

Densadeg XRC™ extreme-rate clarifier

high-rate settling clarifier process

→ APPLICATION

- CSO/SSO
- tertiary wastewater/phosphorus removal
- industrial treatment

→ FEATURES

- extreme-rate yields compact footprint
- enhanced TSS & BOD removal
- fully automated
- high density ballast

a unique combination of solids contact, ballast addition and solids recirculation principles providing enhanced, rapid treatment

ready for the resource revolution



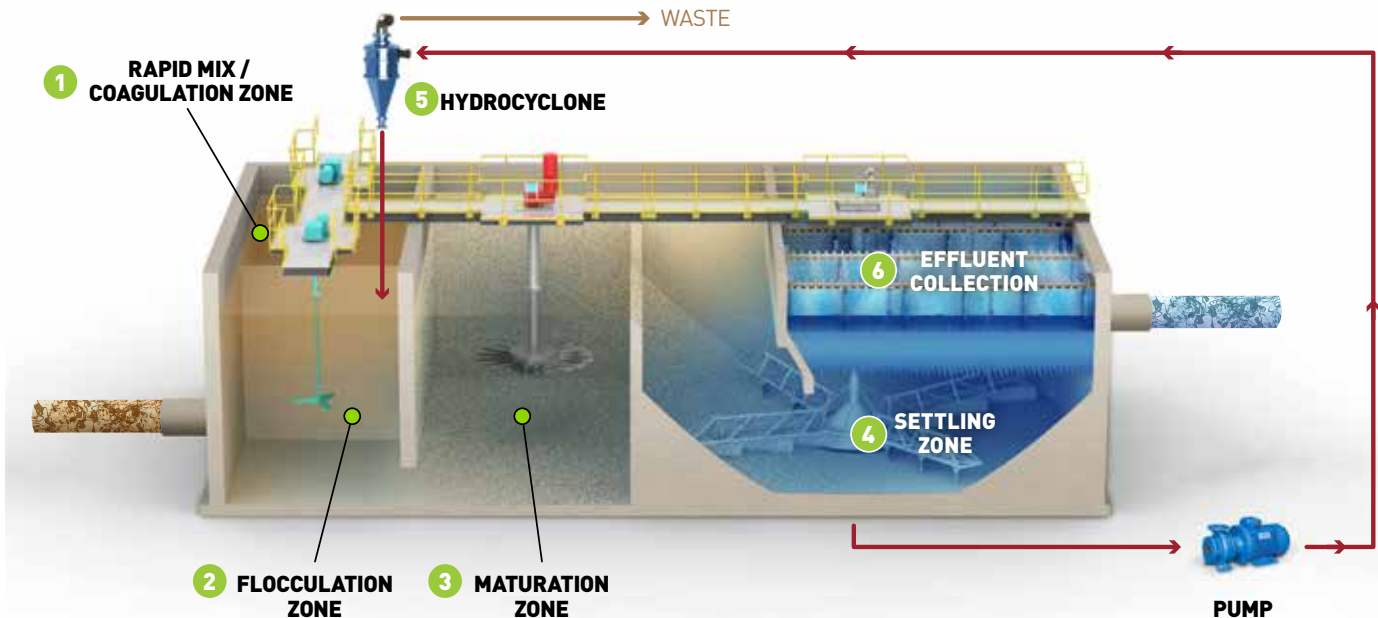
extreme-rate treatment

The Densadeg XRC™ is a high-rate settling clarifier process combining solids contact, ballast addition and solids recirculation to provide enhanced, high-rate settling of solids. The process consists of:

- 1 rapid mix / coagulation stage:** raw water flows into the rapid (flash) mix zone where a coagulant is added. Coagulation is the destabilization of colloidal particles, which facilitates their aggregation and is achieved by the injection of a coagulant such as alum or ferric chloride.
- 2 flocculation zone:** coagulated water then flows to the flocculation zone where, with a lower energy vertical turbine mixer, a continuous ballast media recirculation feed and a low dose of a flocculating agent (polymer) are added to begin the process of agglomerating the coagulated water into floc particles.
- 3 maturation zone:** flocculated particles are then developed and grown into large, very dense mature particles. This is achieved with optimized mixing energy and detention time. The result is a floc which settles at extremely high rates.

- 4 settling & clarification zone:** flocculated solids enter the settling zone, over a submerged weir wall, where dense, suspended matter settles to the bottom of the clarifier. Clarified water is displaced upward from the downward moving slurry, through inclined plate settlers. The plate modules act as a polishing step for lighter, low density solids.
- 5 hydrocyclone and ballast recovery:** settled sludge is continuously recycled via a recirculation pump to the hydrocyclone where the ballast media is separated from the waste stream. Ballast is returned to the flocculation zone and the waste stream is sent to sludge handling.
- 6 effluent collection:** uniform collection of clarified water is accomplished in effluent launders above the settling plate assembly.

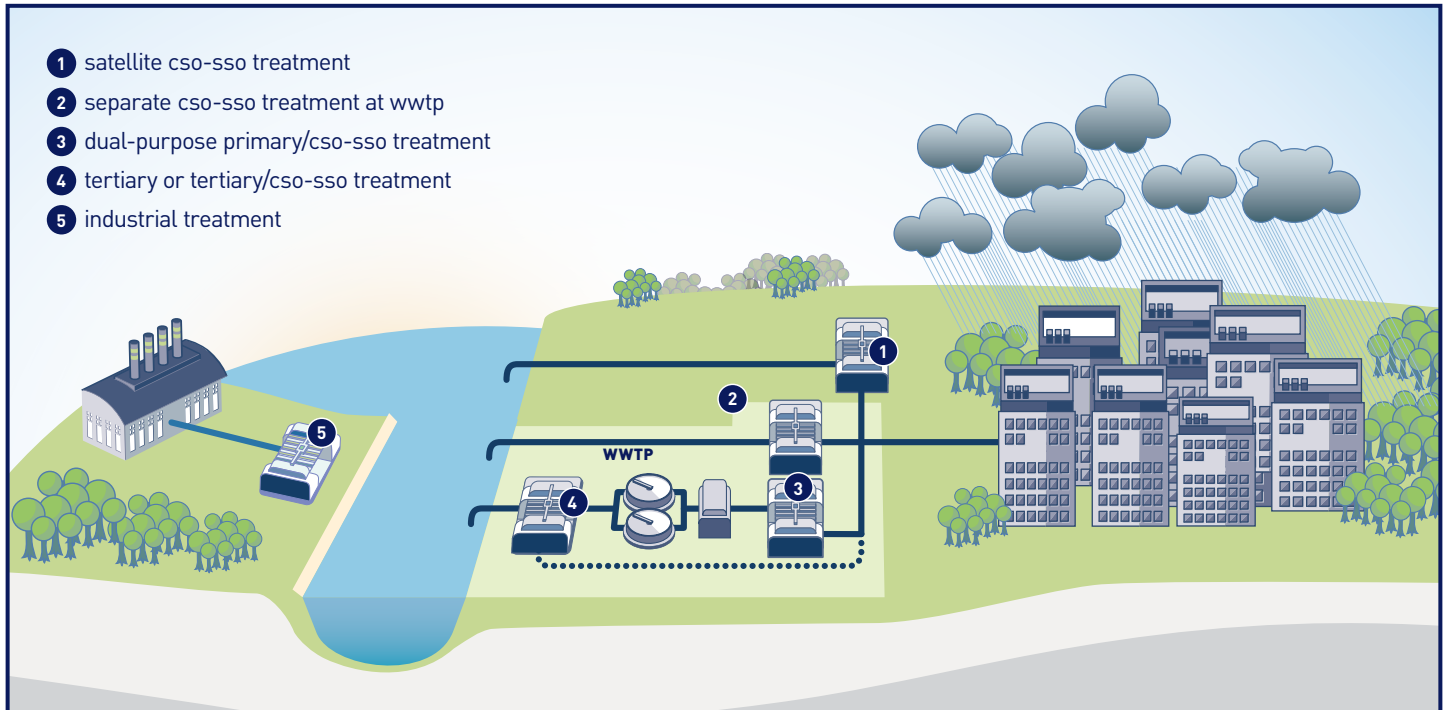
The **Densadeg XRC™** process



ready for the resource revolution



where you find Densadeg XRC™ systems:



features & benefits

- **extreme loading rates:**
 - CSO/SSO: 100–140 m/h
 - tertiary/industrial: 70–120 m/h
- **compact footprint = low installation cost**
- **ability to retrofit existing basins**
- **tertiary phosphorous removal <0.1 mg/L**
- **fast start-up time:**
 - <10 minutes
 - no sludge inventory required for startup
- **eliminates need for CSO storage**
- **pilot available**
- **concrete and steel package units available**





Densadeg XRC™ at Skanderborg Central WWTP

At Skanderborg WWTP in Denmark, Densadeg XRC™ is applied for a combination of tertiary and stormwater treatment ensuring reduced discharge of phosphorus into the receiving lakes.

operating conditions

The Densadeg XRC™ is installed for tertiary treatment under normal operating conditions.

10-15 annual events of heavy rain occur where the hydraulic capacity of the main treatment line is exceeded. During these events, the Densadeg XRC™ will switch over to function as dedicated treatment of the overflow ensuring removal of suspended solids and phosphorus before discharge.

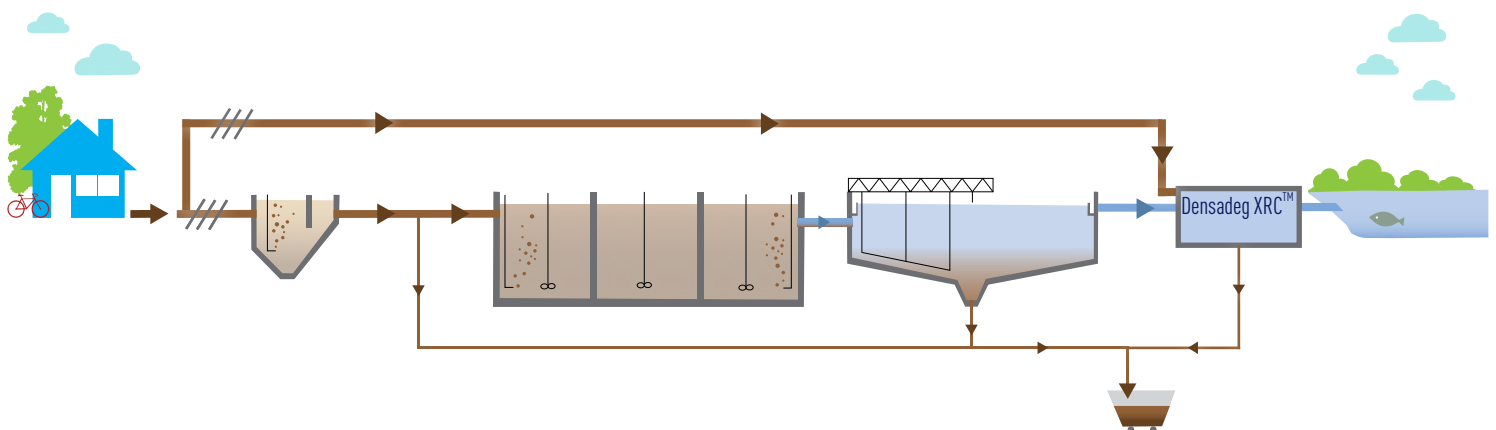
about the plant

Skanderborg central WWTP is designed as a conventional activated sludge process with biological phosphorus removal with a capacity of 41,000 PE or 1250 m³/hr.

The treated water from the main treatment line is sent to Skanderborg Lake while the treated storm water is sent to the smaller Swan Lake. The Densadeg XRC™ will ensure that the discharge of phosphorus into Swan Lake is reduced by **90%**.

treatment line

The Densadeg XRC™ is located downstream of the secondary clarifiers and it is built with two parallel lines each with a max. treatment capacity of 750 m³/hr. In dry weather conditions only one line will be in operation for tertiary treatment while the second line is in standby mode. During heavy rain events, the overflows are led directly to the Densadeg XRC™ for treatment.



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