CASE STUDY

Innovative Engineering & Additive Solutions for a Streamlined Pipe Drilling & Stopping Process

INDUSTRY:
Energy & Utilities

COMPANY

Pacific Gas and Electric Company

Natural Gas & Electric Service Provider

> "Saratech's ability to look at our project from a different perspective and utilize their unique engineering talents was invaluable. They were able to design and 3D print a tool that helps our workers safely and accurately mark and limit the insertion depth of our equipment while drilling or stopping off flow of gas in our pipelines."
>
> - Jim Pacheco
> Expert Pressure Control Specialist
> PG&E

CHALLENGE

PG&E employees need to drill into gas pipelines to install fittings to either inspect the pipe (just steel or steel and plastic) or to measure maximum compression distances when using rubber stoppers to stop the flow of gas. There are two possible configurations for pipelines: a live steel pipe pressurized with natural gas, or a live plastic pipe inside of a steel pipe. The task involves drilling through the steel pipe to check if it is pressurized. If it is not, then there is a live plastic pipe inside that should not be drilled into. This is why controlling the depth of the drilling machine is crucial to the safety of the operation. To address this, workers previously relied on tape markings on the outside of the device, necessitating additional time, resources, and manual oversight to ensure accurate measurements and prevent drilling beyond the tape mark.

SOLUTIONS

PG&E teamed up with Saratech to engineer a clever Control Depth Collar (CDC) tool designed to securely clamp to the outside of the drilling machine. Saratech specially engineered the tool to remain firmly in place once tightened down. This innovation eliminates the need for field operators to rely on watching the tape mark during the drilling process, providing a stable physical stop for precise control. To address variations in drilling and stopping machines, Saratech created five different versions of the CDC tool, each tailored to accommodate specific machine design differences.









Using its HP Multi Jet Fusion (MJF) 3D printing machine, Saratech printed these CDC tools using Nylon PA12 and dyed them in distinct colors, facilitating quick identification in the field. The MJF 3D printer played a pivotal role in this solution by enabling the printing of assemblies in place. Despite the tool being hinged, no additional assembly was required, thanks to the self-supporting print technology. Moreover, the MJF machine's capacity to print production quantities allow the production of approximately 60 tools per day.

RESULTS

With Saratech's Engineering & 3D Printing Services, PG&E experienced a significant improvement in their pipe inspection process. Saratech's engineered CDC tool ensures optimal friction between the tool and the threads of the drilling machine body, allowing a hard stop to the drilling operation. This improvement not only enhances safety and mitigates risks but also leads to substantial cost reductions and improved accuracy in the field.

ACCURATE PRECISION

MITIGATE RISKS

INCREASED SPEED & EFFICIENCY

REDUCED COSTS

ABOUT SARATECH

Saratech provides engineering solutions to help companies realize better products. We supply engineering expertise, services, software, and manufacturing solutions to improve product development experiences. Our dedicated engineering team uses the software and tools that we sell and support while employing industry best practices and methodologies. We serve customers in all major industries, including energy & utilities, aerospace, space, marine, defense, automotive, manufacturing, industrial machinery, medical, electronics, consumer products, and more.

Partner with us to solve challenges and accelerate your development cycle, contact us today to request your free consultation: 949.481.3267 | info@saratech.com

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