TECHNICAL TOOLBOXES

The HDD PowerTool ROI Guide

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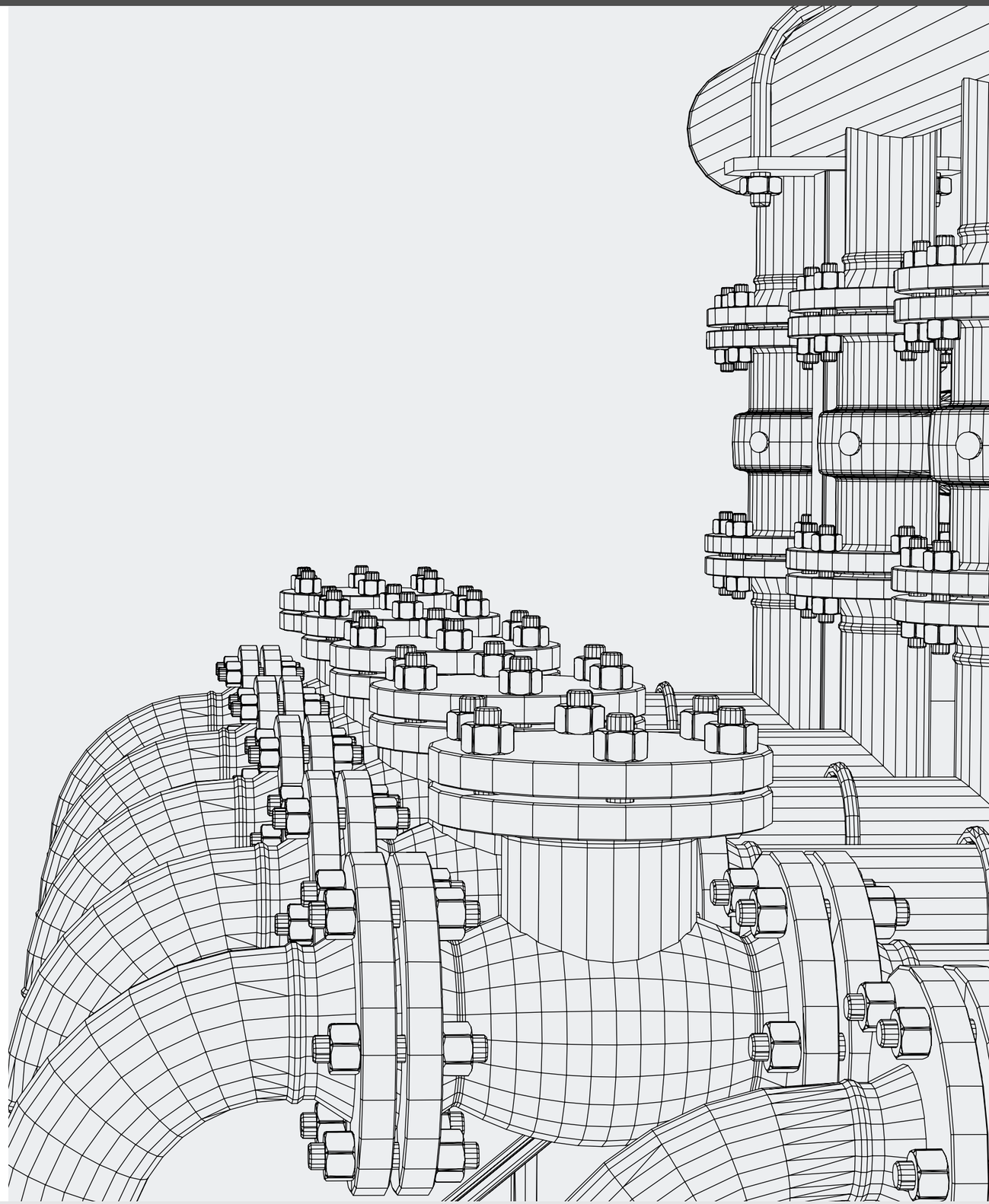


Who Needs This Guide?

The HDD PowerTool ROI Guide is for busy senior engineers and executives who design and/or construct horizontal directional drilling bore paths for oil and gas or utility companies. This guide reveals how the HDD PT provides the framework to maximize your engineering productivity. It gives examples of how the software reduces HDD expenditures in terms of cost and risk exposure for steel and PE pipelines.

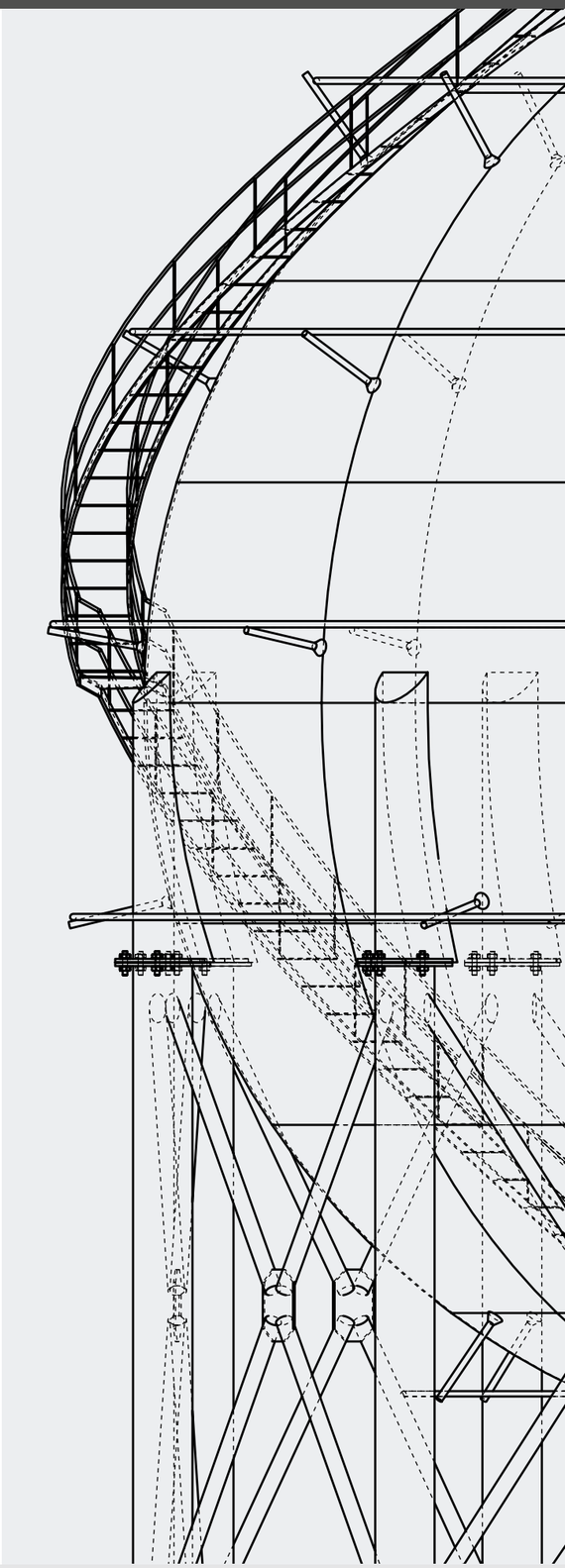
> “This guide reveals how the HDD PT provides the framework to maximize your engineering productivity. ”

“Asset owners face extreme financial and reputational liability if an HDD design fails in the field. ”

The ROI on Horizontal Directional Drilling

When Operators choose HDD, there are trade-offs between complexity and cost savings in capital expenditure (CapEx) and operational expenditures (OpEx) compared to alternative solutions, assuming any are available.

To get the most return on investment from HDD, asset owners, engineering design teams, and contractors in the field need accurate tools for design and validation. Contractors have practical concerns about equipment, bore-path, and drilling fluids, and they need to validate designs before drilling. Asset owners face extreme financial and reputational liability if an HDD design fails in the field.

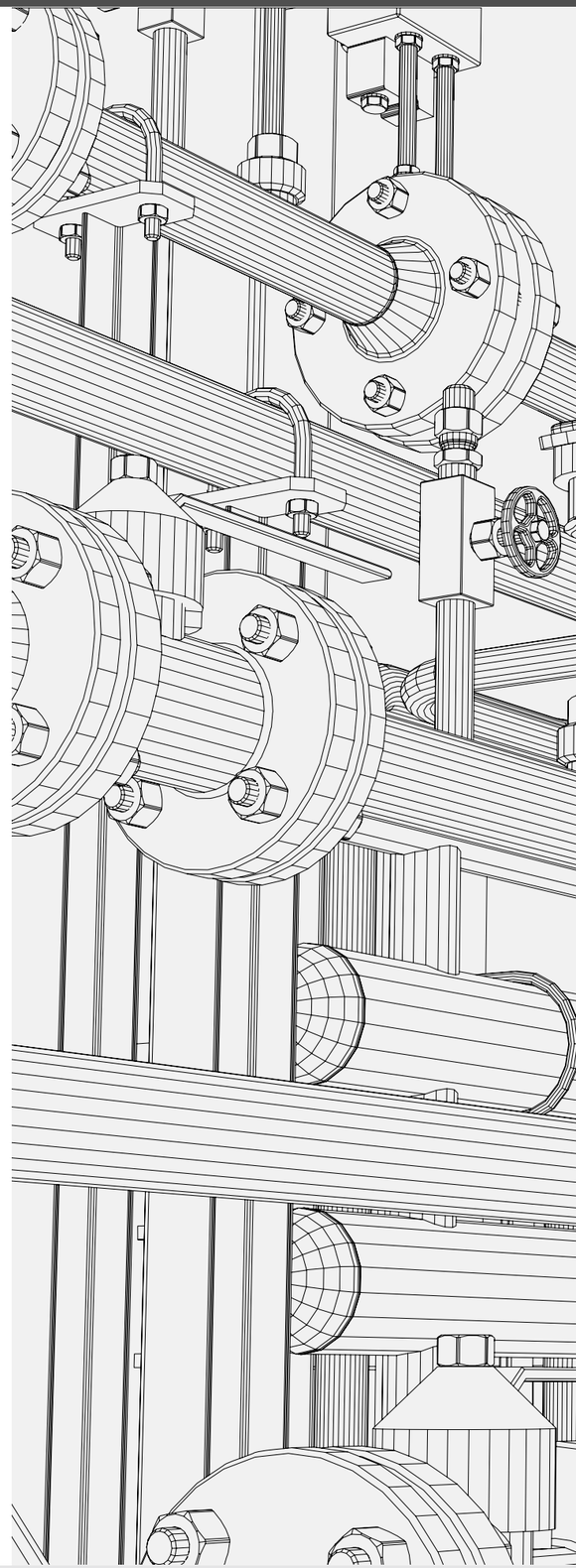


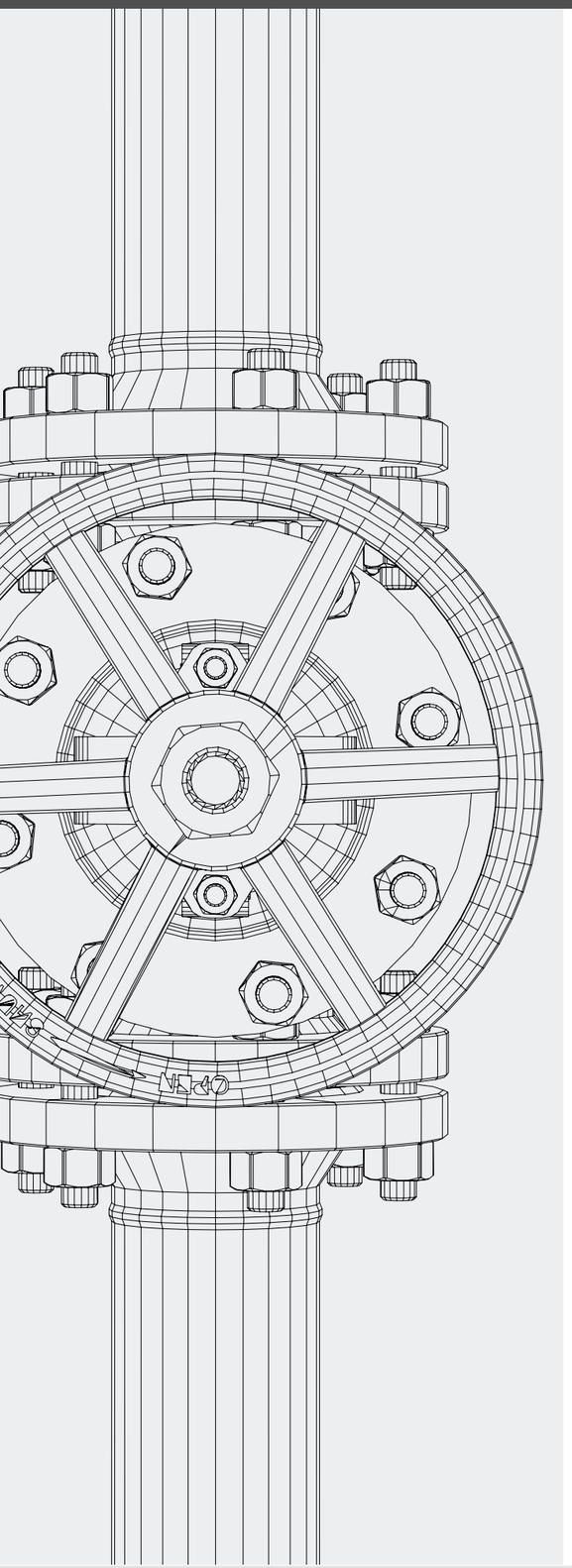
Achieving Superior ROI with HDD PT

HDD PowerTool (HDD PT) from Technical Toolboxes is a design and validation solution that enhances HDD engineering performance and standardizes calculations as part of an engineering platform that saves engineering time and prevents costly errors.

Compared to manual methods, ad-hoc in-house spreadsheets, and third-party stand-alone software solutions, the small incremental investment in the HDD PT provides remarkable opportunities for returns. The data integration capabilities of connecting to the Pipeline HUB (HUB^{PL}) make it vastly more capable than stand-alone applications. Return on Investment for HDD PT has three relevant perspectives:

- Engineering hours
- Risk mitigation
- Software investment





Investment in Engineering Time Saved

At the engineering level, accuracy, reliability, and speed matter in terms of capacity. When each member delivers more productivity, engineering teams can devote more resources to exploring new opportunities for the business. Automation reduces the data administration workload, manual data entry errors, and time spent hunting through documents or other repetitive tasks with every new project.

Engineering Team Example

Rapid data gathering and access to case histories and improved data accuracy result in fewer engineering hours spent on each analysis. Reducing the time spent by engineering teams cuts hundreds of thousands or millions from an engineering department's labor costs, freeing engineers for more productive activities.

> "When each member delivers more productivity, engineering teams can devote more resources to exploring new opportunities for the business. "

"Rapid data gathering and access to case histories and improved data accuracy result in fewer engineering hours spent on each analysis"

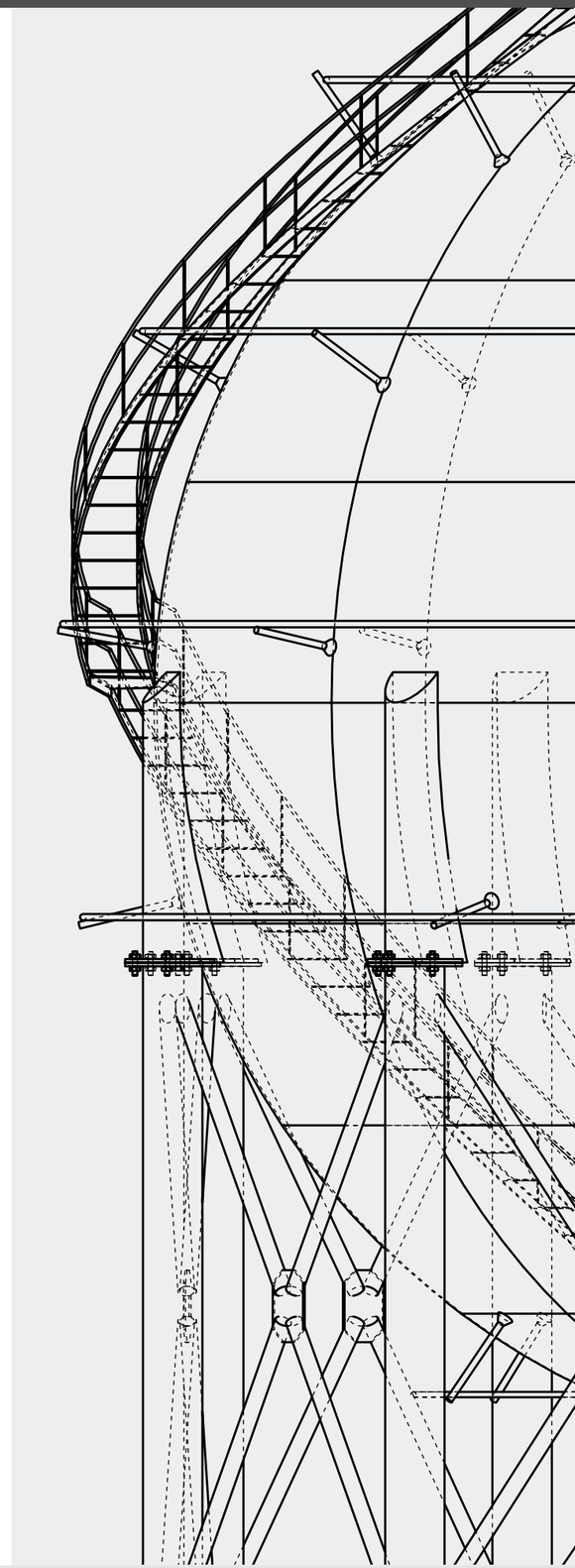
Where:

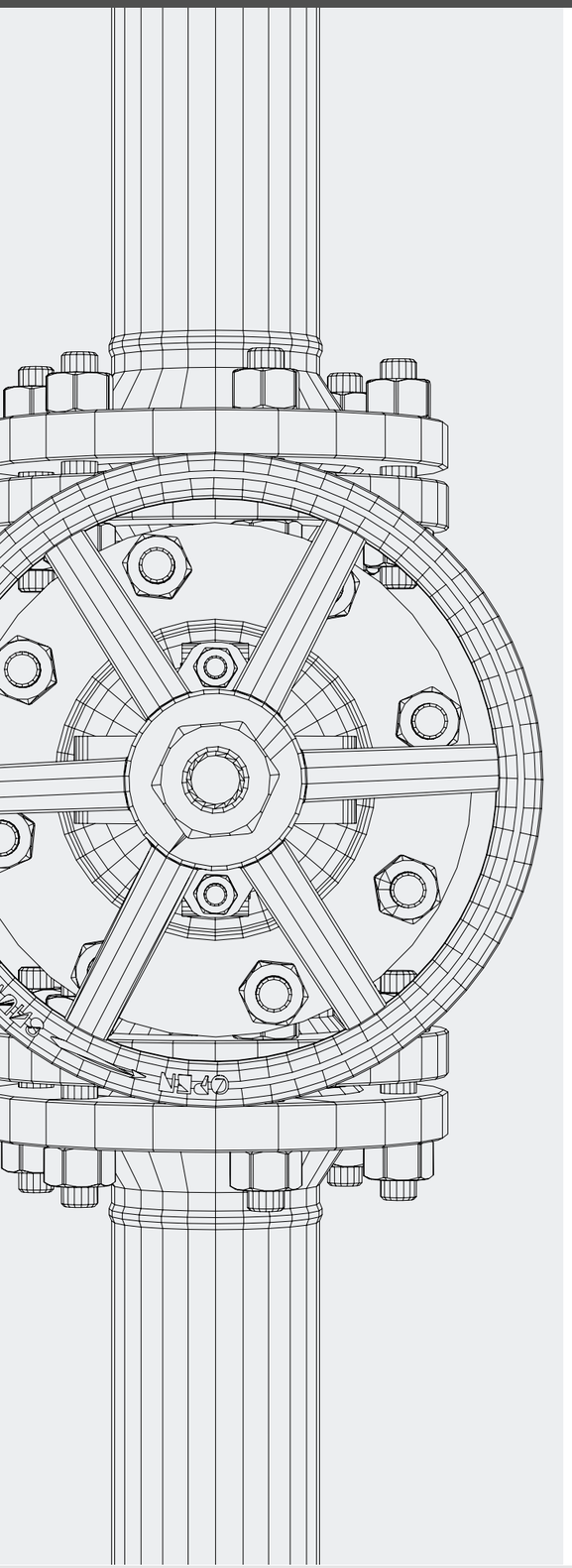
Engineering hours cost $150 per hour

Full-time employees work 52 weeks per year x 40 hours per week = 2080 hours

If the time to complete HDD analyses formerly performed by a team of seven engineers in a year can be done by three engineers using HDD PT:

- 2080 x $150 = $312,000 per year per engineer
- $312k x 7 = $2,184,000
- $312k x 3 = $936,000
- The difference of $1,240,000 equates to a savings of 57%





Investment in Risk Mitigation

If a bore path fails, at the very least, the work will have to be redone, adding significant cost to the project. In a worst case scenario, drilling mud inadvertently finds its way to rivers or residential lawns resulting in cleanup costs, fines, and lawsuits. In practice, engineers compensate by increasing the margins in calculations. They design deeper or longer drill paths that require more time to complete. When using the HDD PT, confidence in calculations allows engineers to optimize designs and refine margins, reducing capital and operational expenditure.

Savings from risk mitigation can be challenging to quantify. Qualitatively, the assurances provided by HDD PT address the risk associated with errors in drill path design and costly frac-outs in three ways:

1. Preventing hundreds of thousands or millions of dollars in fines or remediations
2. Replacing margins of error estimations with accurate data and calculations for leaner, more consistent resource allocation
3. Validating the work of third-party contractors in-house improves confidence and provides an important quality check

“If a bore path fails, at the very least, the work will have to be redone, adding significant cost to the project.”

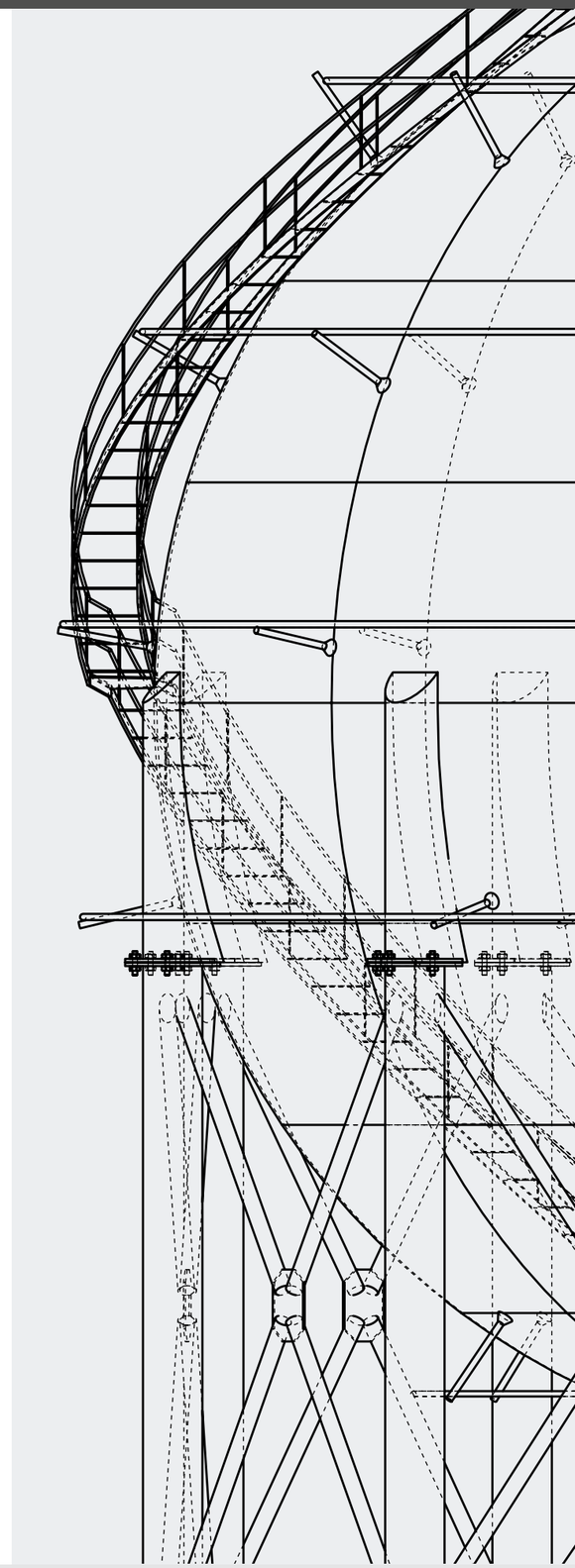
“Confidence in calculations allows engineers to optimize designs and refine margins, reducing capital and operational expenditure.”

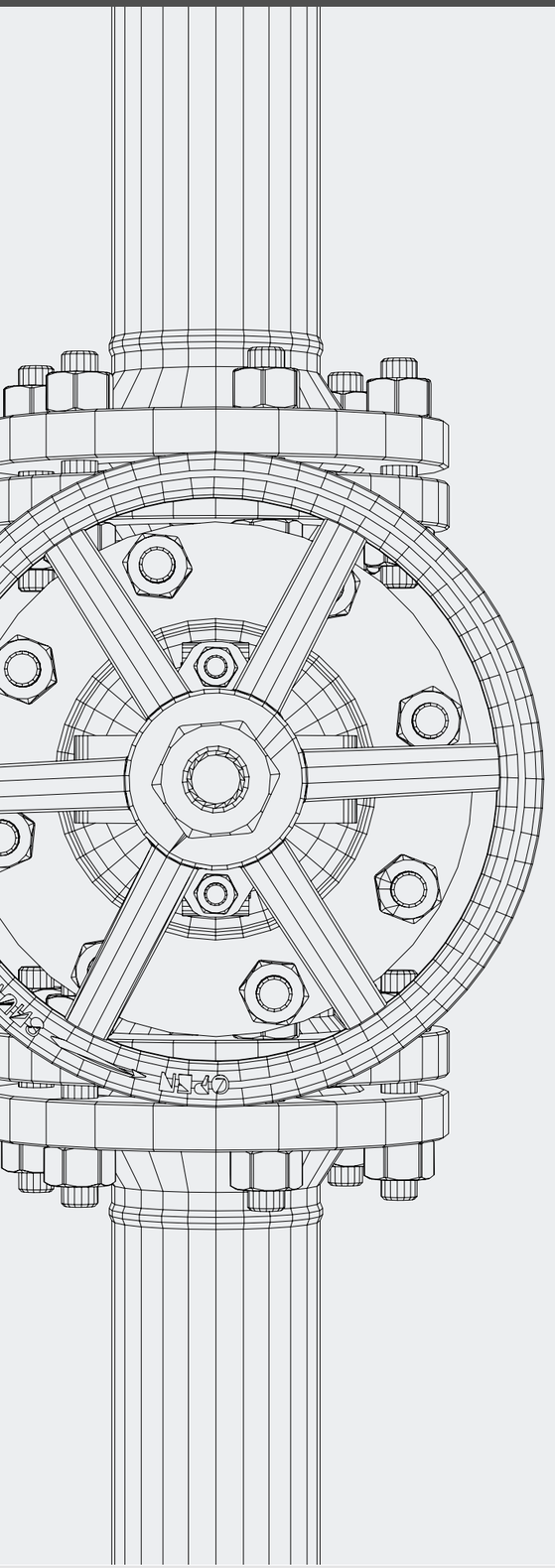
Examples

Design errors that caused inadvertent returns or frac-outs during an HDD have proven to be costly for the liable party and organizations. Therefore, it is of primary concern to prevent errors that lead to fines and remediations, or validating the work of third-party contractors.

Where:

- Assuming two weeks work for two engineers to redo calculations
- 2 x 2 x 40 hours per week = 160 hours @ $150 per hour = $24,000
- Fines and/or remediations from $100,000 at the low end to potentially much higher!
- Loss of community goodwill and relations (increased future opposition)
- A minimum of $124,000 risk eliminated for a $7,500 investment = 913% ROI or more





Replace rule-of-thumb margins with critical resource allocation

Where:

When accounting for equipment costs and teams deployed in the field, a project might cost $200,000 per week with an included safety 10% margin.

If you can eliminate that margin, it saves $20,000 per week, which for busy teams in the field, could amount to savings of as much as $1 million per year.

For one project/week ($20,000 savings) / ($7,500 investment) = 267% ROI.

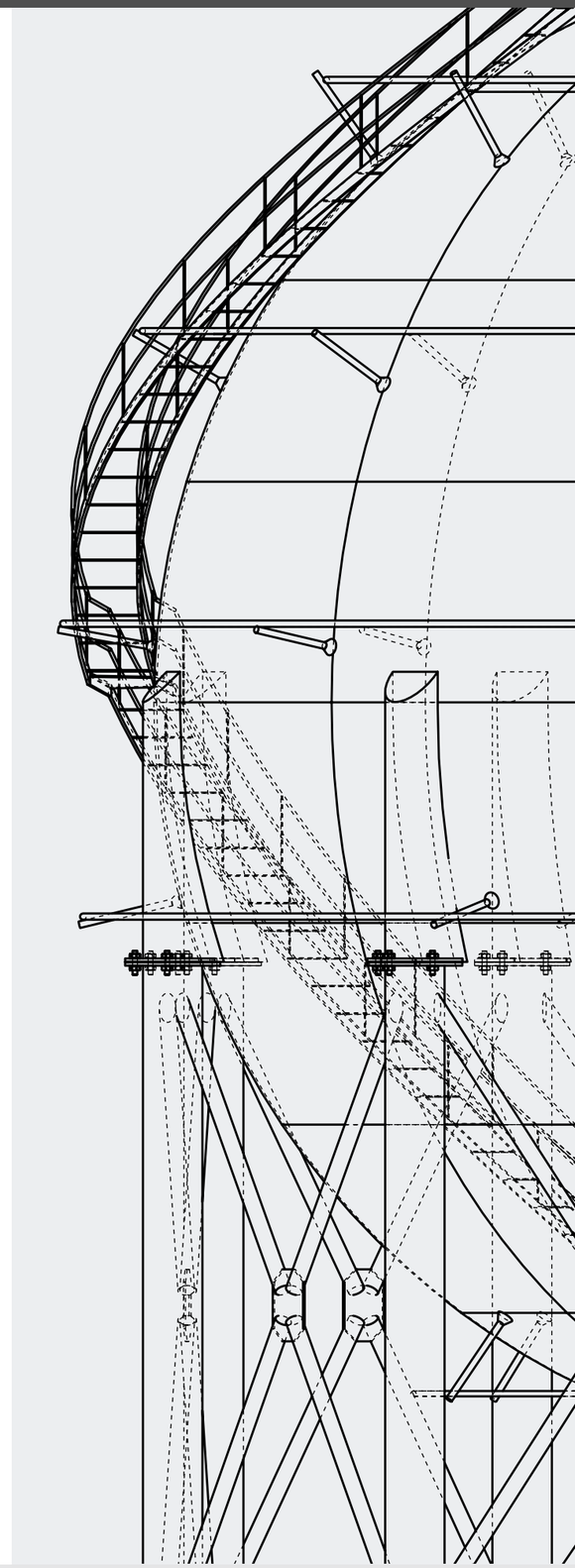
“When accounting for equipment costs and teams deployed in the field, a project might cost $200,000 per week with an included safety 10% margin.”

"This incremental investment in the solution also mitigates the risks associated with HDD projects..."

Return on Sofware Investment

Investing in HDD PT saves companies hundreds of thousands in CapEx and OpEx. Conservatively, after combining the quantifiable engineering time savings with the reduced contingency costs of risk mitigation for operators and contractors, the ROI is considerable.

An investment of $7,495 on HDD PT reduces engineering time, impacting departmental budget requirements. In the example above, it reduces the cost of HDD design and analysis by 57%. This incremental investment in the solution also mitigates the risks associated with HDD projects, preventing hundreds of thousands or millions of dollars in fines or remediations.

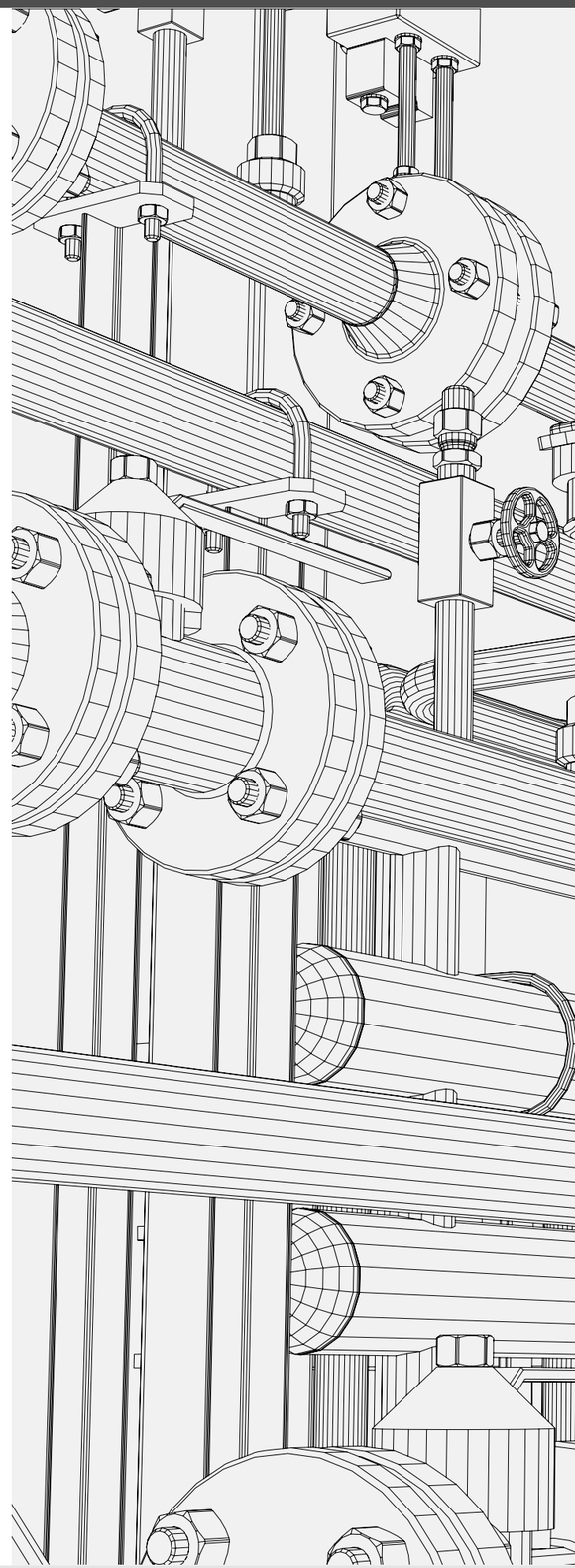


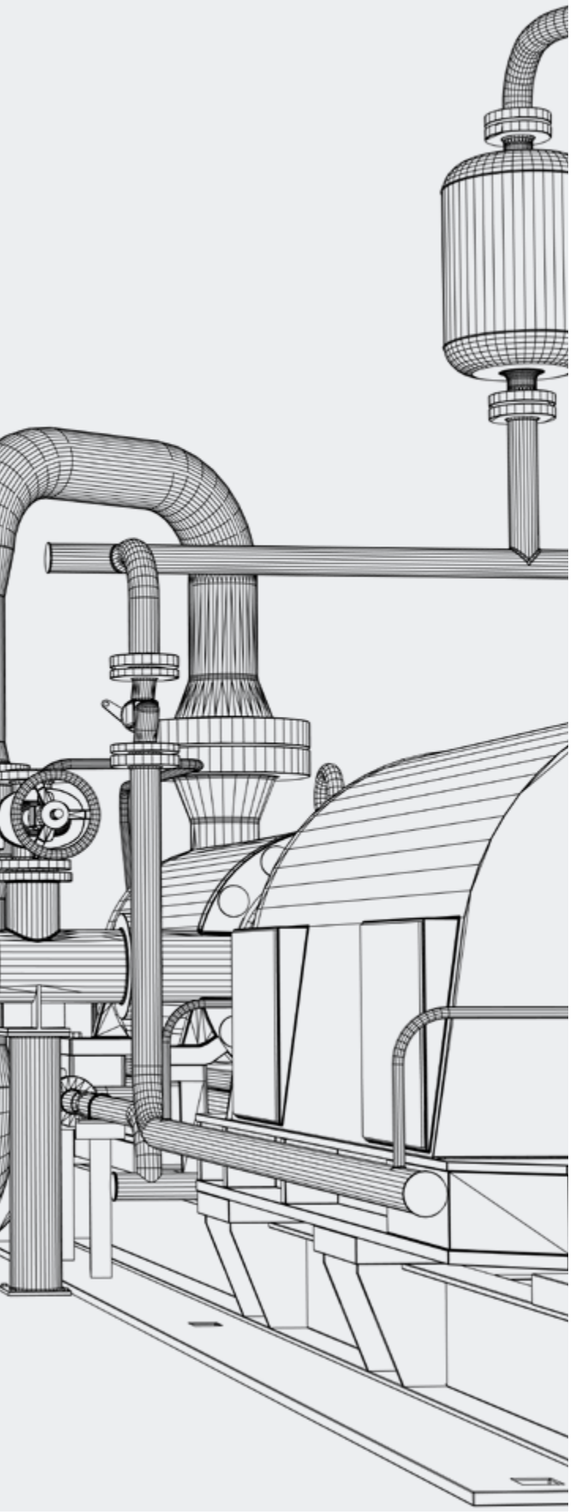
The HDD PowerTool Perspective

HDD PT analyzes pull force and installation stresses for steel, PE pipes, and cables/conduits. It improves borehole stability by properly characterizing drilling fluids, geotechnical information, and hydraulic pressures using the single point Delft cavity expansion model. This ensures bore stability, thus reducing the chance of inadvertent returns during drilling operations.

As a long-standing PowerTool from Technical Toolboxes and industry-certified application, the HDD PT integrates with the HUB^{PL}. The digital platform of the HUB^{PL} brings together data, case histories, and pipeline network maps as one solution.

HDD PT on the HUB^{PL} exchanges data with corresponding applications for other roles, such as the Pipeline Toolbox, Encroachment Manager, AC Mitigation PowerTool, Report Builder, Hierarchy, and GIS map data to share calculations and case histories for analyses at all stages of the pipeline life cycle.





HDD PT Background

HDD PT builds calculations based on the Technical University of Delft's model and the US Army Corps of Engineers® Engineer Research and Development Center. Technical Toolboxes worked extensively with world-renowned expert David Willoughby to develop and refine the PowerTool as an industry-leading HDD solution suite.

Mr. Willoughby has 40 years of experience in the industry. He is the author of highly regarded HDD, Utilities, and Pipeline textbooks and provided practical expertise for the HDD PT. Mr. Willoughby also works with the Technical Toolboxes training department as an instructor for our professional development courses for HDD.

Additionally, Technical Toolboxes is an Authorized PRCI software reseller and the hub of an intellectual property resource network. Technical Toolboxes is a thought leader and knowledge resource provider for engineers, with live and online training for Professional Development Hours and industry-leading instructors, like Mr. Willoughby.

"Technical Toolboxes is a thought leader and knowledge resource provider for engineers, with live and online training for Professional Development Hours..."

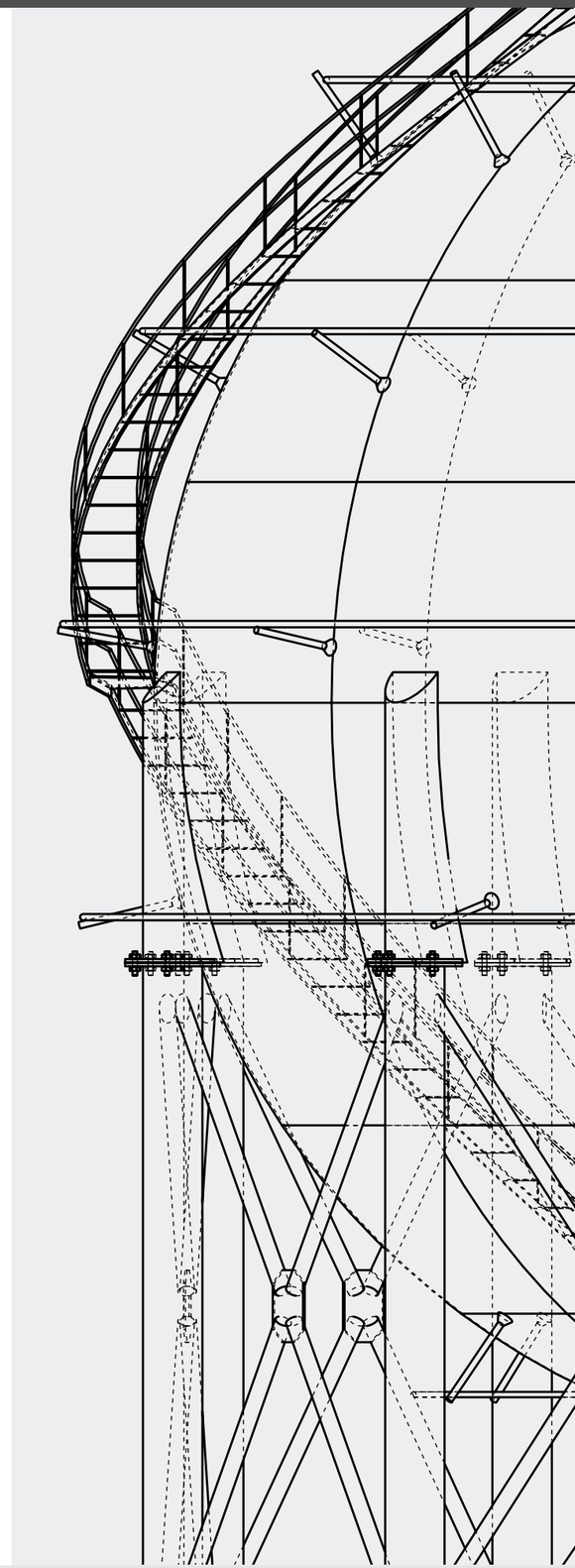
“Investing in HDD PT provides an immediate return on investment by saving engineering time. ”

Conclusions

HDD PT provides the design and analysis tools to get the most value from the HDD process. It connects with the HUB[PL] that brings together data, case histories, and pipeline network maps as one Integrated Data Environment.

Investing in HDD PT provides an immediate return on investment by saving engineering time. Additional savings can come from the risk reduction and avoiding expensive fines and remediations.

If your organization utilizes HDD or holds responsibility for teams that do, a live demonstration or networking meeting of the HDD PT can help you define the potential return on investment for your company. Take the next step to find out what the HDD PT can do for you.



Next Steps

- Request an HDD PowerTool demo
- Request a Networking Meeting with Technical Toolboxes in-house HDD SME
- Contact us anytime with questions or send us your feedback
- Visit the Technical Toolboxes website for more resources
- Register for an HDD training

Click here to learn more about Technical Toolboxes

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
www.technicaltoolboxes.com

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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.