The continuous height adaption of the inlet structure.

BEST AVAILABLE TECHNOLOGY NEWLY DEFINED

Carefree operation of secondary settling tanks with

hydrograv adapt

- Terminate sludge overflow
- Treat more combined wastewater
- Retain more sludge in aerated tanks
- Effluent values like a sand filter

hydrograv

hydraulics · gravity separation

With the patented inlet structure hydrograv adapt sludge overflow and flock discharge by secondary settling tanks are consistently avoidable – with distinct increase in the capacity of your secondary clarifiers.

Avoid sludge overflow and flock discharge

Sludge overflow and flock discharge – these are two of the central problems of many WWTP – in spite of all technological progress in sewage treatment.
And that means:

- unnecessary environmental pollution
- high waste water levies
- violation of discharge limits.

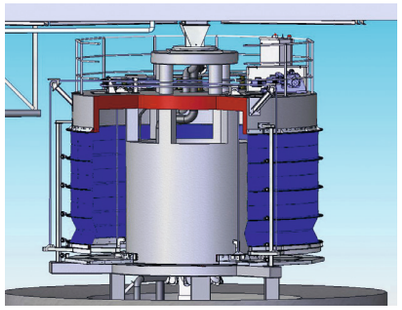
The solution of these problems is obvious:

The inlet structure simply has to adjust itself continuously to current loading and to sludge blanket level, for using the flock filter without swirling up sludge.

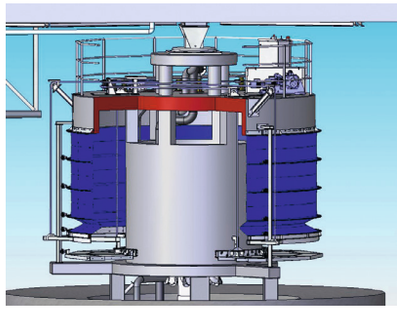
- If the sludge blanket level is low, then the inlet shifts itselfs to a low position.
- If the sludge blanket level is high, then the inlet shifts itselfs just to a high position.

Additionally horizontal inflow has to be ensured. Then the flock filter is always retained and the effluent is clear. And furthermore the loading capacity of the clarifier is considerably enhanced – because due to the securely horizontal inflow at sludge blanket level also resuspension of the sludge bed is minimized.

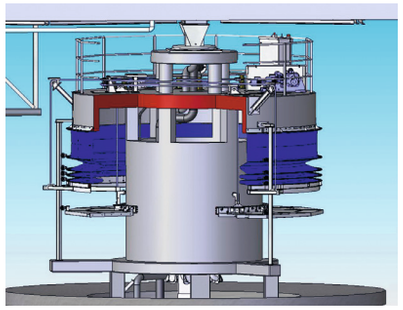
Dry weather, night-time



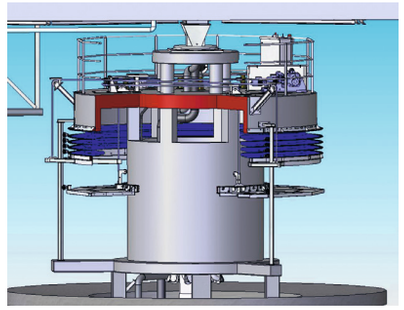
Dry weather, daytime



Wet weather



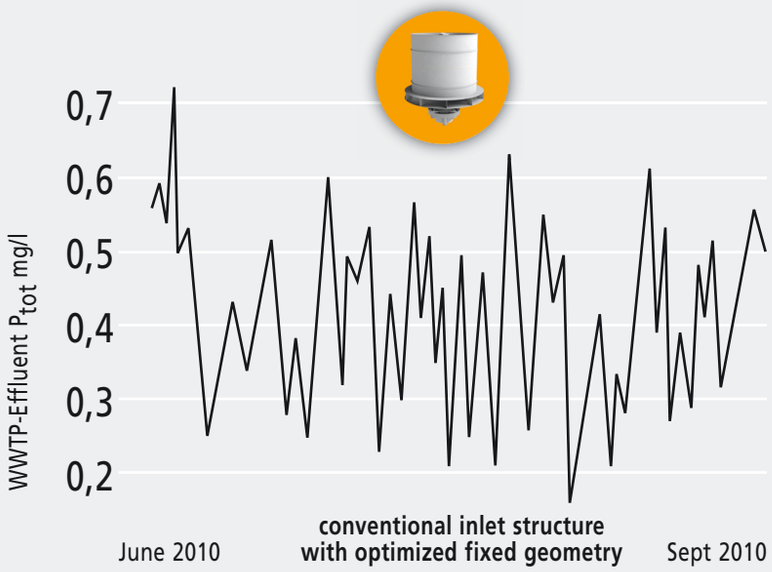
Heavy stormwater

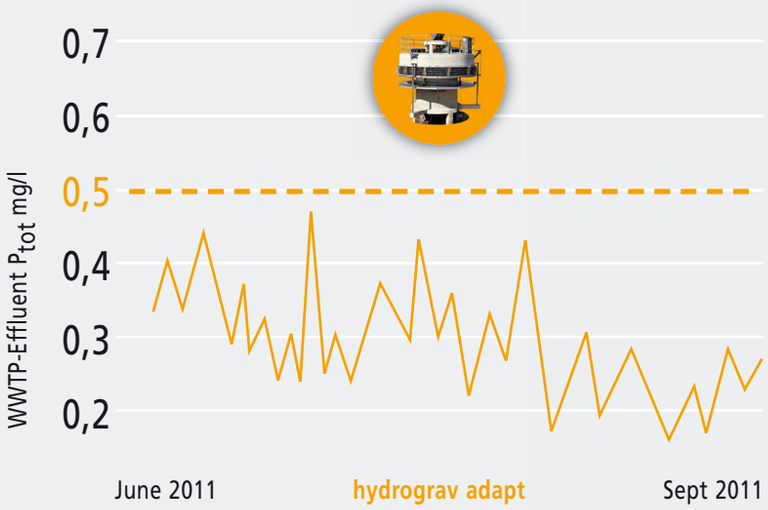


hydrograv adapt is sustainable protection of surface waters

hydrograv adapt with effluent values like a sand filter

- without pumping costs
- with negligible energy demand
- with minimal operating expenses
- no additional space required





Peter Birken
Head of department
Wastewater, LINEG

"After installing the adapt inlet structures on the WWTP Moers-Gerdt we could verify discharge reductions of P_{tot} of almost 30 % and of COD of 25 %. Thus we are allowed to set off the investment costs against waste water levies."

Minimization of the phosphorus discharge by actively securing the flock filter with hydrograv adapt, this is efficient protection of surface waters!

The hydrograv adapt system gives intelligence to secondary settling. Finally secondary clarifiers become controllable.

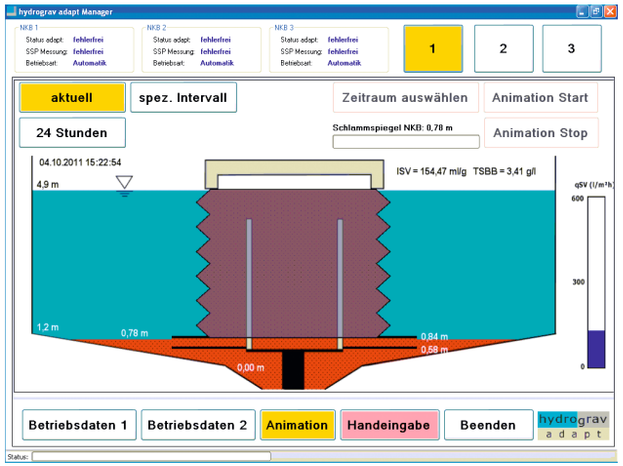
Much more than just a structure – an innovative system

The adapt system offers:

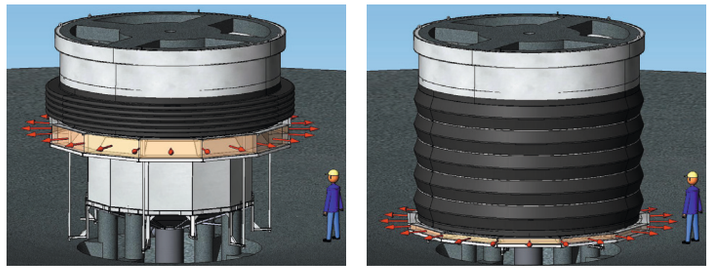
- A computer-based individual adjustment to the sewage plant of the customer
- Technology based on the know-how of the international leading experts for setting tanks
- full controllability of the complex sedimentation process

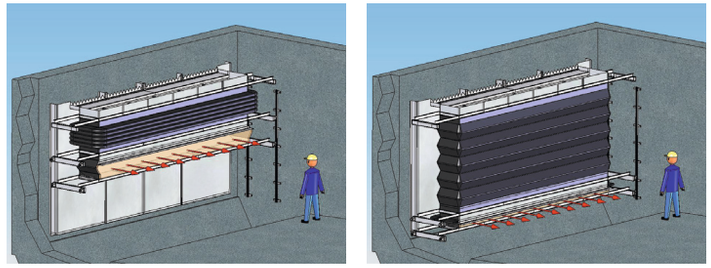
The adapt system includes:

- Our robust and durable construction.
- Most reliable hardware, manufactured consistently from stainless steel.
- A complex process measuring and control technology based on leading know-how, customized to every individual WWTP, and therefore optimally controllable.
- Numerous monitoring tools for the operator, warnings and alerts based on most recent methods.
- A highly developed computerized sludge management system that retains a maximum of sludge in the aerated tanks – especially at stormwater, when it is most urgently needed there.



Fully automatic hydrograv adapt sludge management system: It checks, informs, and warns. That's how you get your sludge balance under control!



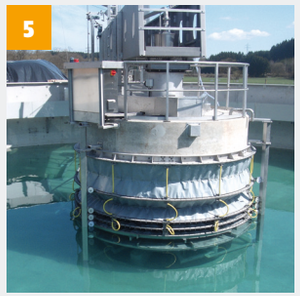


hydrograv adapt
for circular tanks (above) and rectangular tanks (below)

Finally a carefree operation of secondary settling tanks is possible!

Horst Junge
Plant Manager of the
WWTP Cologne
Operates adapt since 7 years

Impressive successes in practice



- Low inlet with narrow opening width at low loadings.
- High inlet with wide opening width at high loadings.
- Horizontal inflow to prevent swirling up of settled sludge.

And concurrently always located below the sludge blanket level.

These are the patented key elements to the best effluent quality that secondary settling tanks may achieve. And to the highest hydraulic capacity. So good, that our inlet structure hydrograv adapt convinces WWTP operators with impressive results meanwhile since seven years! Those, who have got it, absolutely want to keep it. And recommend it to others.

Install it and switch it on. It just works! – our prototype already for 7 years without any malfunction.

"Install it and switch it on. It just works! A fine thing with impressive impact and operational stability."

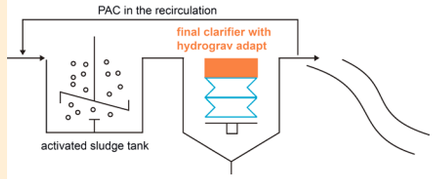
1 Our successful prototype in Cologne (2007)
2 Refitting with hydrograv adapt in a tank with suction collector system (2010)
3 Here major problems regarding effluent quality occurred. Now the effluent turbidity is mostly below 6 FNU: hydrograv adapt in a tank with blade scraper (2009)
4 Long lasting problems of the secondary settling on this WWTP were solved by three adapt inlet structures (2010–2011). Achievement: clear effluent, almost 30 % reduction of P_{tot} as well as 25 % less COD!
5 A new secondary settling tank with hydrograv adapt (2009–2010). Outcome: Clear effluent and considerably less floating scum. The operator equipped a second WWTP with hydrograv adapt.
6 Cologne equipped the secondary clarifiers on its third WWTP with adapt inlet structures (2010–2011, 2011–2012). Results amongst others: Much less backwashing of filters – because the adapt tanks provide it just with clear water.

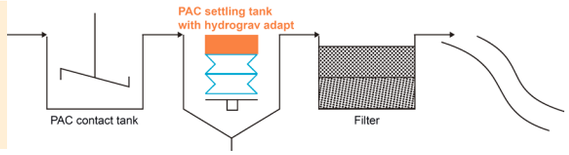
hydrograv adapt optimally complements tertiary wastewater treatment.

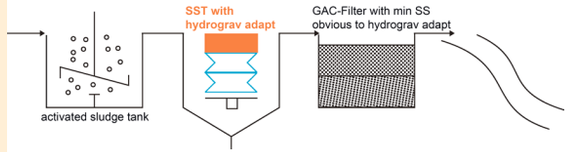
Organic matter, nitrogen and phosphorus are the objectives of wastewater treatment nowadays. But micropollutants are becoming an increasing priority. They partially can be eliminated by activated carbon. Mainly by three variants: activated carbon within the aerated tank, suspended in a tertiary treatment with subsequent settling tanks, or in a downstream filter.

The consistent complement to activated carbon treatment

All three variants rely on efficient settling.	**hydrograv adapt provides the variants in the following way:**
Activated carbon in the recirculation within the aerated tank increases the MLSS that have to be removed and hence the loading of the secondary settling tanks. The Suspended solids have to be strongly minimized, because they contain carbon loaded with micropollutants.	Maximum performance of secondary clarifiers for the activated slugde process (MLSS) and at the same time maximum retention of the suspended solids through hydrograv adapt.
Activated carbon suspended in a tertiary treatment requires for itself a settling that is as efficient as possible.	Extremely efficient activated carbon settling tank with hydrograv adapt.
Activated carbon in a filter works the more stable and with the less tedious backwashing, the lower the amount of suspended solids is in the effluent of secondary settlers.	Secondary settling tanks upgraded with hydrograv adapt already minimize the solids quantity at the inflow of the activated carbon filter as good as technically possible.

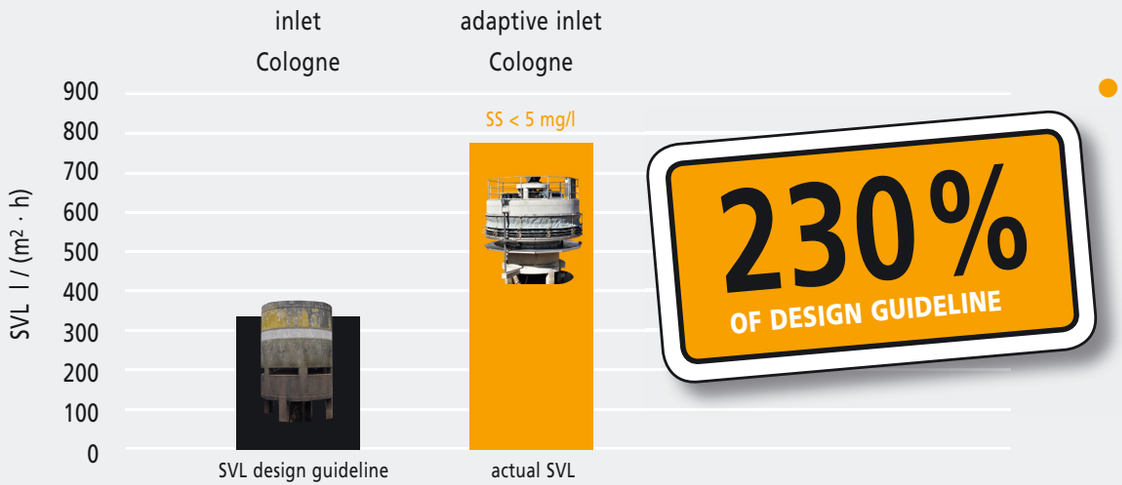






The hydraulic bottleneck secondary settling prevents that more combined wastewater may be treated on WWTPs.

Treat more combined wastewater – without additional secondary settling tank



Less discharge of combined wastewater within an urban catchment, this is active protection of surface waters, too. For example we operated our prototype in a comparatively shallow secondary clarifier with a surface loading of 2 m/h. Operationally safe and still with reserves.
At an actual sludge volume loading (SVL) of app. 775 l/(m² · h). This accords to 230 %, i. e. more than twice the load that recent design guidelines permit for this tank.

- Connect additional urban catchments, without constructing a new secondary settler at once.
- Treat more combined wastewater in your WWTP – discharge less wastewater unpurified.
- Avoid a bypass around the activated sludge tanks – or apply it only at much higher loadings.
- Reuse then dispensable secondary clarifiers for additional treatment steps, for instance elimination of trace contaminants.

Guido Hammer
Plant Manager of the WWTP
Moers-Gerdt, LINEG
Operates adapt since 4 years

"For years we were looking for a solution for our problems of the SSTs on the WWTP Moers-Gerdt.
Until we installed the adapt inlet structures. Now the effluent is always clear."

hydrograv adapt – the height-variable inlet system.
With manifold advantages compared to inlet structures with fixed geometries. For carefree operation of secondary clarifiers. And effluent values like a sand filter!

BEST AVAILABLE TECHNOLOGY NEWLY DEFINED

Advantages of hydrograv adapt:

- Say goodbye to sludge overflow by securing the flock filter within the secondary settlers.
- Less sludge displacement at stormwater provides for a higher sludge concentration and thereby better degradation in the aerated tanks.
- Lower sludge blanket level and a more stable sludge bed lead to increased operational safety.
- Minimum particulate phosphorus and COD in the effluent. On average and in maximums. That means sustainable protection of surface waters and reduction of waste water levies.
- Flock filter within the secondary settling instead of additional filtration downstream. Thereby minimization of investment costs and considerable savings of energy.
- Ideally facilitate the elimination of trace contaminants by activated carbon.
- Treat more combined wastewater.
- Expand without constructing new secondary settling tanks.
- Low maintenance and high durability e.g. on the prototype plant for 7 years without any malfunction.

In contrary to inlet structures with a fixed compromise geometry hydrograv adapt always ensures minimum effluent loads combined with maximum capacity.
hydrograv adapt – a patented technology of hydrograv GmbH.

hydrograv
hydraulics · gravity separation

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