Global projects

ABR® and AB-Carrousel®
ABR® and AB-Carrousel® technologies have been successfully used in a wide range of industrial applications worldwide.

Royal HaskoningDHV is a leading independent, international engineering consultancy service and technology provider, with more than 140 years of experience backed by the expertise and experience of 7,000 colleagues all over the world. Our professionals combine global perspective with local knowledge to deliver a unique blend of engineering and consulting services for the entire living environment from project offices in 35 countries.

By showing leadership in sustainable development and innovation, together with our clients, we are working to become part of the solution to a more sustainable society now and into the future. Today, the company ranks in the top 50 of independently owned, non-listed engineering companies worldwide.

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ABR® - Anti Bulking Reactor
and AB-Carrousel®
Combating bulking sludge

Royal HaskoningDHV
Water Technology
The ABR® - Anti Bulking Reactor

- Mixed-tank unit
- Fatty acids, saccharides and alcohols
- Sludge bulking is common

The Challenge
- Sludge bulking
- Oxygen demand (COD)

The Response
- Use chemicals to control bulking

Other major advantages of ABR® are:
- Higher energy efficiency
- Lower sludge discharge cost
- Higher surface loading rates
- Anaerobic pre-treatment
- Anaerobic post-treatment (UASB)

Applications
- Where wastewater has high COD
- COD concentrations exceeding 2000 mg/l
- In the Paper and Pulp (P), textile (Chemical and Pharmaceutical), industries
- Where SVI are overloaded

Case of bulking sludge
- Sludge bulking occurs when the remaining low biodegradable components can be removed in a much easier and effective manner. Reduced sludge production leads to improved settling performance.

Case of Anti-bulking sludge
- Anti bulking occurs when the remaining low biodegradable components cannot be removed in a much easier and effective manner. Reduced sludge production leads to improved settling performance.

The ABR®-Carrousel® combination

Two Royal HaskoningDHV technologies - ABR® and Carrousel® - can be combined to form a treatment plant process suitable for industrial wastewater - the ABR®-Carrousel®.

The Carrousel® collection
- AB-Carrousel®
- AB-Carrousel® - can be combined to form a treatment plant process suitable for industrial wastewater - the ABR®-Carrousel®.

The Carrousel®, compared to UASB, are:
- Less sensitive to operational upsets
- Requires three months+
- Have a very fast start-up time of less than 100 days.
- Have a very low sensitivity to shockloads.
- Can operate from 20ºC+
- And have, therefore, very slow settling properties.

Carrousel® oxidation ditch:
- A sludge-bulking process
- A Carrousel® oxidation ditch is a single tank treating industrial wastewater - the Carrousel® - can be combined to form a treatment plant process suitable for industrial wastewater - the ABR®-Carrousel®.

Fine bubble aeration
- Operating an ABR® with fine bubble aeration is an option which is claim- and vendor-specific. Types and execution range from plate, tube and disc to bio-disk.

*See our Carrousel® brochure for more information. **See CarCON® brochure for more information.

The CarCON™ automatic real-time control system
- The CarCON™ automatic real-time control system for Carrousel® wastewater treatment plants is a state-of-the-art system, based on dissolved oxygen (DO) control of the ABR®. The DO-COD control is based on dissolved oxygen and measurements from hundreds of Carrousel® plants worldwide, resulting in an ever-improving control system. The measurement of dissolved oxygen (DO) and mixed liquor suspended solids (MLSS) in the CarCON system control the aeration for the Carrousel and the Carrousel®.

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