The natural way of treating wastewater
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Nereda® is an innovative and advanced biological wastewater treatment technology that purifies water using the unique features of ‘aerobic granular biomass’. Contrary to conventional processes, the purifying bacteria concentrate naturally in compact granules, with superb settling properties. As a result of the large variety of biological processes that simultaneously take place in the granular biomass, Nereda® is capable of producing excellent effluent quality.

Even when not particularly targeted, extensive biological phosphorus and nitrogen reduction is an intrinsic attribute of this technology, resulting generally in chemical-free operation.

These unique process features translate into compact, energy saving and easy to operate Nereda® installations for both industrial and municipal wastewater treatment. Nereda® presents attractive new solutions for green field installations and retrofitting or extending conventional activated sludge plants. The technology is also highly recommended for performance and capacity upgrades of existing SBR-facilities. And: with tank sizes already similar to the world’s largest SBR-tanks, the technology is proven and applicable for even the largest applications.

Thanks to the unique characteristics of granular biomass, Nereda® technology uses an optimized SBR-cycle:
1 Filling of wastewater and simultaneous displacement of purified water.
2 Aeration results in extensive simultaneous biological removal of organic, nitrogen and phosphorous compounds.
3 Biomass is separated from the purified water during a very short settling phase, and Nereda® is ready for a new cycle.

Unique features are that aerobic, anoxic and anaerobic biological processes take place simultaneously in the granular biomass and that optimal biological treatment is accomplished in only one effective aeration step. Nitrate is transported by diffusion between outer aerated and inner anoxic space eliminating the need for pumping large recycle flows in the plant.
Advantages of Nereda®

Cost-effective
Nereda® enables extensive treatment in compact and uncomplicated designs. The amount of mechanical equipment is much less than in conventional processes. For example, separate clarifiers, return sludge pumping stations or moving decanters are not necessary. What’s more, the concentrated biomass substantially reduces tank volume and easily makes the plant footprint a factor 4 smaller.

This lowers the direct plant costs for green field, brown field, retrofit or capacity extension application and often enables that existing treatment sites can be utilized rather than purchasing new land.

Operation & Maintenance costs are much lower thanks to the reduction in mechanical equipment, chemical-free operation and the remarkably high energy efficiency of the process.

Easy to operate
Thanks to the nature of the technology, plant operation is easy and process performance robust. Every Nereda® plant is equipped with an AquaSuite®Nereda®Controller, a smart, integrated process controller. This ensures fully automated plant operation, reliable performance and ease-of-operation. It even enables unmanned or remote control - for example - from our central control room.

Sustainable
Extensive life cycle analyses reveal Nereda® as a truly sustainable technology. Compared to conventional processes, Nereda® not only has significantly lower energy consumption but also produces, commonly without use of waste generating chemicals, a remarkably high effluent quality. In addition, the technology requires less construction materials and less mechanical equipment resulting in a better environmental construction profile.
Advantages of Nereda®

Thanks to the compact and smart design, Nereda® plant construction is quick and efficient. The technology results in both investment and operational cost savings.

End-users, project partners and licensees have access to a complete Nereda® product and service portfolio. We are confident in proving the advantages of Nereda® and fitting designs that exactly meet your current and future needs. We can provide convenient technology packages inclusive of special hardware, and deliver complete easy-to-operate plants in any contract type preferred by our clients. Added-value services extend to effective operational support or taking full responsibility for plant operation and maintenance.

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Development of Nereda®

Nereda® was invented by the world-renowned Delft University of Technology. In close cooperation with universities, research institutes, STOWA, water boards, various industrial and municipal launching customers, and supported by national and international grants, Royal HaskoningDHV has transferred the process into an internationally applied, sustainable and cost-effective technology. After 20 years of research and development this innovative biological solution is now proving itself as the leap forward in wastewater treatment technology.

Highly decorated

Nereda® and its developers have received many prestigious awards, including:

- 2013   STW Simon Stevin Meester Prize
- 2012   Lee Kuan Yew Water Prize
- 2012   European Inventor Award (runner-up)
- 2010   Energy Globe (national winner)
- 2009   SAICE Technical Excellence Award
- 2008   European Business Award for the Environment (runner-up)
- 2007   Water Quality and Safety Award
- 2007   STW Simon Stevin Gezel Award
- 2007   Dow Energy Award
- 2006   Process Innovation Award
- 2005   Ingenuity Award
The name Nereda derives from the Greek word “Neraida”. Nereda was a water nymph and one of the daughters of Nereus, the wise and benevolent Greek god of the sea. In Greek mythology Nereda is linked with the terms “pure” and “immaculate”, a hint to the water quality produced by the new technology!
Royal HaskoningDHV is a leading independent, international engineering consultancy service and technology provider. Ranking globally in the top 10 of independently owned, non-listed companies and top 40 overall, its 7,000 professionals offer state of the art sustainable solutions across the globe from 100 offices in 35 countries.

**Our connections**
Innovation is a collaborative process, which is why Royal HaskoningDHV works in association with clients, project partners, universities, government agencies, NGOs and many other organisations to develop and introduce new ways of living and working to enhance society together, now and in the future.

**Memberships**
Royal HaskoningDHV is a member of the recognised engineering and environmental bodies in those countries where it has a permanent office base. All Royal HaskoningDHV consultants, architects and engineers are members of their individual branch organisations in their various countries.

For more information on Nereda:
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