

## R2S Anaerobic Reactor

### Main Features

- Two stage system
- Low space requirement
- High reduction rate
- Production of biogas
- Easy to use and maintain design
- Minimization of lime sedimentation
- Available as a gastight construction
- High sludge activity thanks to selective heavy sludge discharge

### Applications

Anaerobic pre-clarification of effluent with a heavy organic load from various industries such as:

- Paper and pulp industry
  - Pulp production
  - Wood pulp production
  - Paper production
- Food industry
  - Breweries
  - Soft drinks
  - Production of fruit juices
  - Fruit and vegetable processing
  - Dairy processing

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- UK Leader in energy efficient wastewater reuse

## Voith Paper Environmental Solutions R2S Anaerobic Reactor



# R2S Anaerobic Reactor

The R2S Reactor is a two stage, high-performance reactor designed for the anaerobic clarification of industrial wastewater, in particular for the paper and pulp industries. Its unique construction provides for the effective degradation of dissolved organic waste materials in an extremely small environment with a minimal space requirement. Easy maintenance and operational safety – even with high lime loads – were given special attention during the development of the reactor.

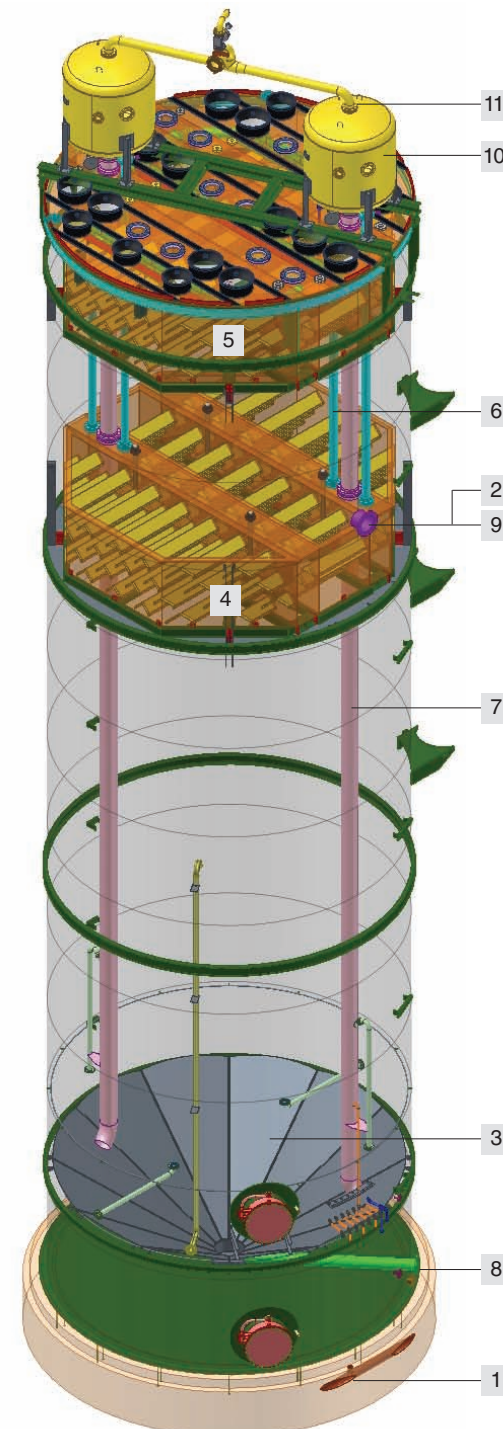


## Operation Principle

- The effluent is fed via an inlet (1) into the bottom of the reactor (3) and mixed intensively with the anaerobic biomass.
- The feed-in area is specially designed so that heavy sludge (i.e. calcified biomass) can be periodically discharged without interrupting the operation.
- Two three-phase separating systems (4, 5) allow for effective separation of effluent, biomass and biogas.
- The major portion of the obtained biogas is removed in the lower separator. Biogas, water and biomass from the lower reactor area are directed over a riser (6) into a degassing tank (10) on the reactor head. Water and biomass are then returned back into the lower reactor area over a downer (7).
- The internal recirculation is supplemented with an additional external recirculation.
- The outlet system for the effluent is constructed in a way that sedimentation can, for the most part, be avoided.

## Machine Elements

- 1 Feed
- 2 Outlet
- 3 Inlet Distribution System
- 4 Lower Separator
- 5 Upper Separator
- 6 Riser
- 7 Downer
- 8 Heavy Sludge Discharge
- 9 Scum Sludge Discharge
- 10 Degassing Tank
- 11 Biogas Pipe



## Design Concept

### Flexibility

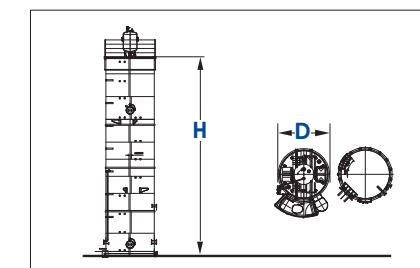
- With the combination of internal and external recirculation, the R2S Reactor offers these advantages:
  - high flexibility regarding feed amount and COD load
  - functions with different sludge qualities

### Easy to Operate and Maintain

- Efficient distribution system without risk of clogging
- Heavy sludge discharge on running operation
- Optimized discharge system offers good accessibility and prevents sedimentation
- Fixtures can be removed without dismantling the insulation and covers

## Technical Data

R2S Standard				
Cyl. Height H [m]	16	20	24	30
	Aktive reactor volume [m³]			
Diameter D [m]				
2.25	60	76	-	-
3.0	106	134	-	-
3.6	151	192	-	-
4.1	95	247	300	379
5.0	285	364	442	560
5.9	392	501	610	774
6.7	498	639	780	992
7.5	616	793	970	1235
8.0	695	896	1097	1399
9.0	-	-	1374	1756
12.0	-	-	2364	3042



## On-Site

### Installation

- The R2S Reactor tank is available in stainless steel or coated normal steel.
- Insulation and covers are available upon request.

### Operation

- The R2S Reactor runs user-friendly and operationally safe.
- In contrast to aerobic equipment, the R2S produces little excess sludge.
- Biological process with low chemical and energy demand.

