

# Specialized expertise

Established knowledge, guiding you through



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Starting at the front end of a project, GF Piping Systems supports engineering and designing to ensure a sustainable and efficient solution is available. Our competence in all applications and proven references throughout the entire product range ensures the highest quality of management during project planning and execution.

## The benefit of Engineering Services

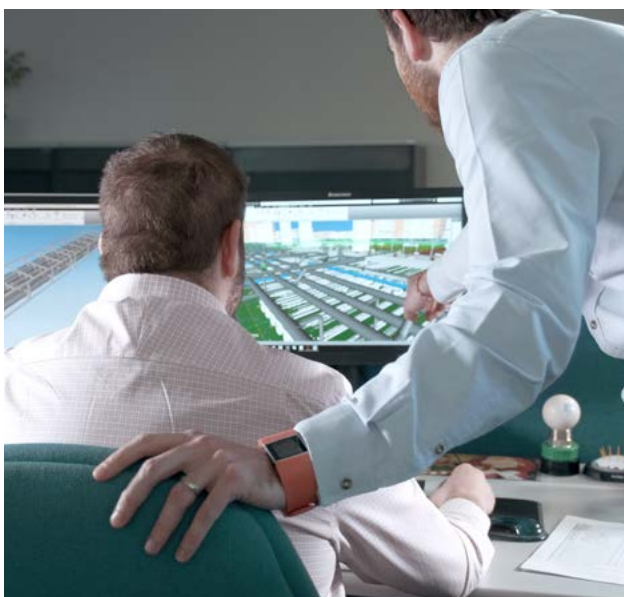
Piping systems only represent a fragment of the budget of a typical industrial project – somewhere in the lower range of the one-digit percentages. But, when looking at the source of reliability issues the project might have to overcome, the portion dedicated to piping grows much bigger.

The reason for this discrepancy between relative importance and share in reliability challenges is to be found in design mistakes. If we compare design offices with doctors, piping systems could be considered as kidneys - yes, a typical physician knows much about them, but not into the last detail.

Studies show that up to 40% of design errors result in stress cracks while another 22% are linked to water hammer<sup>1</sup>. When looking at the consequences of those design mistakes, the concern only grows bigger: Failures usually result in

downtime, which costs over \$100'000 per hour for 98% of organizations<sup>2</sup>, or contributes to project delays, that nowadays still affects 55% of construction projects<sup>3</sup>.

The name of the game is, therefore, to prevent design errors from happening. This is where GF Piping Systems specialists can bring tremendous value, by accounting for the specificity of piping systems design. An even more specific science within this focus lies in the peculiarities of plastics. Would you for instance not calculate with both short term and long term E-modulus, design errors would not only be possible but probable. If the devil is in the details, you certainly don't want to miss a chance to have our dedicated engineering team take a close look at the design and calculations of your piping system.



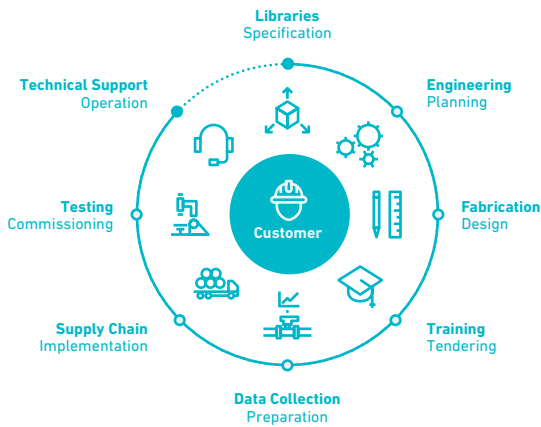
GF Piping Systems provides engineering and design support every step of the way, from part modification of an existing product, to full-system design from customer piping and instrumentation diagrams.



# Engineering

## Specialized expertise

### Specialized Solutions



**With Specialized Solutions, the global leader GF Piping Systems provides project support every step of the way to achieve construction excellence.**

In the initial phases of a project, we support you with planning and design, which includes Engineering Solutions in the Specialized Solutions range by GF Piping Systems.

GF Piping Systems supports the conception and design process of a project from the outset to ensure that a sustainable and efficient solution is achieved. Whether in the selection of the right plastic solution from our extensive portfolio, the management of complex sub-projects, or quality control based on recognized international standards - you can benefit from Specialized Solutions for all application areas and references from a wide range of industries across the entire product range.

### Benefits for your business

1

#### Minimized project risks

Diminish incorrect calculations, improper design or wrong material selection due to ignorance or lack of experience.

2

#### Durable, safe and reliable investment

Piping system delivery of the highest quality, selected by experts.

3

#### Faster project implementation

Thanks to years of experience, complex calculations and planning are carried out quickly and reliably.

4

#### Effective personnel deployment

External plastic systems specialists can be added to a customer team – target-oriented for the duration of the project.

# Modular solutions for every need

GF Piping Systems offers a choice of tailor-made analysis packages in order to increase the efficiency of a project.



### Project Analysis

#### Package description

Basic analysis of the piping system and recommendations based on the technical manuals for up to four hours per project.

#### Recommended for

Customers with little or no experience with plastic systems and insufficient resources in their own company.

#### Included components

- Material selection (metal to plastic conversion, system selection)
- Basic expansion & contraction\* (based on received operating parameters)
- Material Take Off Service (MTO)\*



### Advanced Engineering

#### Package description

Comprehensive analysis and planning support for applications with particularly challenging and demanding environments.

#### Recommended for

Special planning challenges or operating situations, such as great variations in medium and ambient temperatures or aggressive media with possible influence on the material properties of the piping system.

#### Included components

- Dynamic/static mechanical stress analysis
- Pipe support, spacing and bracketing
- Specification design, review and adherence
- Heat loss calculations
- Hydraulic calculations and modeling (water hammer elimination)
- Seismic calculations
- Buried pipe load calculations
- Finite Element Analysis (FEM)
- CO<sub>2</sub> sustainability calculations

# 40%

project failure due to poor stress analysis<sup>1</sup>

# 22%

of failures caused by water hammer<sup>1</sup>

# \$100K

cost per hour of downtime<sup>2</sup>

## Next steps

This brochure has provided important information about the Specialized Solutions we offer. But nothing replaces a personal conversation with an expert from GF Piping Systems. It is all about your needs and how we can support you with your specific projects. If you have not already done so, make an appointment today.

On the GF Piping Systems website you will find specialized contact persons in your area. There you will also find further information on the individual solutions, including technical data sheets and operating instructions as well as relevant certificates and approvals.

Get your appointment with an expert from GF Piping Systems to tailor a solution to your needs.

**More information at:**  
[gfps.com/engineering](https://gfps.com/engineering)

**Get in touch with us:**  
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<sup>1</sup> Reliability of piping systems – Volume 4, The Pipe Failure Event Database

<sup>2</sup> Information Technology Intelligence Consulting

<sup>3</sup> International Journal of Project Management – Vol. 24

\* Contact local GF Piping Systems Sales Company, separate charge depending on project

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