

PROCESS PIGGING FOR INDUSTRY

**The most efficient, cost
effective, environmentally
responsible method for
clearing process pipelines**



HILTAP
FITTINGS LTD.

Pigging clears pipeways faster than conventional flushing with 98% less waste

What are the benefits of pigging?

In today's manufacturing environment, raw material costs, manufacturing costs, and waste disposal cost are all steadily rising. In addition, end users are demanding higher and more consistent product quality. All of these factors continually place pressure on your product margin and ability to compete.

Pigging systems recover lost product, eliminate flush waste, minimize the cost of using dedicated piping, and result in consistently higher product quality. Pigging systems help companies be more competitive, reach continuous improvement goals, and be better stewards of the environment.

Pigging systems from HILTAP provide rapid paybacks and a remarkable return on investment. HILTAP has developed pigged transfer solutions for clients in a broad range industries and products. We have pigged products as thin as water and as viscous as resin and paste. We bring our past experience to each new client pigging application and if we find an application we have not seen before, our creative staff of engineers will design a system to meet the application need.

How can I have an operating pigging system in my plant?

HILTAP is the only North American full service pigging system provider. HILTAP will come on site, review client objectives and application needs, engineer an application specific pigged transfer

solution, manufacture the components, assist with installation and commissioning, and guarantee system performance.

HILTAP pigging systems are designed to be Plug-N-Play. Clients are provided with all the required components for the specific pigging system operation and control along with installation, welding, clean-out, and commissioning documentation. With the components and documentation provided, clients can cost effectively install and commission the pigging system using their approved and proven contractors or internal maintenance staff.

HILTAP is also available for both off-site and on-site engineering, installation and commissioning services. We can perform process engineering, review piping layouts, train installers, inspect pipe welding and installation, supervise system clean-out, and assist with commissioning and start-up.

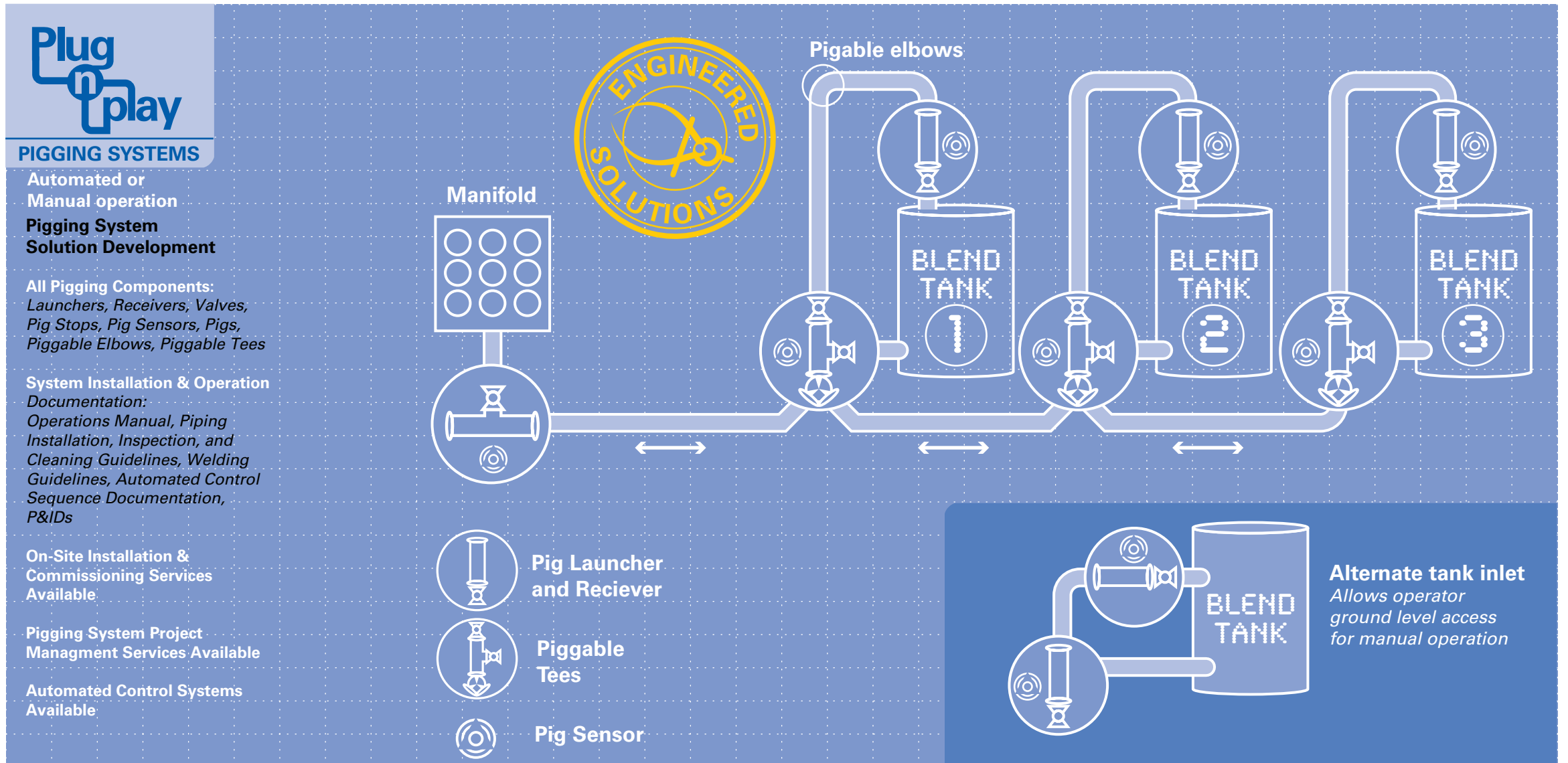
What is pigging? Pigging is process of recovering trapped product in transfer piping by pushing the product with a wiping cylinder (Pig) from the product source to destination. The pig is equipped with multiple wiping discs that form a seal and cleans the internal walls as it moves through the pipe.

How does a pigging system work?

A pigging system works by propelling the pig through the pipe with either a gas or liquid. Gas propulsion is normally accomplished by using either compressed air or nitrogen. For liquid propulsion, the pig is normally pushed with either another product or the flush media commonly used by the client.

What are the components of a pigging system?

A pigging system consists of components to launch and receive the pig, route the pig from multiple sources to multiple destinations, and detect the pig location. Pigging systems can either be manual or automated. A unique feature of HILTAP systems is the ability to later upgrade a low cost manual system to a fully automated stand-alone PLC or plant wide integrated DCS system. HILTAP pigging systems can be manufactured for either industrial or sanitary applications and for hazardous manufacturing areas as required. Industrial systems are designed to ASME B31.3 guidelines and sanitary system to Sanitary 3A guidelines. All components are precision manufactured in an ISO 9000 certified facility.





Design

A well designed pigging system will save pipe, product, time, manpower, and the environment



Virtual testing



Manufacture and Installation

What if my company is already working with an engineering firm?

Occasionally, pigging systems are a part of an overall plant upgrade or expansion being designed and project managed by a third-party engineering firm. In these instances, HILTAP will work with both the client and the engineering firm to develop an application specific solution. HILTAP will guarantee performance if we design and specify the pigging system. This process assures the client receives a properly designed and functional system, relieves the third party engineering firm of the responsibility for pigging system project component, and protects our reputation as the pigging systems experts.

What type of company benefits from pigging?

HILTAP has pigging systems for both industrial and sanitary applications. Listed below are typical pigging examples.

Industrial	Sanitary
Chemical Intermediates and Raw Materials	Dairy Products
Solvents & Alcohols	Milk, Cheese, Yogurt
Resins	Food
Household and Industrial Cleaning Products	Juice, Soft Drinks
Lubricants & Grease	Soups, Sauces, Paste
Automotive Chemicals	Chocolate, Syrups, Jelly
Paints and Coatings	Ketchup, Mustard,
Adhesives & Sealants	Salad Dressing, Mayonnaise
Agricultural Chemicals	Pet Food
	Personal Care
	Hand & Skin Cream
	Bath & Body Wash
	Toothpaste
	Pharmaceutical
	Eye Care
	Hospital Preparations

Pigging components and unique HILTAP features

Pig launching, receiving, and maintenance: HILTAP's Pig Launcher/Receiver (PLR) designs provide operators with rapid and safe access to pigs. Though most HILTAP pigging systems allow the pig to stay in the system between product transfers, pigs are a wear component and will require routine inspection and periodic replacement

Twister LQC safety access cap: All PLRs where pig maintenance is performed are equipped with HILTAP's patented LQC (Locking Quick Connect) safety access cap. The LQC access cap connects to the back of the PLR with just a quarter turn and will lock under product transfer and pigging pressure. When the system is not under operating pressure, pigs can be inspected and replaced in less than 1 minute. Should the operator attempt to remove the access cap during operation, the LQC will move to a locking position and remain locked and sealed until system pressure is removed.

Wiper disc relax chamber: Most HILTAP designed systems are bi-directional with the pig being returned to its "home base" PLR after the pigging process is completed. Since pipe cleaning is accomplished by compression of the pig wiper discs against the pipe wall, the wiper discs will bend into a chevron pattern in the direction of travel as the pig moves through the pipe. To assure the pig wiper discs will reorient in the new direction of travel when turned around, Wiper Disc Relax Chambers are provided in the PLRs to allow the wiper discs to slightly decompress. Wiper Disc Relax Chambers increase pig life and allow pigs to easily be inserted/removed from PLRs without "stuffing".

Pigged transfer flow control: Many times process plants will benefit from using common pigged transfer lines to move products between multiple sources and destinations. To accomplish these objectives, HILTAP has available Piggable Manifolds, 3-Way Piggable Valves, and 2-Pig systems.

Piggable manifolds: In most process plants, products are transferred from many different source locations to many different destinations by cross-connection of hoses. HILTAP manufactures piggable hard-piped manifolds that can be used to safely cross connect between multiple sources and destinations for performing simultaneous multiple pigged transfers. Through the use of HILTAP Piggable Manifolds, the practice of using potentially unsafe and environmentally unfriendly hose connections can be eliminated and the benefits of pigging can be achieved from source to destination.



Pig Launchers and receivers



Manifolds



3-Way piggable valves: Piggable 3-Way Valves can be used to target multiple destinations along a single common transfer line with near zero residual cross-contamination risk. Typical uses are the receipt of bulk raw materials to several storage tanks or the transfer of finished products from a mix tank to several finished product storage tanks.

2-Pig systems: For product transfers targeting multiple destinations along a single common transfer line that tolerate a small level of residual cross-contamination, a low cost 2-Pig System can be used. In a 2-Pig system, one pig is home based at the beginning of the line and the other at the end of the line. Before a transfer starts, the pig at the end of the line is positioned above the target tank and held in position with a Pig Stop mounted to a Low Trap Piggable Tee. The pig acts as an isolation valve and forces the transferred product into the targeted tank. At the end of the transfer, the pig at the beginning of the line is used to push the remaining product from the source to the targeted tank. Both pigs are then returned to their home base at the beginning and end of the line.

Clean-in-place systems: Many sanitary and some industrial pigging applications benefit from the ability to clean or sanitize

pigs while inside the system. HILTAP provides specially designed PLRs for this specific application.

CIP PLRs: CIP PLRs are designed with a wash chamber and pig plunger. The wash chamber provides an open area for the pig to be cleaned by either a flush media being plumped through the line or from a small diameter wash line mounted to the chamber directly above the pig. After pig cleaning, a manual or pneumatic plunger is used to re-insert and seal the pig into the transfer line for pigging.

Pig detection: Pigging is a process sequence that requires the operator to know the location of the pig for proper pigging operations. Pigs can be detected either manually or through automated magnetic pig sensing. HILTAP provides clients with both automated and manual pig detection systems.

Manual pig detectors: A Manual Pig Detector is a spring loaded plunger attached to a mushroom shaped hand actuator. The operator presses down on the actuator and the plunger shaft depresses into PLR chamber. Pig detection is determined by contact of the plunger shaft with the pig.

Magnetic pig sensors (MPS): The HILTAP supplied MPS consists of a unique combination of magnetic sensor, signal conditioning circuitry, and processor to provide reliable magnetic pig detection. The MPS will detect pigs in both a stationary and moving position and provides outputs for automated control systems or the triggering of remote lights, horns, or other remote detection signaling devices. Power requirements are either 12 or 24 VDC.

Pigs & materials: HILTAP can provide pigs suitable for each client's specific need. Many choices of pig types and materials of construction are available to meet virtually any client pigging application.

Pig materials: HILTAP is one of just a few pigging system providers that manufactures their own pigs and can provide a wide range of pig material options to meet virtually any client

application. HILTAP is the only North American source for pigs manufactured from rubbers and elastomer such as EPDM, Nitrile, Aflas, Chlorobutyl, and Viton needed for more aggressive chemical applications. For food grade applications, pigs are available manufactured from FDA approved food grade materials. For less aggressive chemical applications, lower cost urethane pigs with additives for chemical resistance and friction lowering properties can be provided.

Magnetic pigs: For magnetic pig detection by the Inline MPS, pigs can be provided with carefully chosen magnets embedded at each end to provide reliable pig detection.

Pig type: The two primary pig types are the SUD and the VIPRS. The SUD is designed with 8 closely spaced wiper

discs for maximum cleaning of slightly irregular surfaces common to ASME/API standard pipe. The VIPRS is designed with 4 widely spaced wiper discs and with no right angles for maximum pig CIP cleaning and use in sanitary tube applications.

Why choose a pigging system from HILTAP?

- HILTAP systems provide rapid pay-backs and a remarkable return on investment.
- HILTAP systems are Plug-N-Play and designed for each client's specific application.
- HILTAP components are precision manufactured for maximum safety
- Operator ease of use
- Maximum product recovery
- Minimum residual product hang-up
- Experience & Creativity



FOR SALES & INFORMATION CONTACT

Pigging Solutions, LLC
Phone: (630) 310-4041
www.PiggingSolutions.com

The 'HILTAP Way', is a mindset. We realize that without you our customer, we have nothing. Thus, the goal of every individual involved in supplying you our products is to earn your long term business, by way of offering you a 'passionate, responsive, enthusiastic approach to developing new products and servicing the ones you may



WORLDWIDE SALES AND SERVICE

1-800-661-6150 Toll-free U.S. only
(403) 250-2986 Canada (403) 291-3592 Fax
www.HILTAP.com Email: support@HILTAP.com
1,3140 14th Avenue N.E., Calgary, Alberta Canada T2A 6J4

be currently using". Whether you buy our products through one of our committed distributors or representatives or deal with us directly, you will be offered great service and we will conduct our business with total integrity. As 'supply chain management systems' entrench themselves into your business, you find yourself requiring, for those critical service applications, not the lowest cost product available in the global supply chain. The expression we hear all too often is 'the bitterness of poor quality & cheap solutions, lingers far longer than the sweetness of low prices". Your local needs, may they be conforming to environmental and safety regulations and the expectations of your stakeholders demand more. Reducing construction costs, shortening 'turn around times', improving margins and tracking accurate life cycle costs, are all necessary steps in improving all of our businesses, but eventually new ways of doing things are required, and identifying vendors that can help you achieve these targets is crucial; and that's what we do best,...it's the HILTAP way.