



THE COMPLETE PIGGING SYSTEM HANDBOOK FOR FOOD MANUFACTURERS

Learn about HPS Advanced Liquid Product Recovery (Pigging) Technology - helping food manufacturers increase yields, capacity, efficiency, and sustainability.

PIGGING: AN INTRODUCTION

At the heart of modern liquid processing industries, including food manufacturing, lies a revolutionary process – HPS Advanced Liquid Product Recovery (Pigging) Technology.

This innovative approach, harnessing the latest pigging techniques, will transform your liquid transfer operations. It will ensure that your processes are not only optimised, but also environmentally sustainable.

Experience increased yields, productivity, and significant cost savings through streamlined processes. Safeguard against contamination risks, reinforcing product integrity and operational excellence.

Moreover, you can expect a substantial year-on-year return on investment (ROI) as a direct outcome of implementing HPS Advanced Liquid Product Recovery Technology.

ADVANCED PIGGING TECHNOLOGY

WHAT IS PIGGING?

In modern food processing, Advanced Liquid Product Recovery (Pigging) Technology recovers residual liquid product from pipes. If it wasn't recovered by pigging, this liquid would go to waste, or at least be downgraded.

The recovered product is perfectly useable so can be sold, stored, packed, or continue to be processed along with the rest of the batch, rather than being flushed down the drain.

If you work for a company that transfers liquids through pipelines during manufacture or processing, our state-of-the-art automatic pigging technology stands as a game-changer for products like:

- Sauces
- Dips
- Nut Butters
- Sugar Syrup
- Honey
- Yeast Extract
- Soups
- Processed Cheese
- Meat Emulsions
- Pulps
- Ready Meals
- Plus Many More

HOW IT WORKS.

At its core, a pigging system involves a specialist projectile, known as the 'pig,' which is slightly larger than the pipeline it navigates. This pig is automatically introduced into the pipeline and propelled through the pipe.

The process involves propelling the pig through the pipe by pressurizing the pipework behind it. This pressure can come from compressed air, carbon dioxide, nitrogen, clean water, or even the subsequent product, depending on the application.

Rather than disposing of the residual liquid by flushing it away, the pigging process recovers it. It pushes the product left in the pipe to a destination filler or tank or returns it to the source for further processing along with the rest of the product.

Pigging is fast, highly efficient, and easily implementable in both new and existing pipelines.

“HPS pigging technology reduced our changeover times from around 3 hours to just a few minutes.”



HPS PRODUCT RECOVERY SOLUTIONS

EVERY PROCESS CAN BE IMPROVED.

Rapidly enhance your food processing by leveraging HPS's Advanced Liquid Product Recovery Technology. Our state-of-the-art pigging systems are designed to align with your unique needs, systems, and objectives. Understanding the distinct requirements of each customer, we tailor design every liquid product recovery system we provide.

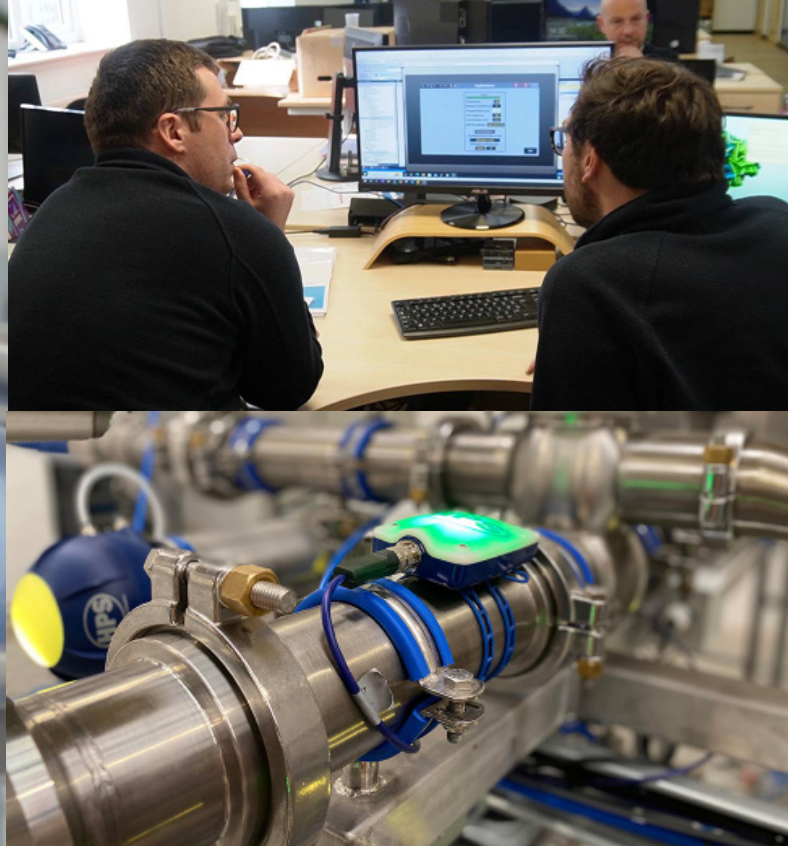
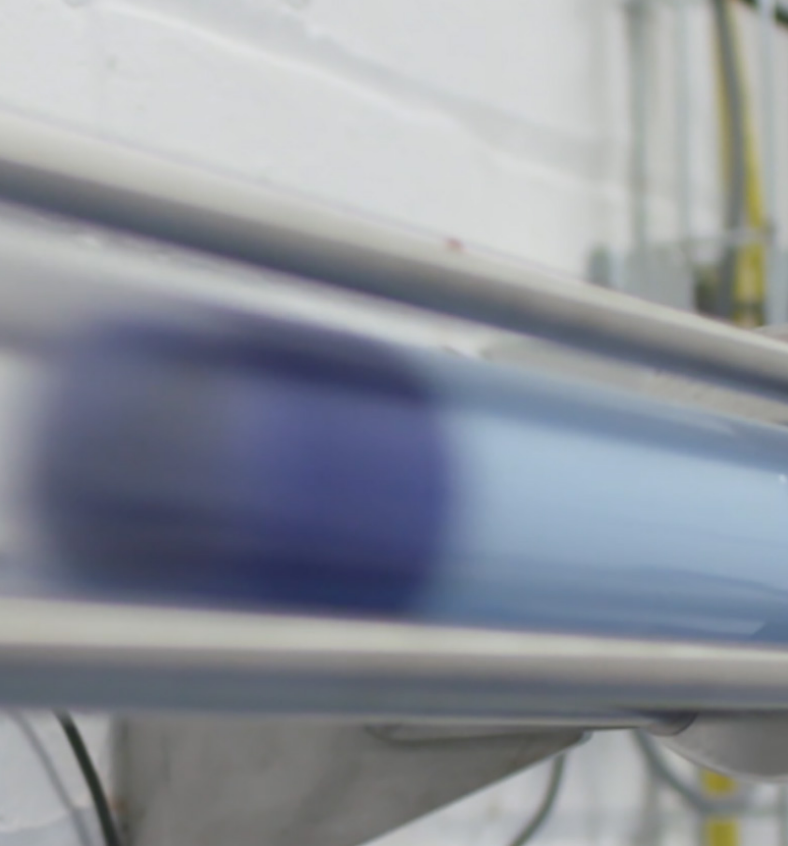
Our commitment goes beyond customisation; we make sure that our solutions not only align with your specifications but also optimise the efficiency and effectiveness of your processes.



HPS ADVANCED LIQUID PRODUCT RECOVERY DELIVERS:

- High Return on Investment (ROI)
- Increased Yields and Better Margins
- Reduced Waste and Less Downtime
- Increased Plant Capacity
- Streamlined Changeovers and CIP
- Prevention of Aeration, Foaming and Dissolved Oxygen
- Lower Water and Energy Consumption
- Minimised Cross-Contamination Risks
- Reduced Effluent and Associated Costs
- Boosted Productivity and Efficiency
- Improved Environmental Sustainability





BENEFITS OF PIGGING

WHY YOU SHOULD CONSIDER PIGGING TECHNOLOGY!

HPS proven pigging technology delivers efficiency, cost savings and transformative benefits to many different process industry sectors, including food, beverages, and other applications.

HIGH ROI

If you choose an advanced pigging system by HPS, your savings will usually pay back the initial cost of the system in just a few months. After that, it will provide a high ROI year on year.

REDUCED WASTE AND DOWNTIME

Our high-tech, modern pigging solutions massively reduce waste, as well as saving cleaning agents and water. In addition, pigging streamlines cleaning and changeovers, so you have less downtime.

INCREASED YIELDS AND MARGINS

Because pigging reclaims nearly all residual product in pipelines instead of it being wasted, it significantly increases your product yields. And as a direct result of this, you'll increase your margins.

FASTER CHANGEOVERS AND CIP

Pigging's efficiency in minimising water flush and CIP requirements accelerates processes, resulting in faster, less labour-intensive changeovers and CIP. This contributes to enhanced operational productivity.

PREVENTION OF AERATION, FOAMING AND DISSOLVED OXYGEN

Some liquids tend to foam; others must not come in to contact with air. Specialist 'double-pig' systems prevent aeration, foaming, dissolved oxygen and contamination.

REDUCED WATER USAGE

Enhancing water conservation efforts, pigging improves cleaning procedures and minimises the necessity for excessive flushing. The innovative Dual-Pig Pigging System, with its dual cleaning capacity, efficiently optimises water usage, significantly reducing overall consumption.

IMPROVED CAPACITY

Due to the exceptional recovery efficiency of the HPS pig, it allows for the utilisation of a single line for multiple products. This significantly enhances operational capacity and flexibility, while maximising the efficiency of operations.

IMPROVED SUSTAINABILITY

Pigging reduces waste, decreases water usage, minimises chemicals and related transport and disposal costs. So, the environmental advantages of pigging are substantial.

MINIMISED CONTAMINATION AND CROSS-CONTAMINATION RISKS

Pigging reduces bacterial contamination and product cross-contamination risks. This not only ensures adherence to stringent quality and safety standards but also reinforces overall product integrity.

LOWER LABOUR COSTS

By efficiently recovering product residue from pipelines, advanced pigging systems reduce the need for extensive cleaning and labour efforts. This streamlined approach translates to considerable savings in cleaning expenses and labour.

ENERGY SAVINGS

Pigging systems contribute to energy savings by minimising pumping requirements, speeding up changeovers, and streamlining processes. Additionally, they accelerate hot water flushes, enhancing overall efficiency and reducing energy consumption significantly.



"Pigging saves companies that process liquids tens, sometimes hundreds of thousands of Pounds, Dollars or Euros every year, while also improving their efficiency and environmental sustainability."

4 REASONS WHY YOU SHOULD BE USING PIGGING TECHNOLOGY



BOOST EFFICIENCY

By adopting HPS Advanced Liquid Product Recovery (Pigging) Technology, food manufacturers enhance their operational efficiency and profitability.

Custom-designed to ensure the best outcomes, HPS pigging systems provide:

- Improved ingredient management and consumption
- Faster changeovers and CIP processes
- Increased production capacity

Boosting efficiency is key to continually improving operations and outcomes, particularly with competition increasing.



STREAMLINE OPERATIONS

Streamlining operations in manufacturing is key to improving efficiency.

With a variety of pigging systems available, the right choice ensures that your operations run smoothly and quickly.

For companies looking to reduce the time spent dedicated to CIP processes, or those who want to have seamless product-to-product transfers, the HPS single-pig pigging system could be the right one.

Want to incorporate CIP into your pigging operations? The HPS dual-pig pigging system is the perfect solution for combining CIP and product recovery into one step!

SIMPLIFY CIP

Ensuring cleanliness in food production pipelines can be a time-consuming and resource intensive task.

Using HPS pigging systems enables manufacturers to simplify clean-in-place (CIP) processes in several ways:

- Because pigging recovers nearly all product in the line, initial flushes can be significantly reduced and sometimes eliminated entirely
- CIP processes that require heated water or cleaning agents can save time, money, and resources related to heating
- Pigging sequences are faster than flushing, saving time on the initial stages of cleaning

Speed up changeovers and increase your profitable production time, capacity, and yields.



MAXIMIZE PERFORMANCE

HPS Advanced Liquid Product Recovery Technology offers significant advantages for food manufacturers who want to maximize performance.

HPS pigging systems give manufacturers:

- Recovery of up to 99.5% of residual product from pipelines
- Increased yields and reduced waste
- Faster changeovers and production flexibility
- Improved sustainability
- A high ROI with a quick payback period

Optimize your processes, see the results, and stay ahead of the competition with HPS pigging systems.



**REDUCED
WASTE**

**IMPROVED
SAFETY**

**REDUCED
DOWNTIME**

**INCREASED
YIELDS**

CONTACT US

Find out more about pigging technology for food manufacturers by getting in touch! Our experts will be happy to answer any questions you may have!

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MORE INFORMATION

KEY COMPONENTS OF A PIGGING SYSTEM

A pigging system is made up of a variety of different parts and components. These include pig launchers, receivers, detectors, storage, housings, propellant sources, PLCs, HMIs, control software, and various valves, supports and fittings.

However, the most important component is the pig itself.

PIPELINE PIG

The most important component of a pigging system is the pig. This is a specialist projectile that has a diameter slightly larger than the pipeline that it is pigging. As the pig travels through the pipeline, it reclaims the product, optimising recovery within the system.

PIGGING CONTROL SOFTWARE

HPS modern closed-loop systems are fully automatic, requiring no manual intervention during normal operation. The control software or PLCs, with either HMI or SCADA systems, can either be supplied as standalone or can be integrated into your existing setup.

PIG HOUSING

When the pig is not in use, it resides in a special housing. The HPS pig housing, slightly larger than the pig, allows easy and safe removal for maintenance and inspection. It also ensures there's enough room for water and cleaning fluids to flow around the pig for thorough cleaning and CIP.

PIG DETECTOR

The HPS AccuTect pig detector provides state-of-the-art pig detection. An essential component of HPS pigging systems, it determines the presence or non-presence of an HPS pig.

RECEIVE AND LAUNCH STATION

Pig receive and launch stations, often referred to simply as pig stations, serve a crucial role in safely introducing the pig into the product line propelling the pig between source and destination. If required, they provide storage when the pig is not in use.

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The length between the processing areas is 900 feet and it was estimated that about 1200 gallons of product would be lost without a pigging system."

Tyson Richart, KIK Custom Products

VALVES, SUPPORTS AND FITTINGS

Other important components of HPS advanced pigging technology are the valves supports, and fittings. While valve types may differ across solutions, they collectively serve a common purpose; facilitating the smooth and efficient routing of both the product and pig within the system.

PIPEWORK

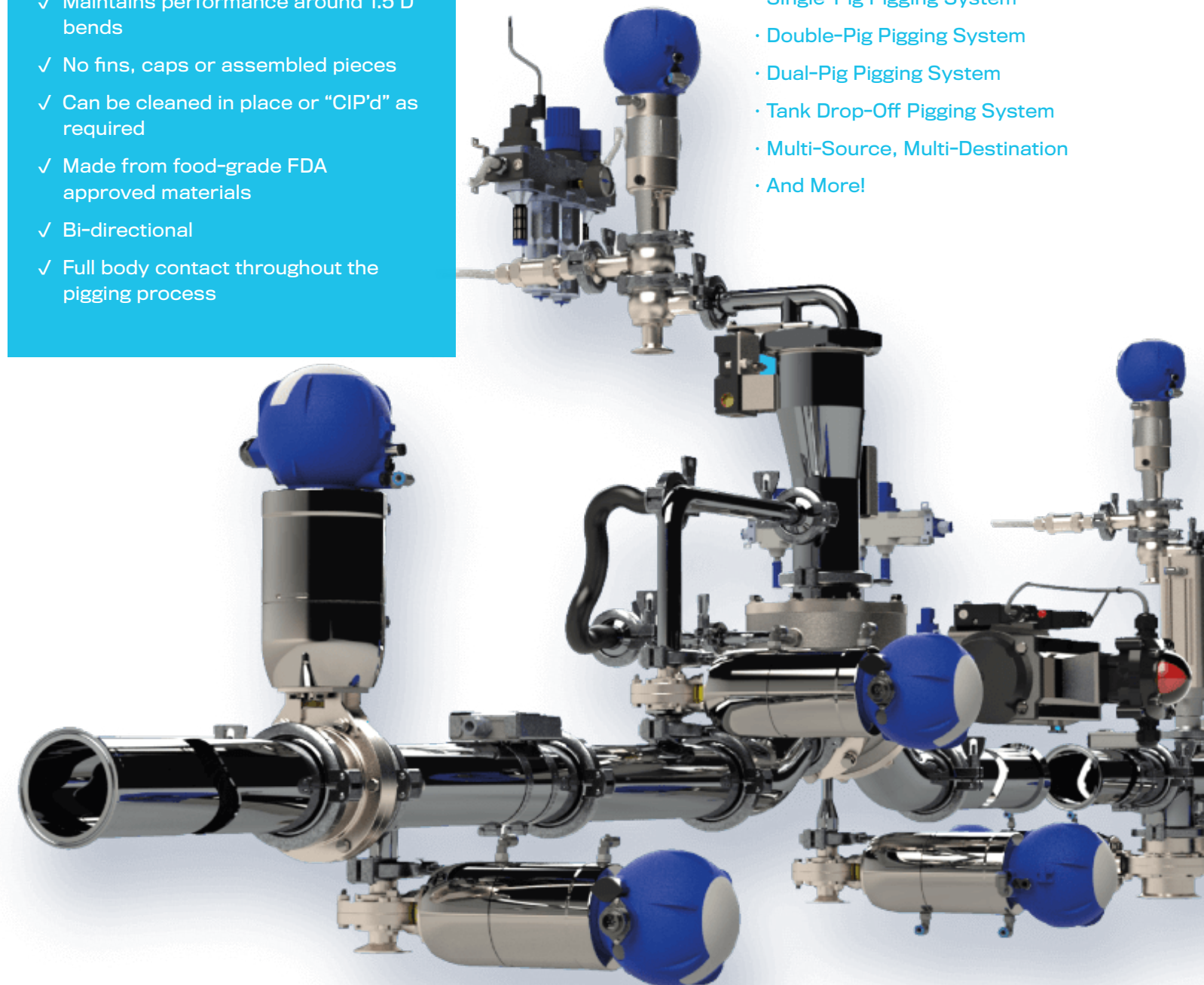
A key part of any pigging system is the pipework. HPS work with a wide variety of pipe codes and standards, including ASME, ANSI, ASTM, AGA, API, AWWA, BS, ISO, DIN, plus more. Importantly, your existing pipework needs to be in good condition and free from dents and damage along the length of the pipe you are intending to pig. Please talk to one of our team if you need more information.

PIG CHECKLIST:

- ✓ Typical recovery efficiency of up to 99.5% of product
- ✓ No solid magnets but fully detectable
- ✓ Long life expectancy
- ✓ Maintains performance around 1.5 D bends
- ✓ No fins, caps or assembled pieces
- ✓ Can be cleaned in place or "CIP'd" as required
- ✓ Made from food-grade FDA approved materials
- ✓ Bi-directional
- ✓ Full body contact throughout the pigging process

DIFFERENT TYPES OF PIGGING SYSTEM:

- Single-Pig Pigging System
- Double-Pig Pigging System
- Dual-Pig Pigging System
- Tank Drop-Off Pigging System
- Multi-Source, Multi-Destination
- And More!



PLANNING A PIGGING SYSTEM

HPS pigging systems seamlessly integrate into existing pipeline processes, as well as new plants, and the majority of solutions delivered by HPS pay for themselves extremely quickly.

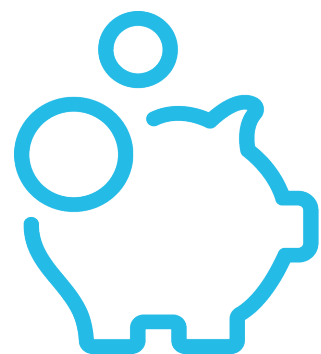
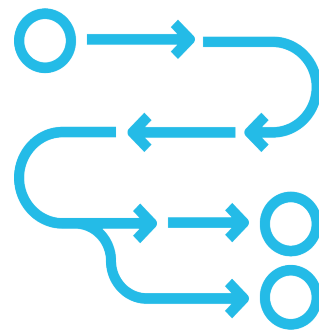
Here are key considerations to bear in mind when planning a pigging system:

HOW TO CHOOSE A PIGGING SYSTEM

Due to the diverse range of applications and objectives, pigging systems come in various designs and specifications. This means there's no one-size-fits-all 'off-the-shelf' product recovery system available.

At HPS, we tailor each system to meet your specific requirements and infrastructure. Our experts guide you in selecting the most suitable system, and we'll design it for you. The most important thing is that we will provide a high performance solution that not only works but provides outstanding results.

Different products have different requirements. While a single-pig system suits many applications, if your product tends to foam or must avoid contact with air, a double-pig system is likely the recommended solution. Moreover, if your priority lies in achieving precise cleaning and reducing the water content in your product, the dual-pig system may be the ideal solution.



PIG CONSIDERATIONS

There are different types of pigs available for sanitary and hygienic applications.

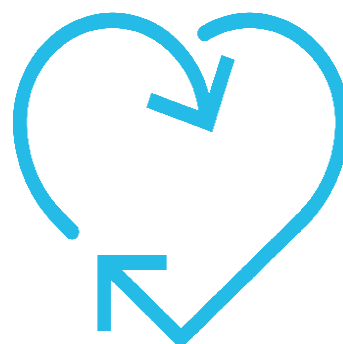
While the market offers a wide array of pigs, optimal performance often aligns with certain characteristics. The most efficient pigs are typically bi-directional, with a one-piece flexible design and contain no solid magnets (instead containing a flexible magnetic core). They exhibit the capability to navigate around 1.5 D bends without compromising full product recovery rates.

Generally, these pigs don't have fins or intricate shape profiles. This is because fins or protrusions can rip or tear, and sometimes product can build up behind the fins or where there's a sudden change in profile of the pig.

EXISTING SERVICES

Pigs are typically propelled using compressed air, nitrogen, or carbon dioxide. Water or the next product in line can also serve as propellants.

Utilising existing services is preferable, so it's vital to note their availability and specifications, including ratings when planning a pigging system.



EXTENSIVE SAFETY FEATURES

It's crucial to partner with a pigging system provider that takes safety seriously. At HPS our pigging systems are equipped with extensive safety features. These include:

- One-piece pig with no solid magnets
- Full automation and interlocks
- No manual intervention
- Pig detection, automatic venting and depressurisation
- Pig housed off-line until needed
- Physical barriers



AUTOMATION

HPS Advanced Liquid Product Recovery Systems are fully automated.

Automated pigging systems are more efficient, reliable, easier to run and safer than manual systems. You may have your own PLC, SCADA or HMI system specialists that will be able to set up programming and control for you. In this case we will supply you with a Functional Design Specification (FDS).

Alternatively, if you choose HPS, you can call on the extensive experience of HPS pigging system automation specialists.

CHOOSE THE EXPERTS

When it comes to pigging systems, not all are created equal. That's why, when considering a pigging system for your organisation, it's crucial to partner with a provider offering high-tech, modern, proven technology.

HPS stands out as the forefront leaders in Advanced Liquid Product Recovery (Pigging) Technology.



PIGGING SYSTEM FREQUENTLY ASKED QUESTIONS (FAQS)

Here are some of the more common questions regularly asked about HPS Advanced Liquid Product Recovery (Pigging) Technology.

Please get in touch if you have any more questions.

DO I NEED TO MANUALLY LOAD OR REMOVE THE PIG?

No. As HPS pigging systems operate fully automatically, the need for manual pig removal or loading by operators is eliminated. Usually the only time you'll need to manually access a pig is for occasional inspection and maintenance.

WHAT PROPELS THE PIG THROUGH A PIPE?

Pigs don't propel themselves. Instead, they are pushed along pipes by liquids or gases. Industrial process pigging utilises various propellants such as water, filtered air, nitrogen, carbon dioxide, and other specialised products to facilitate their movement along the pipeline.

WHAT DOES 'ADVANCED LIQUID PRODUCT RECOVERY' MEAN?

HPS leads the industry in Advanced Liquid Product Recovery Technology, showcasing an innovative approach at the forefront of industry advancements. Its distinctive feature include the unique design of the pig with no solid metal magnets, full automation with no manual intervention, extensive safety feature: plus more innovative pigging techniques.

AT WHAT STAGE IN A PROCESS IS PIGGING USED?

It depends on the process. Typically, an operator or automatic control system will send a pig through a pipe to recover product whenever required. This can occur, for instance, after a holding tank has been emptied by a pump, before the CIP procedure, during a transition between products, or upon the completion of a specific batch run.

DO PIGS GET STUCK IN THE PIPELINE?

This is a common misconception about pigging. However, it is extremely rare for a pig to get stuck (well not HPS ones anyway). As long as you haven't exceeded the recommended usage of the pig, then there must be a reason why a pig doesn't reach its destination. This could be due to pipeline faults, loss of pressure, or an obstruction.

ARE ALL PIGGING SYSTEMS AUTOMATED?

Yes, nearly all pigging systems designed by HPS are fully automated. Automatic pigging solutions, controlled by PLCs with either HMI or SCADA systems, have a wide range of benefits. These include increasing process speed, productivity and overall efficiency. They also reduce the chances of human error. Ultimately, they will give you a higher ROI.

HOW MUCH DOES A PIGGING SYSTEM COST?

Because there are many different variables involved in working out costings, it is not possible to provide standard pricing. Contact HPS if you would like us to provide a budget quotation and expected ROI.

HOW LONG DO PIGGING SYSTEMS LAST?

If properly maintained, HPS pigging systems will last an extremely long time. In fact, some of our very first systems are still in use after nearly thirty years.

CAN PIGS TRAVEL THROUGH PIPE BENDS AND BE STEAM CLEANED?

Yes. The flexible nature of HPS pigs enables them to travel through 1.5 D – 90° bends and still maintain full recovery rates. They can withstand temperatures up to 250 °C or 482 °F without degradation. This means you can steam clean them if required.

ARE HPS PIGGING SYSTEMS COMPATIBLE WITH CIP?

HPS Pigging Systems and Clean In Place (CIP) solutions are fully compatible. Because HPS pigs recover nearly all product within a pipe, CIP is much easier, less time consuming, uses less water and CIP chemicals, and is less labour-intensive.

PROCESS PERFECTED

HPS advanced pigging technology is trusted throughout the world. We have hundreds of customers, including multi-national, multi-site blue-chip companies as well as many smaller independents.

WHAT DO OUR CLIENTS HAVE TO SAY ABOUT US?

“ Pigging mitigates the need to flush additional coating through the lines so that change overs and cross-contamination issues are mitigated. In addition, it helps prevent settling and freeze ups by clearing the pipe as frequently as we like with little to no effort.



“ With HPS Pigging Technology, CP Kelco are saving approximately 1200 gallons of product per run.

CP Kelco, USA

“ HPS pigging systems resulted in a clear increase in product yield, equating to 48,000 extra cans per week.

Coca-Cola, UK



CONTACT HPS

We're local to you - we have offices in the UK, US and Australia, and agents throughout the world.

UK

From our Nottingham head office, we provide a range of products and solutions to businesses throughout the UK and the rest of the world.

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USA & CANADA

HPS work with organisations throughout the USA and Canada that pump liquids during the manufacturing process, ranging from major household names to smaller independents.

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AUSTRALIA & NEW ZEALAND

HPS Australasia provides liquid product recovery and transfer technology to companies that process liquids throughout Australia, New Zealand, and neighbouring countries

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We also have official representatives based in:

Brazil
India
Mexico
Singapore
China

Thailand
Malaysia & Indonesia
The Netherlands
Belgium