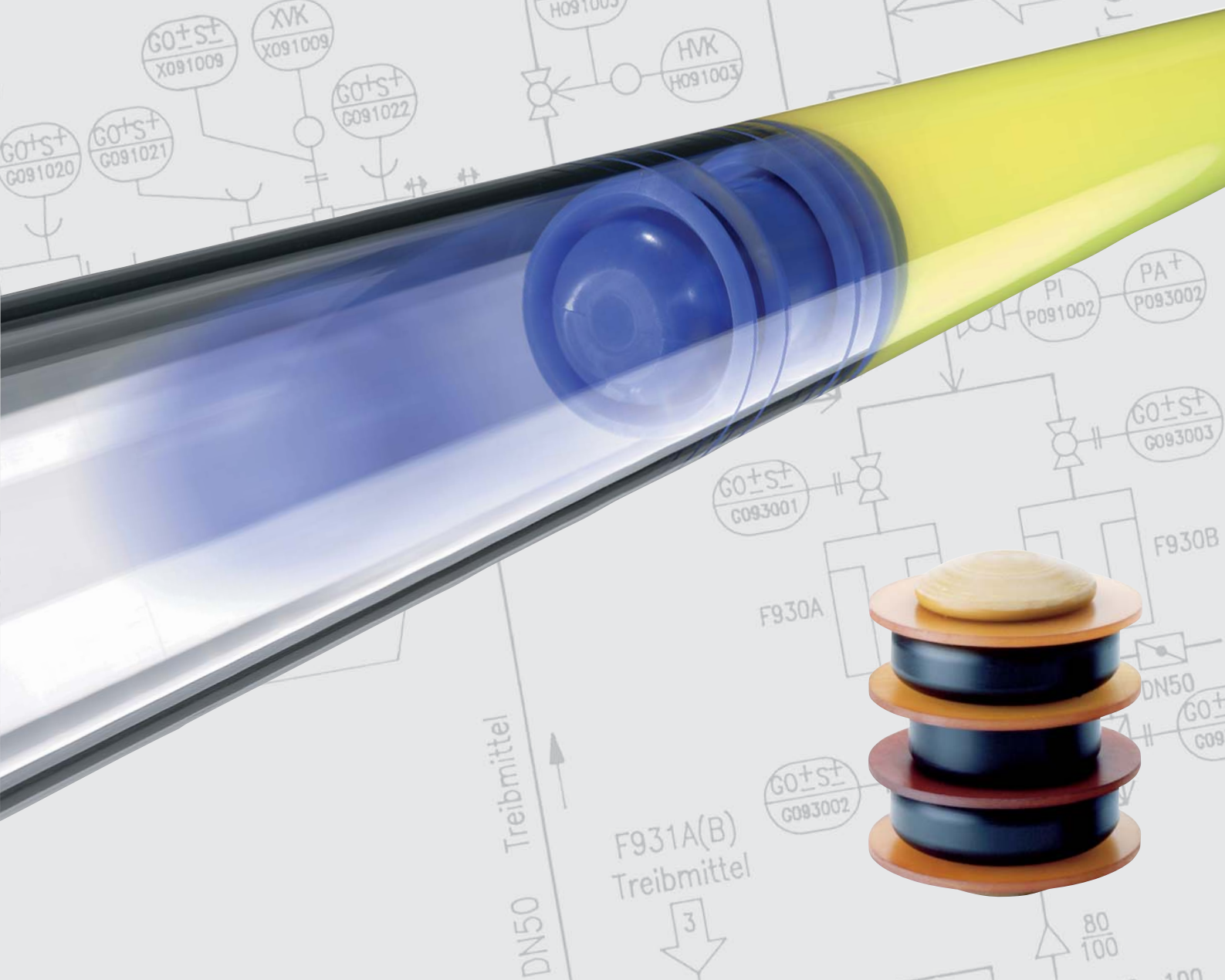


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# KIESEL

# Pig cleaning systems

**for**  
**chemical industry**  
**colour-coating industry**  
**petrochemical industry**



### Pigging technology will gain you a cutting edge in the production process



#### KIESEL creates solutions for liquids and highly viscous products

A pig is a rubber part which cleans and completely empties pipe systems. It is pressed through the pipe by means of a propelling agent. An optimum cleaning quality can be achieved upon minimal propelling pressure. This process is called 'pigging'.

This technique originated in mineral oil industry and today is applied in any industry that processes liquids and products with high viscosity as well as with a high rate of sediment creation. It is furthermore used for hardening and toxic products, pastes and powders, and in production processes that have frequent product change in pipes.

The main application of pigging technology is the cleaning process, as well as the retention of products upon conveying and dosing of material through the pipe system. It serves cost reduction and allows for better availability of production and filling devices. It serves environmental protection and quality assurance.





**KIESEL Pigging technology – a great advantage in piping**

Pigging technology enjoys multiple application possibilities in the production of laquers and paints, chemicals or in the mineral oil industry.

- Product separation
- Complete product retention, no mix
- Transport of small amounts
- Shortened cleaning times and reduced cleaning costs
- Quality assurance reliable cleaning processes
- Minimal environmental impact by a reduction of water contamination
- Extended reliability of production facilities
- Avoidance of foam creation
- Pipes can be left without any heating
- Hardening or deposit creation can be avoided
- Super simple handling from manual to fully automated facilities
- Sizes DN 25 thru DN 200
- Piping diameters DIN 11850 version 1  
version 2  
and according to DIN 2430-1
- Connection of pipes and fittings by orbital welding technique
- All systems do have additional possibilities for rinsing
- Facilities certifiable

**All in one from KIESEL:**

- **Planning**  
of complete production facilities
- **Engineering design**  
by experienced engineers
- **Manufacturing**  
of all components by KIESEL
- **Installation and Control**  
friction free complete installations and control
- **Maintenance**  
by trained specialists



### Pig cleaning system interaction

This example shows the schematic structure of a pig cleaning system. With its flexibility KIESEL pigging systems can be customized to all customer needs.

#### Dualway pig switch

1 inlet, 2 outlets,  
120° move, manual, auto-  
mated.

#### Pig speed regulator

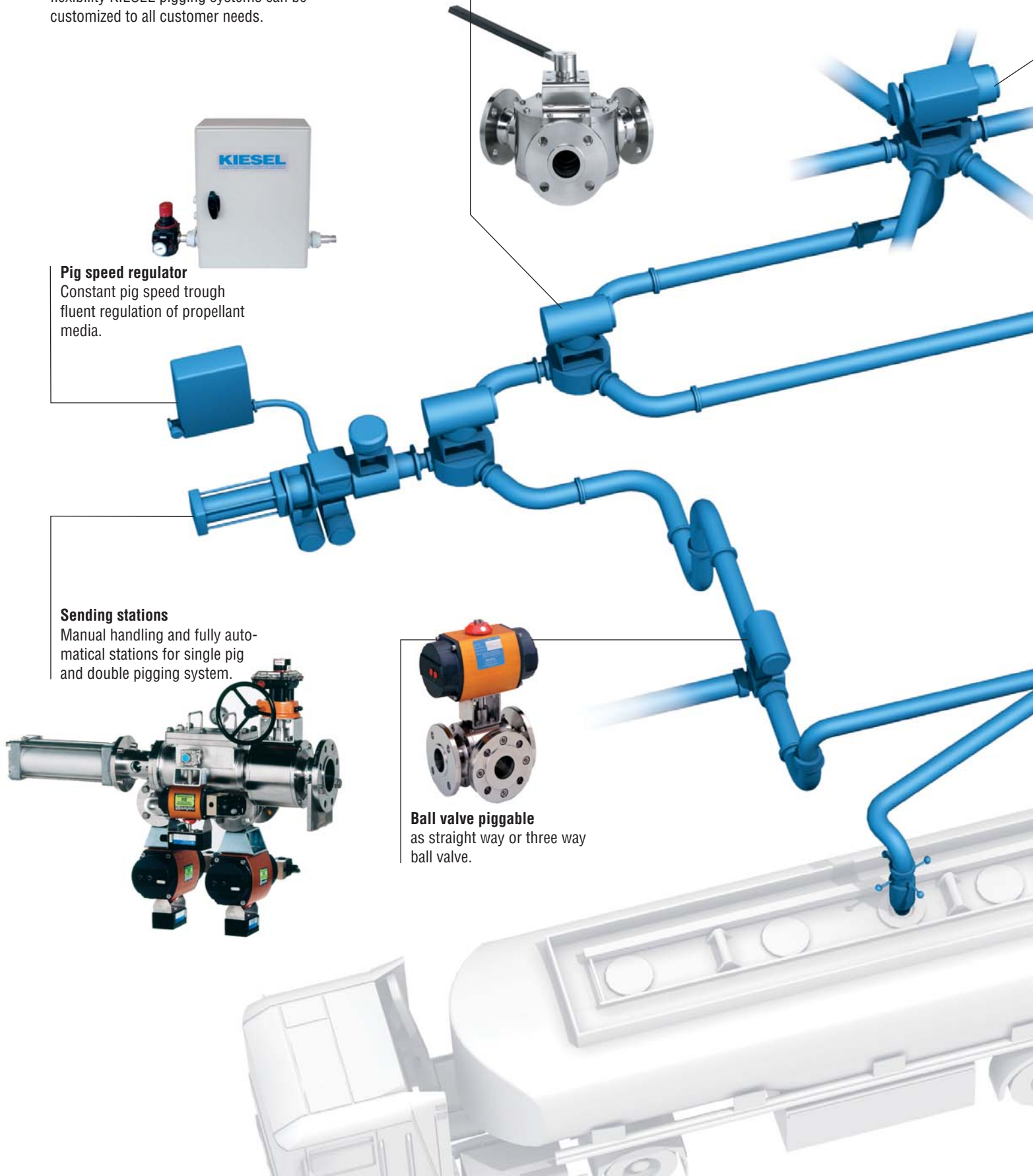
Constant pig speed trough  
fluent regulation of propellant  
media.

#### Sending stations

Manual handling and fully auto-  
matical stations for single pig  
and double pigging system.

#### Ball valve piggable

as straight way or three way  
ball valve.





## Multiway pig switch

1 inlet vertical, 6 outlets horizontal, manual, automatic.



## Piston valves

Dead space free check valve as product feeder.



## Straight way piston valve

Dead space free check valve fitting as product inlet or outlet in a double pig system.



## Three way piston valve

Dead space free outlet fitting in single pig system.



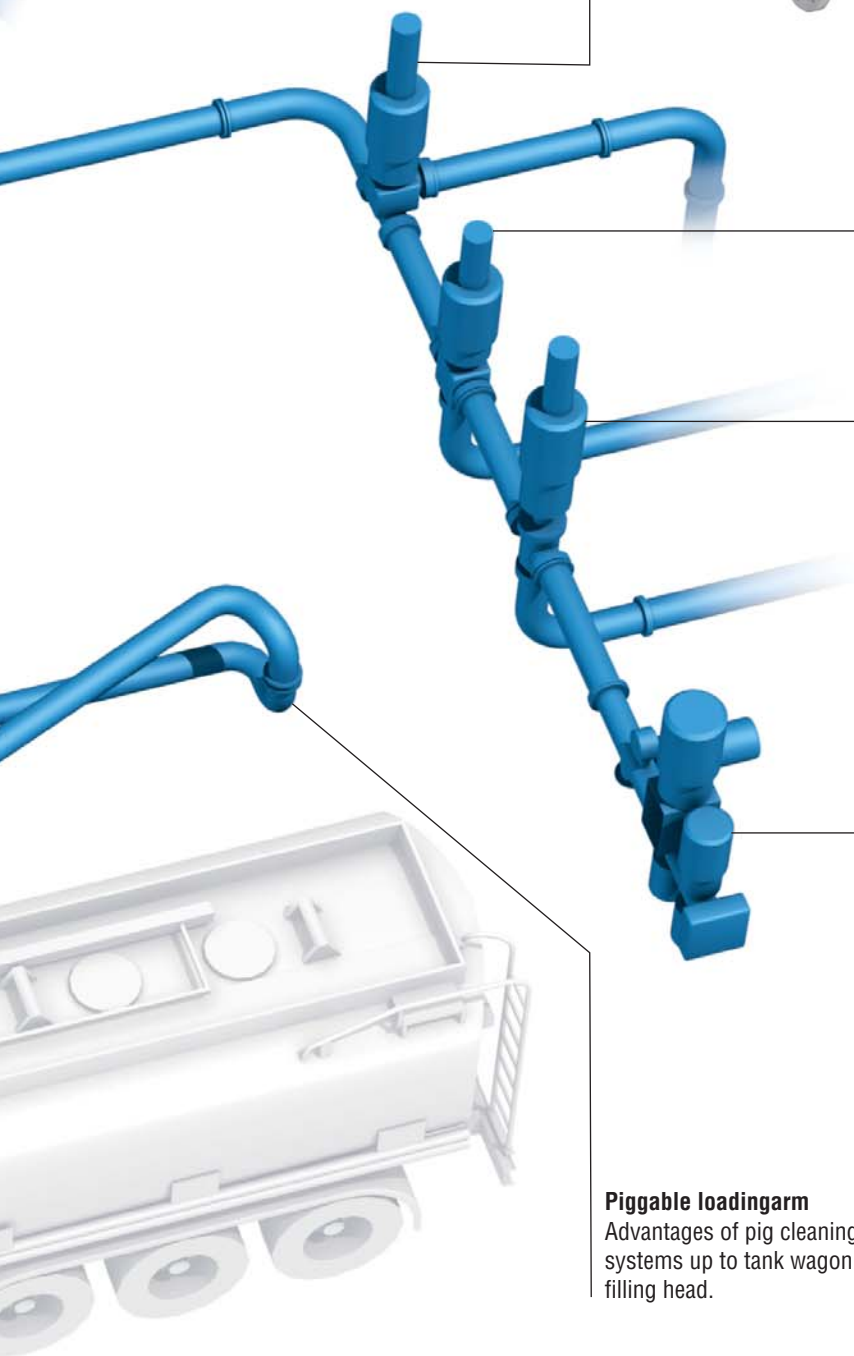
## Receiving station

Manual handling, fully automatic piggable in passage station for single and double pig system.



## Piggable loadingarm

Advantages of pig cleaning systems up to tank wagon filling head.



## KIESEL Matrix-manifold

**KIESEL Matrix-manifold**, piggable, allows for the distribution of an infinite number of pipes to varied destinations such as mixing units, filling units and loading units. Pipes of different nominal widths from DN 50 thru DN 100 can be assembled to one manifold. This allows for great flexibility with very little effort.

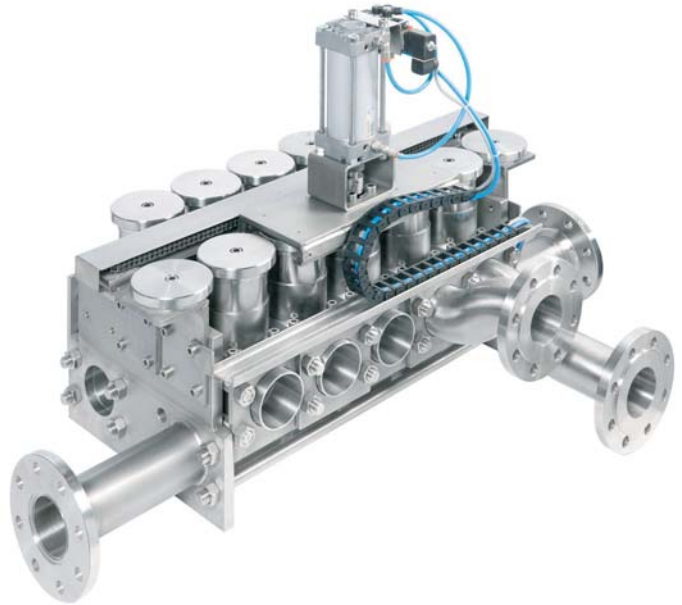
The matrix-manifold has only one pneumatic actuator over a row of up to 50 inlet valves. This actuator works on a chain drive. It opens the source valve, which is closed by an automatic center punch.

The small number of actuator cylinders contributes to minimizing the number of cabinets for fully automatic control.

### Materials:

Stainless steel 1.4301/304L

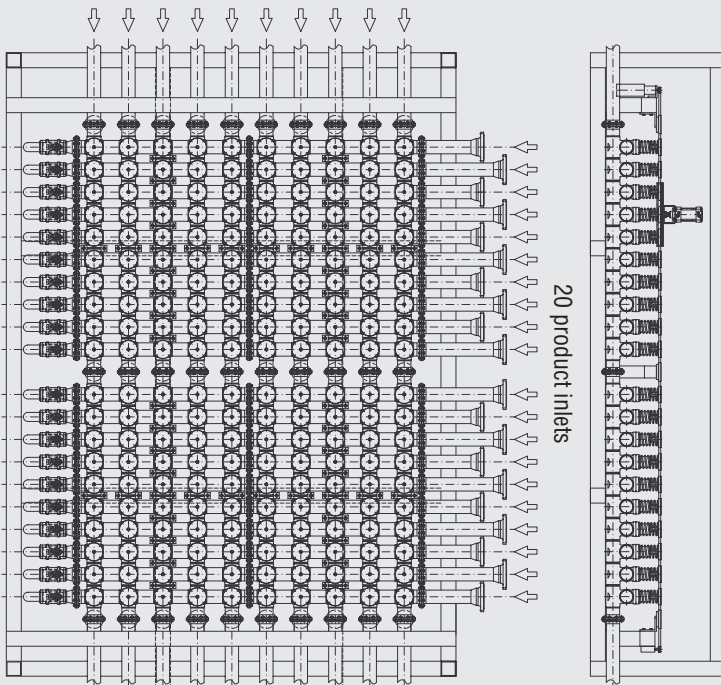
Sealings Perbunan, EPDM, PTFE



Matrix-manifold

### Schematic drawing

10 piggable pipes



### Advantages of KIESEL Manifoldvalves:

- Self supporting design and module construction, extendible and upgradable any time
- Fluidic favorable design without section constriction
- Super simple disassembly and assembly upon sealing change
- Elastomeric long life sealing, temperature proof from 0° C to 120° C
- Simple O-seals
- Large drive disc, for valve to allow for operation when in un-even position
- A single drive for an entire row of valves of piggable pipes
- Drive control by an absolute valueage, which makes errors impossible
- Automatic lock, in case drive is not on valve
- Extension by a pig speed control with long discharge pipes guarantee absolutely smooth running of the pig
- Smooth running of pig even upon back passage without products through an impact pressure valve

## KIESEL Piston valves



**Piston valve**



**Three way piston valve**



**Straight way piston valve**



**Cross piston valve**

**KIESEL Piston valves** have been developed as dead space minimizing and piggable valves for the chemical industry, as well as for paint, lacquer and mineral industry.

They are check units for product inlets and outlets. The passage width has been precisely adjusted to the pipe diameter according to DIN 2430-1. This results in perfect pig work and the ridding of all products deposits by the pig.

They are manufactured in DN 25 thru DN 150. A pneumatic cylinder is the actuator.

**Materials:**

Stainless steel 1.4404/316L

Sealings Perbunan, EPDM, PTFE

## KIESEL Feeding stations



KIESEL piggable sending and receiving stations are fully flexible to customize: Examples for individuell customer needs are following multiple used details like partially and completely extended pig chambers, radial and axial opening, implementation of intermediate cleaning

## KIESEL Receiving stations



liquid between two pigs, dedicated pig rinsing in sending and/or receiving station, security features before opening the pig chamber, manual and automatical systems, additional product inlets and outlets, adding the KIESEL pig speed regulator, etc. ...

**KIESEL Ball valves, piggable****Ball valve****Three way ball valve**

**KIESEL Ball valves**, piggable, have been designed especially for pigging works. Balls and casings are manufactured from forged stainless steel. For smooth operation of the pig, the piggable passage width is precisely adjusted to the pipe diameter according to DIN 2430-1. Ball valves can be operated manually or automatically with pneumatic or electrical actuators.

They are manufactured in nominal widths of DN 25 thru DN 200 PN 25. They come with dead space minimized and adjustable sealings.

**KIESEL Pig switches, piggable****Pig switch****Multi pig switch**

**KIESEL Switch**, piggable, comes with a small ball valve and PTFE-jacket sealing. The design allows for great dead space reduction.

The product range contains dual way and multiple way switches with nominal widths of DN 25 and DN 200 according to DIN 2430-1 for manual and automatic operation.

**Materials:**

Stainless steel 1.4404/316L  
PTFE



## Accessories for KIESEL pig cleaning systems

Extraction of KIESELs large portfolio

### KIESEL Piggable loadingarm

DN 50 to DN 125



### Filling head

for tank wagons piggable up to the last point of product outlet, DN 25 to DN 125



### PLC for KIESEL pig cleaning systems

Piggable valves with intelligent distribution box for bus termination. Small steerings for easy pig cleaning systems up to complete PLC's on PC-base and visualization.



### KIESEL Pig speed regulator

A special invention for complete equable and hitchless pigging procedure with different viscosities, long piggable pipes and high differences in altitude.



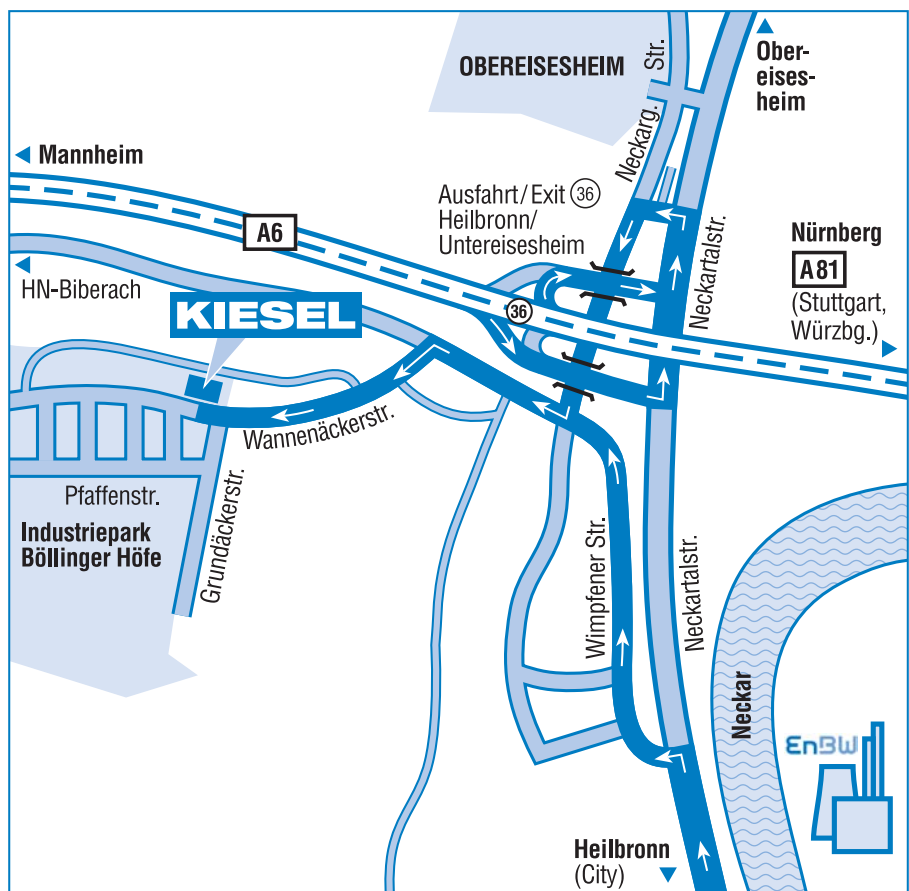
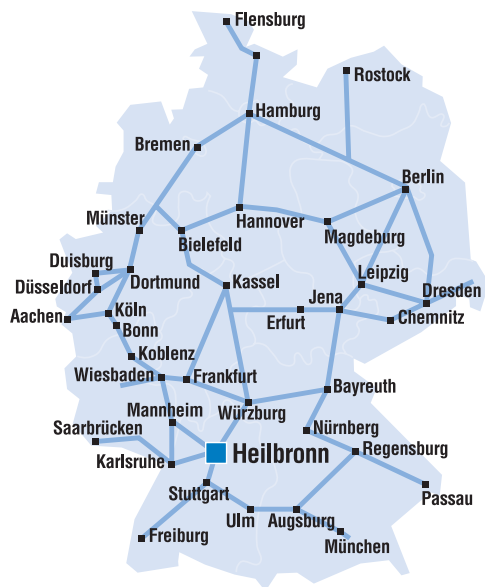
**NEW** solution against hitching pigs

**KIESEL Pigging technology for best solutions!**

# KIESEL

## Welcome to Heilbronn!

You are cordially invited to visit our modern production lines. Please make an appointment to visit: a quick call is sufficient and we look forward to hearing from you – by the way, we also look forward to your visit to our homepage. Here, you can find out the latest information about new KIESEL developments.



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