

DISSOLVING

MIXING

EMULSIFYING

HOMOGENIZING

SUSPENDING

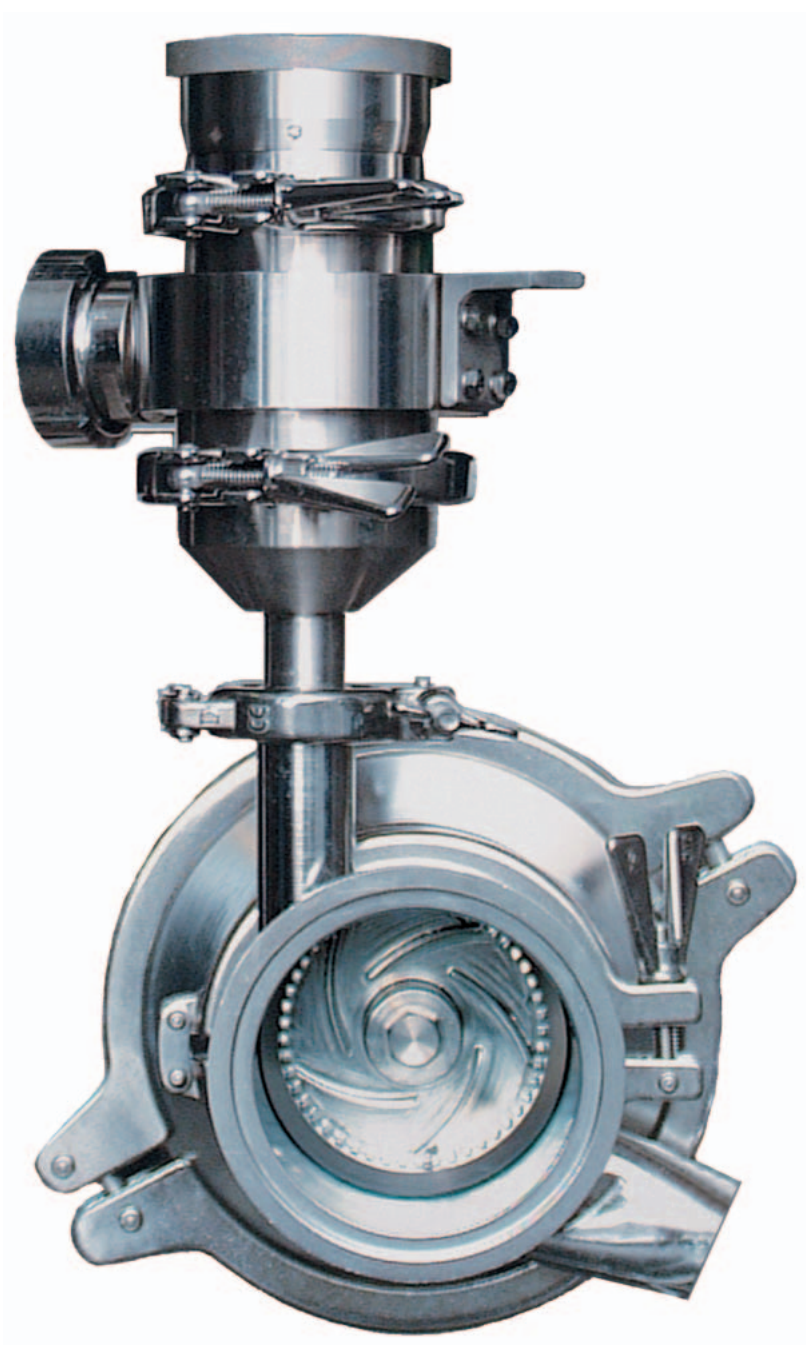
DISPERSING

GASSING

**YTRON<sup>®</sup>**  
PROCESS TECHNOLOGY



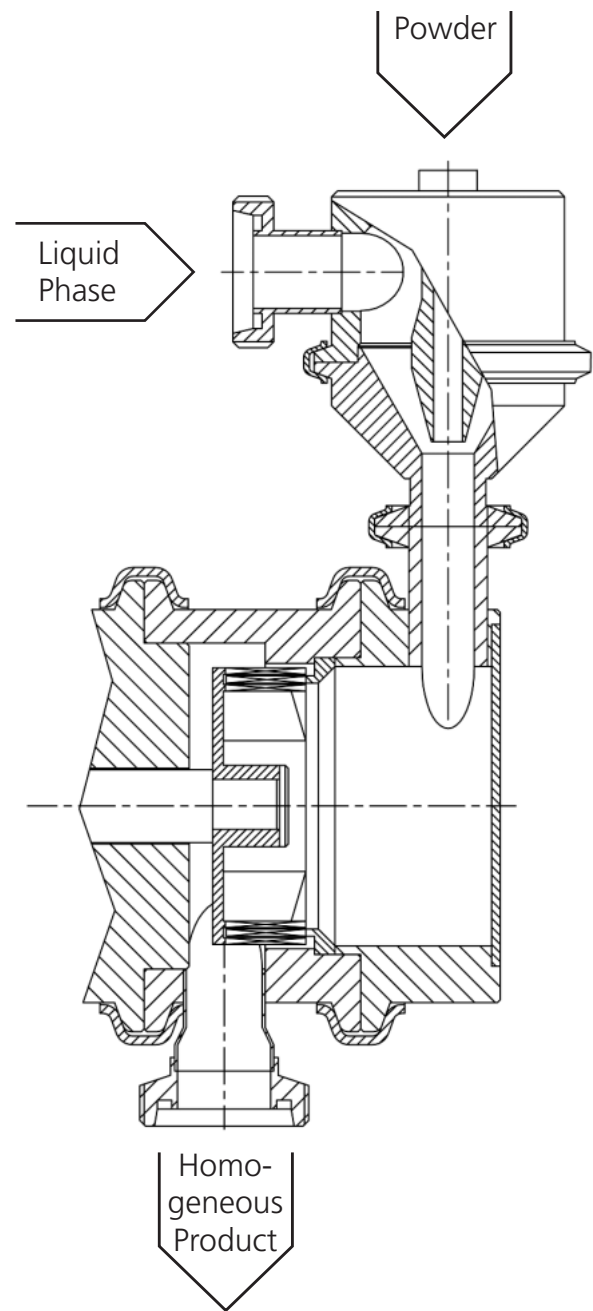
# YTRON-PID



## The YTRON-PID Principle

### Powder-Inject-Dispersing

The thickener or gelling agent is sucked out of a hopper, BigBag or a silo into an injection chamber where it is pre-wetted by the liquid phase. This pre-wetting process is designed to occur without product hold-up. The forced passage through the rotor/stator system ensures a perfectly wetted out product. A pump installed downstream achieves a controlled discharge of the product. The tendency of powders to stick or form lumps on the contact surfaces of the powder/liquid injection chamber is totally eliminated during either continuous or short process intervals.



## Important Advantages of YTRON-PID:

- Extremely difficult to wet-out powders are processed without any problems
- Free flowing powders ensure that reproducible results can be achieved
- Concentrations of over 20% can be achieved in a single pass
- Sticking, clogging or lump formation in the contact areas liquid/powder is totally avoided
- Free flowing powders mean that a metered, continuous operation can be achieved without problems
- The required concentration is achieved by appropriate adjustment in the injection chamber
- Powder consumption can be significantly reduced by the intense wetting out of the product
- STRETCHING® of the molecular chain achieves a higher viscosity and therefore higher yields
- Cleaning, even between short process intervals and after a product change, is unnecessary



YTRON-PID in a mobile construction  
 Application: Dust-free incorporation  
 of an Acrylic Polymer from a bag to  
 produce a Cosmetic Product



YTRON-PID  
 Powder addition via hopper or from BigBag or silo  
 Application: InLine-dissolution of Poly-Vinyl Alcohol (PVA)

## The Problem

When in contact with water, individual particles of the hydrophilic polymer immediately begin to swell. The surfaces of these gradually swelling particles cross-link to form a tough outer skin which prevents the completion of the hydration process.

The result is an agglomeration of particles which are wetted on the outside only. These appear at best as small transparent 'fisheyes' but more normally as lumps of varying sizes.

Should one attempt to achieve an homogeneous dispersion by smoothing out the lumps by means of high shear methods, the polymer molecular chain may be broken. This will effect the end result considerably by altering the desired characteristics of the finished product.

## Special properties

- Pre-wetting of the powders in the injection chamber without sticking.
- No damage of the product during passing through the rotor/stator system, as the contact time takes only a fraction of a second.
- A pump installed downstream achieves the discharge of the uniform product even at high concentrations and viscosity.
- Sticking powders, deposits or lump formations are totally eliminated on both the contact surfaces of the 'powder/liquid' injection chamber and in the dispersing reactor. Therefore, cleaning, even between short process intervals, is totally unnecessary.
- The required concentration is achieved by the appropriate adjustment of the injection chamber.

## The Solution

YTRON-PID avoids any sticking, clogging or lump formation in the liquid/powder contact area. This ensures a trouble free operation with reproducible results every time.

YTRON-PID ensures that a metered, continuous operation can be achieved without problems.

YTRON-PID avoids air incorporation, other than occluded air.

YTRON-PID provides a higher viscosity and therefore higher yields for a given solids amount compared to conventional methods due to the STRETCHING<sup>®</sup> of the molecular chain.

Finest dispersions are achieved in a single pass





Carbopol: up to over 10 % concentration



Xanthan: virtually "sausage like" extrusion

Product examples for YTRON-PID



Neutragel: up to 5% concentration



CMC: virtually "sausage like" extrusion

Polyox: up to 7 % concentration



Blanose: up to over 15 % concentration

# YTRON-PID

Model	PID 1	PID 3
Water/Liquid-flow rate (l/h)	4,000 ... 12,000	12,000 ... 30,000
Powder capacity (kg/h) max.	2,000	5,000
Speed (1/min)	3,000	3,000
Power (kW) approx.	11.0	21.0
Mechanical seal, single acting	yes	yes
Liquid inlet	DN 50	DN 50
Liquid outlet	DN 50	DN 80
Powder inlet	DN 25	DN 50
Standard-dimensions approx. LxWxH (mm)	900x1,120x1,250*	100x1,250x1,250*

Other executions deviating from the standard are available, according to the application

\* mobile, without pump or powder hopper

YTRON -PID  
Application: Production of thickener Base  
for the Textile Printing Industry

## Typical applications

Difficult to wet-out thickeners and gums, stabilizers and gelling agents. For example MC, CMC, HPMC, Guar, Locust Bean Gum, Pectin, Agar-Agar, Alginates, Starches, Carrageenan, Xanthan Gum, Milk and Whey proteins as well as swelling polymers with a tendency to stick (Hydrophilic Polymers, Carbopol etc.)

A special configuration allows for very high solid contents in a single pass

Specialty: No product sticking in the contact area of the powder and liquid

Especially gentle treatment suitable for very shear sensitive products





The YTRON® range is not mass produced

YTRON® equipment and systems are carefully selected for your individual application. We therefore kindly ask you to provide as detailed as possible a description of your application containing for example:

- Components to be processed
- Viscosity at the beginning and at the end of the process
- The specific gravity (bulk density when adding powders)
- Overall dimensions and shape of the mixing vessel
- Minimum and maximum filling levels of products to be processed
- Working temperature
- Other details that may be relevant

The capacities indicated in this brochure are related to certain applications under standardised conditions. They are not necessarily valid for all products or processes.

The standard materials for the product contact parts are:

- Material 1.4301 / AISI 304
- Material 1.4571 / AISI 316 Ti
- Material 1.4435 und 1.4404 / AISI316 L

Special materials such as 1.4539, Hastelloy etc. are available on request

Fittings can be delivered various types such as  
DIN 11851, DIN 11864, SMS, DS, RJT, Clamp, Flange etc.

We reserve the right to alter the design without previous notice in the interest of development.





## **YTRON**

Process Technology  
GmbH & Co. KG

Handwerkerpark 21  
D-83093 Bad Endorf  
Tel. +49 (0) 80 53 / 79910 - 0  
Fax +49 (0) 80 53 / 799 10-20

e-mail: [service@ytron.com](mailto:service@ytron.com)

Internet: [www.ytron.com](http://www.ytron.com)



**Agent Exclusif YTRON France**

1885, route d'Apremont  
Z.I. de l'Albanne  
73490 LA RAVOIRE  
TEL : +33 (0)4 79 28 08 02  
FAX : +33 (0)4 79 28 48 39  
[service@ytron.fr](mailto:service@ytron.fr)  
[www.ytron.fr](http://www.ytron.fr)