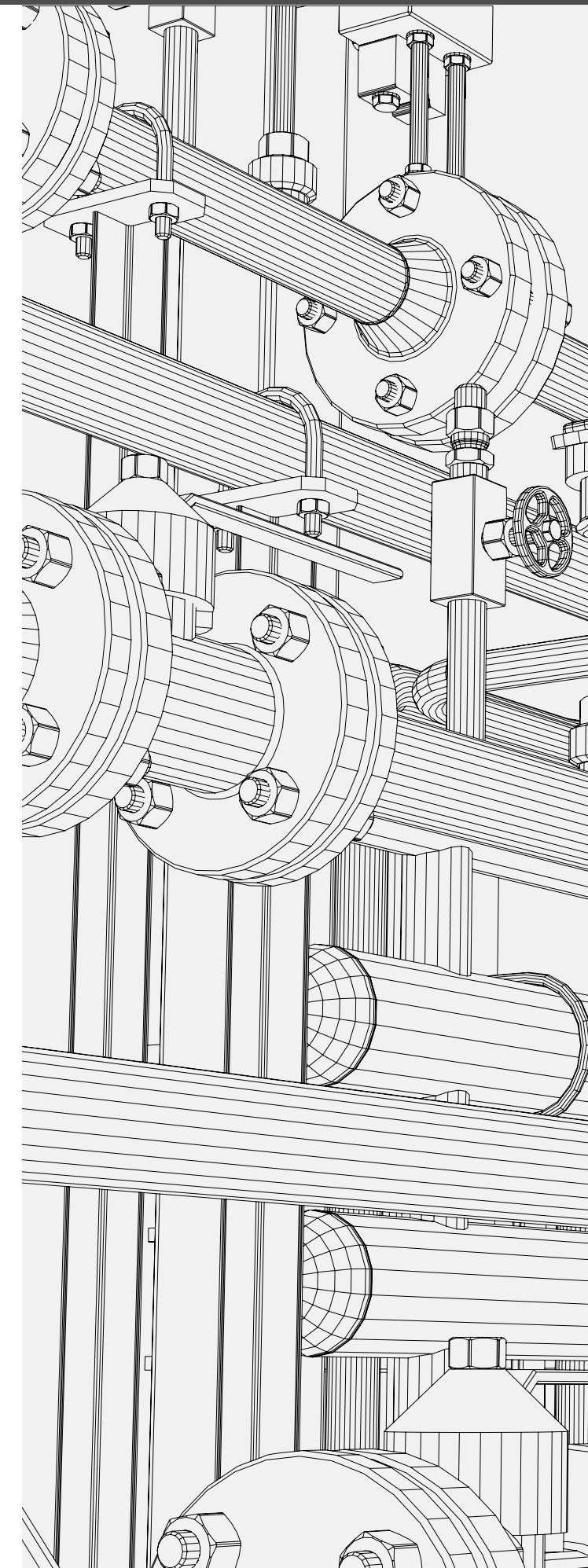


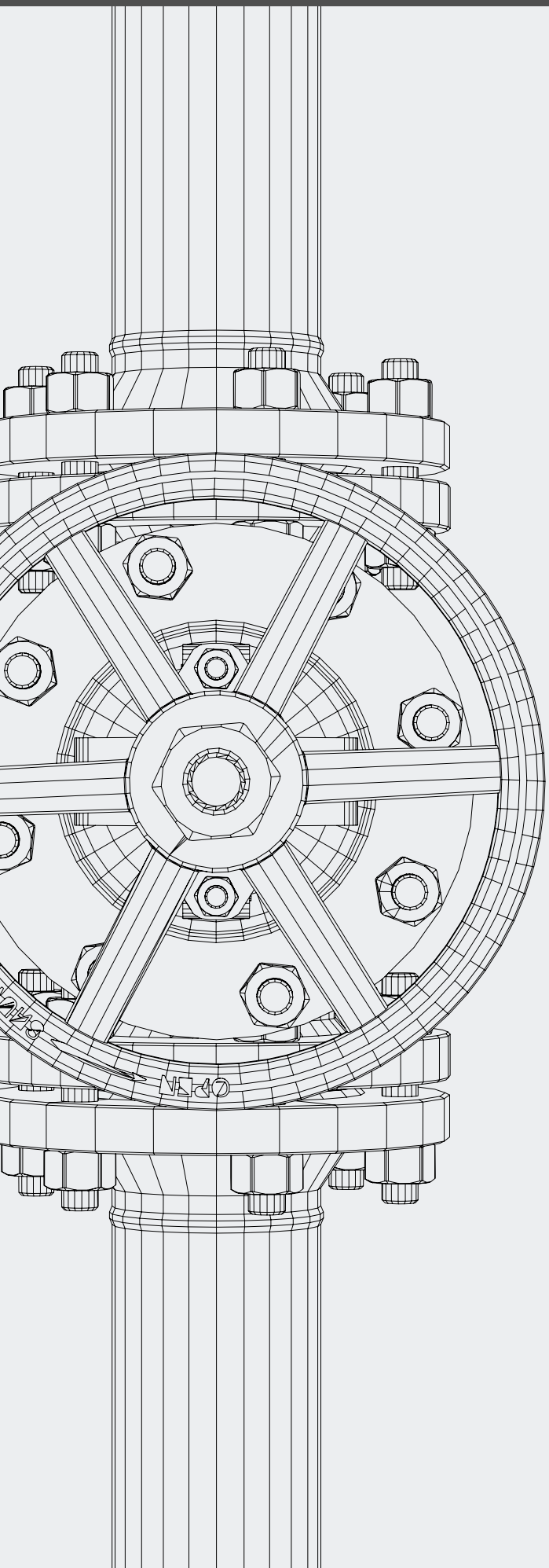


# Success Story: Organizations Avoid Costly Shutdowns from Outdated Requirements

After interviewing several North American companies involved in managing pipeline assets, we were able to detect several parallels from their experiences with the tools. Based on the dialogue, the interviewees mentioned how the HTTB allowed the organization to safely re-evaluate pipeline welding specifications developed decades earlier. Therefore, in-service welding tasks that were once impossible to complete without undergoing a pipeline shutdown were possible to execute with the use of the software model that takes into consideration more updated information about their current scenario, materials, and respective safety parameters.

While avoiding the costs associated with shutting down an asset such as heavy equipment, ditch digging, and cleaning to bring the pipe back online does save money, the profit-saver that guarantees service levels and customer satisfaction is the ability to remain operative while performing safe maintenance. According to the scenarios of those interviewed, depending on the criticality of the line, using the toolkit avoids cases where product cannot flow to the customer and saves days of downtime that translate to hundreds of thousands of dollars.





These companies went from having guidelines that prohibited making an in-service weld to using a time-tested and industry-proven model that maximizes weld quality and safety. Furthermore, the use of the HTTB promoted their ability to retain information and experience gained from each subsequent project, providing the organization with a built-in procedure for institutionalizing knowledge. This process promotes the creation and improvement of best practices, increases organizational efficiency, and allows for cross-company knowledge-sharing.

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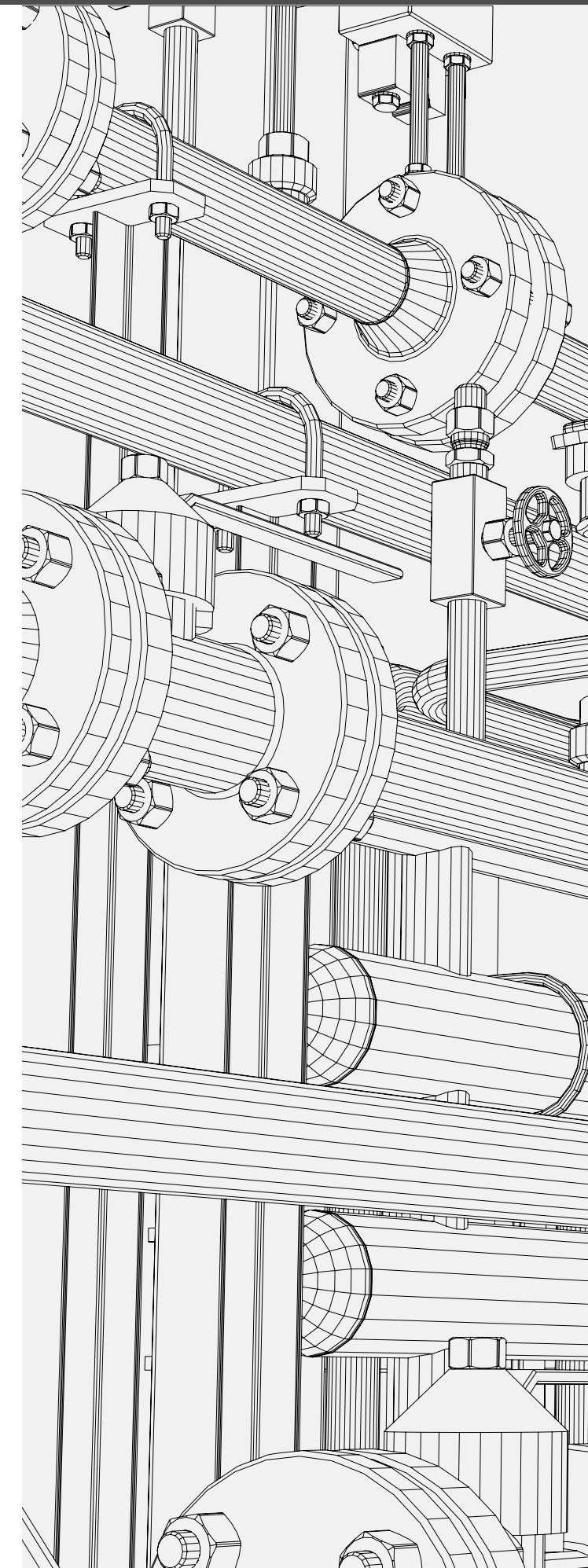




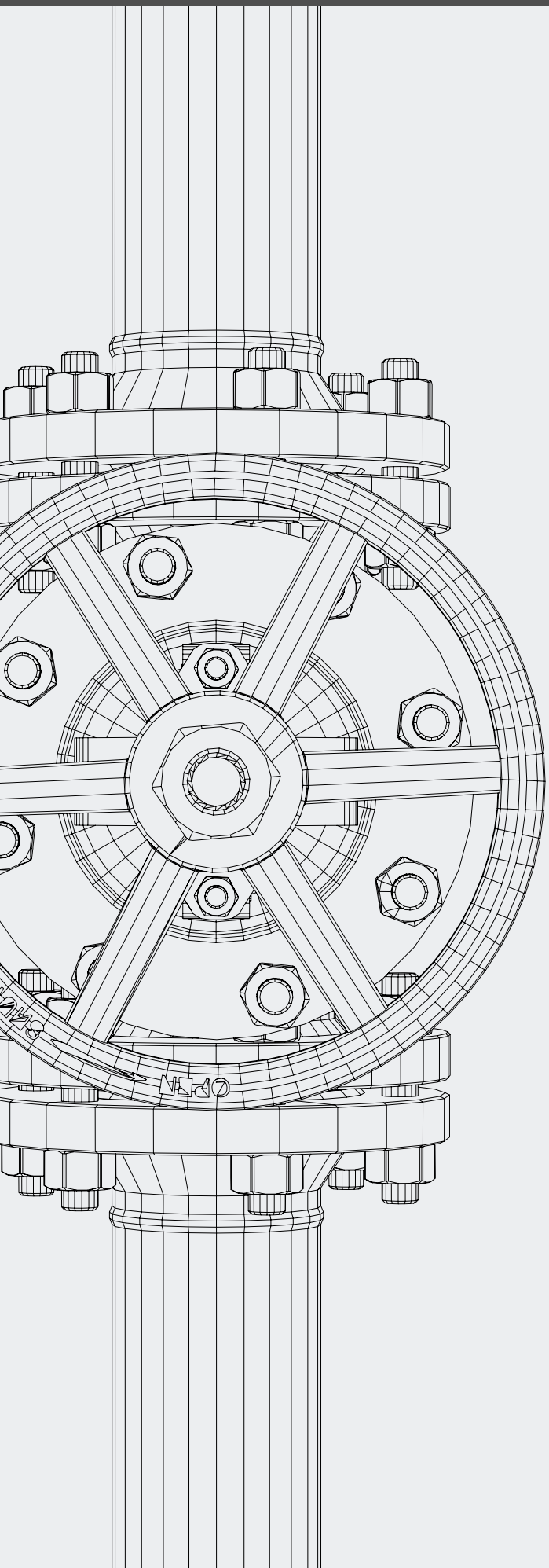
# Success Story: Companies Quickly Adapt to Changes in Parameters

In-service welding depends on more than just having a qualified procedure. Said procedures may be applied safely in some cases; nevertheless, in others, the same can prove to be unsafe. Therefore, companies must rely on a model that allows them to operate under a subset of conditions that can guarantee that a job can be completed in a matter that mitigates risk. Upon interviewing various industry-leading organizations that use PRCI Hot Tap Toolbox, we were able to draw two important conclusions.

The first is that pipeline maintenance projects require a way to evaluate the changing operating conditions. This includes the flow rate of the product, pressure, and wall thickness, among others. The model used in HTTP allows users to evaluate the current case and adjust parameters to provide for a safe welding environment. The tool makes a difference because changes in flow rate and wall thickness that influence the cooling process can increase the probability of break-through. However, these can be adjusted in real-time with actual known values.







Additionally, what-if scenarios are important to these types of maintenance projects. According to the observations made by the interviewees, a common oversight in the industry is assuming that because a pipeline was previously worked on, the conditions of a weld will be the same. Nevertheless, every time work is performed on a line, the organization needs to review all factors and execute their due diligence as if it was a pipe that was never worked on. With the HTTB, users can perform what-if analysis on different aspects and as conditions change.

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“Digital transformation, technological implementation, and automation help organizations develop sustainable competitive advantages...”



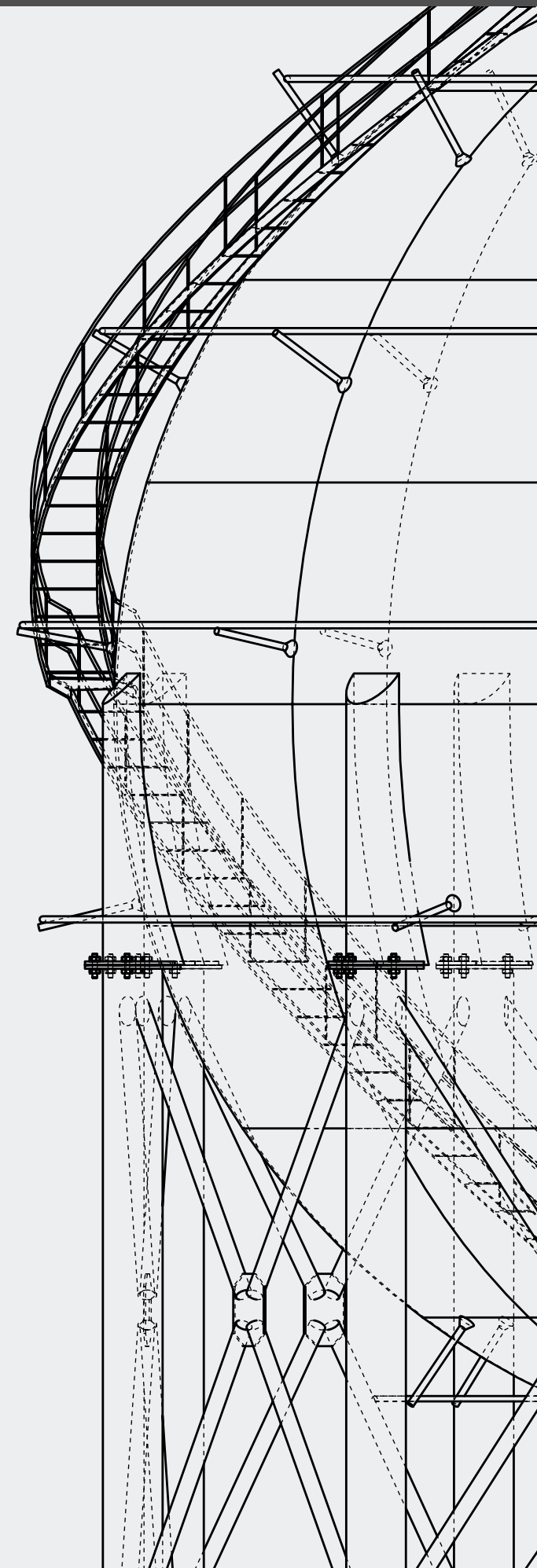
## Conclusions

Hot-tapping onto an in-service pipeline is essential to ensure that the delivery of a product is not interrupted by needed maintenance. However, regardless of the costs associated with a shutdown, if a welding project does not fit the previously established specifications for a safe weld, one of two possibilities exist.

Either a complete shutdown will need to take place, thus following the historical specifications created for a safe weld, or specifications will have to be updated with newer, known conditions. The first costs the organization time and money, while the other increases efficiency while greatly reducing downtime.

With HTTP, organizations leverage the power of technology to increase profitability while maintaining high-efficiency levels. More importantly, the toolkit practically guarantees that your customers are receiving their product without service interruptions in a safe and timely manner while reducing welding-related risks.

With PRCI Hot Tap Toolbox, companies maximize pipeline integrity, increasing their life-cycles while promoting a company-wide standard operating procedure. The success stories compiled by interviewing our users provide a proof of concept that demonstrates how our tools can add productivity and efficiency while driving down costs. All of this is achieved while using data-driven modeling that institutionalizes knowledge and experience, allowing the organization to retain know-how and improve future projects.





## Next Steps

- Request a Hot Tap Toolbox demo
- Contact us anytime with questions or send us your feedback
- Visit the Technical Toolboxes website for more resources
- Register for a training course







Technical Toolboxes  
10370 Richmond Ave, Suite 1150  
Houston, TX 77042, USA

Toll Free: (866) 866-6766  
Phone: (713) 630-0505  
Fax: (713) 630-0560

[info@technicaltoolboxes.com](mailto:info@technicaltoolboxes.com)  
[www.technicaltoolboxes.com](http://www.technicaltoolboxes.com)

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