

RBC (Rotating Biological Contactor)



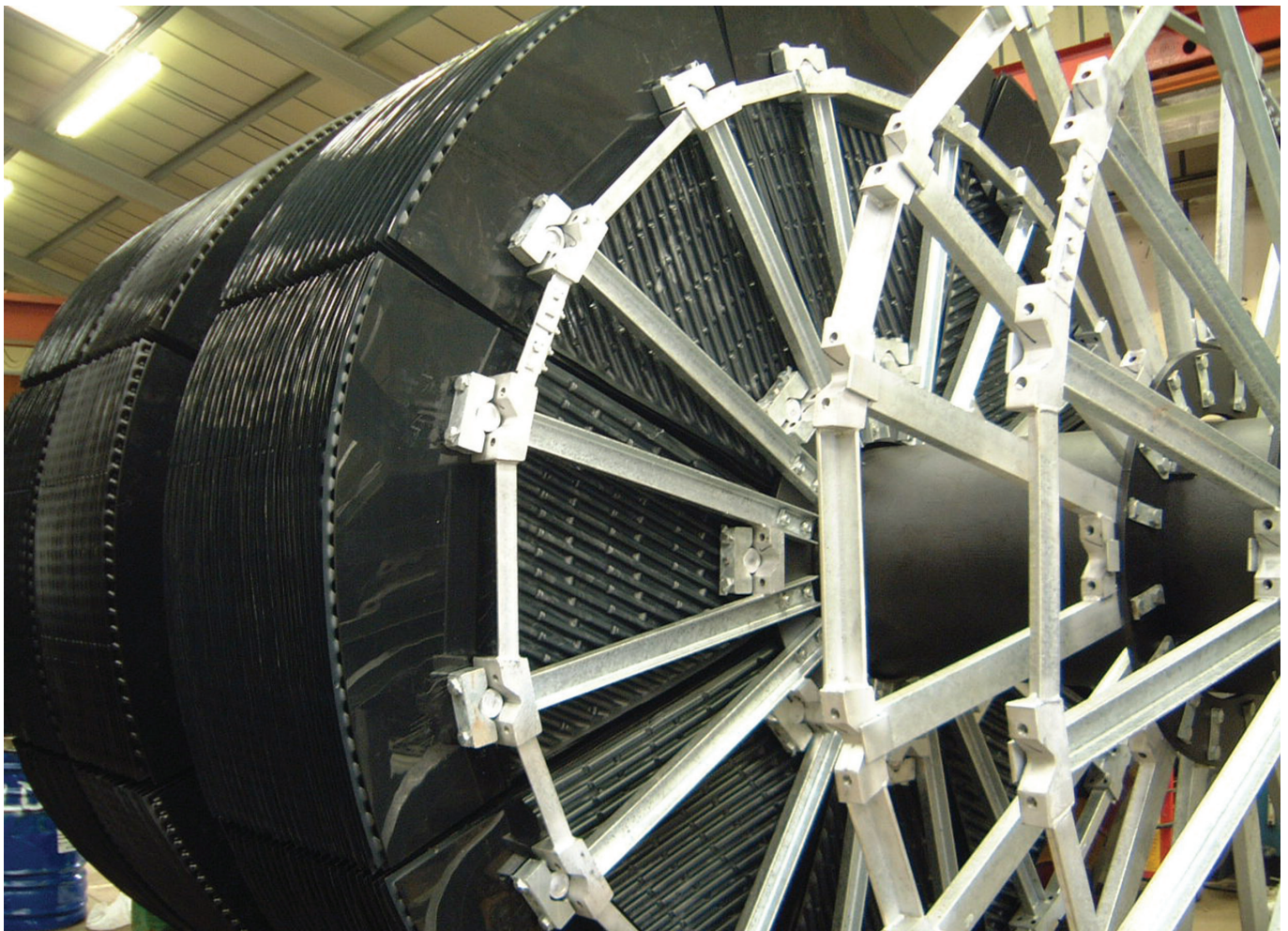
Domestic Sewage & Industrial Effluent Treatment

Key Features & Benefits:

- Low energy requirements
- Minimal operation intervention
- Low operating costs
- Built off site for rapid installation
- Designed for best total expenditure
- Access to process expertise and data

How We Create Value:

- Low operating cost
- Reduced capital cost wastewater treatment
- Simple maintenance
- Built off site
- Proven reliable treatment process



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Effective and Robust treatment systems:

Jacopa™ RBC's are effective and robust treatment systems that fully incorporate all of the operating experience of the large number of installed units in the U.K. and Ireland, and the innovation Jacopa™ has developed from the extensive operating base.

Jacopa™ (formerly Ovivo) joined forces with Severn Trent Water and Cranfield University to gain a thorough understanding of the RBC process.

The resulting new generation RBC design has been in use now for well over 20 years. With several hundred of these improved standard RBC's in operation we are quietly confident that we have successfully allayed industry fears of premature RBC failure.

At Jacopa™ we're proud to have brought about a far better understanding of what makes a modern day RBC a perfectly viable and reliable option for wastewater treatment.



Standardised Design:

To find new ways of manufacturing RBC units more cost-effectively and to make our offers as attractive as possible, we have systematically investigated every component of our original design - right down to the very nuts and bolts. As a result we are now far more confident in our ability to bid competitively on projects. In addition to producing an attractively priced RBC, our series of significant design improvements mean that we can meet additional customer needs that directly relate to cost savings - such as delivering a fully off-site assembled unit, saving many hours of installation.



In addition, Jacopa™ has created a standard range of RBC units capable of meeting the vast majority of our customer's requirements. Standard design features include;

- Drive unit with at least 100,000 hour design life
- Mechanical parts coated to WIMES specifications
- Bolt-on stub shafts
- Bearings located outside of main covers for ease of maintenance

However, we understand that some customers have other requirements and we will modify our standard design to meet all specifications.

The Jacopa™ standard RBC rotor has been designed to withstand the eccentric loads created by partial drying out of the biomass after the rotor has been stationary for up to 8 hours.

In order to reduce installation time, all standard Jacopa™ RBC units are manufactured completely off-site and delivered to site in one piece.

Health and Safety:

We consider RBC covers to be too large for manual removal and believe that the access covers to the RBC bio zone should be safely removed using appropriate mechanical lifting equipment. Lifting points are therefore a standard design feature of all Jacopa™ RBC's.

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Process and Application:

Compared to some treatment systems, the Jacopa™ RBC unit can offer a very cost-effective solution -and with their low power motors, they are also environmentally friendly.

Used to remove soluble, biodegradable, organic materials from domestic and industrial wastewater, an Jacopa™ RBC system can achieve a high quality final effluent that meets Environment Agency discharge consents. The Jacopa™ RBC unit can be used for BOD reduction, BOD and Ammonia reduction for nitrification and for denitrification. Each application is appraised by qualified process engineers to provide tailored recommendations ensuring a high quality final effluent is achieved every time.

Both biomass thickness and speed of rotation are fundamental to the design life of an RBC plant. The biomass thickness on the media applies a load to the frames and shaft, this load creates fatigue stresses.

It is therefore important to specify the assumed biomass thickness when designing a plant to demonstrate that this important element has been

considered. Jacopa's™ standard RBC design assumes a 3mm thick biomass on medium density media discs and a 2mm thick biomass on high density discs.

Rotating an RBC rotor slowly increases contact time with the waste to be treated and improves treatment. However, research has shown that rotating a rotor at less than 1.0 rpm can assist the development of Beggiatoa which is a nuisance bacteria. This not only affects process performance but also reduces the life of the plant. For this reason the Jacopa™ standard RBC rotates at the optimum speed of 1 rpm.



Technical Data:

Population	DWF (m3/d)	Max Daily Flow	Total Daily BOD (kg) (m3/day)	No. of Stages (m)	Rotor Diameter	Media Area (m²)	Motor rating (kW)
300	54	324	18	4	2.6	3,126	1.10
400	72	432	24	4	3.0	4,240	1.10
500	90	540	30	4	3.6	5,252	1.50
600	108	648	36	4	3.6	6,374	1.50
700	126	756	42	4	3.6	7,345	1.50
800	144	864	48	5	3.6	8,403	1.50

Population based on 180 l/hd/day and 60 grms BOD/hd/day for a 95%ile 20mg/l BOD, 30mg/l SS consent, assuming 30% BOD reduction in primary settlement

Extending the Life of Your Asset



Old or defective RBCs, supplied by any manufacturer, may be referred to Jacopa™ for expert advice on refurbishment and repair, and our colleagues have developed a unique procedure for the investigation and repair of any RBC plant.

Key components are assessed by our qualified team of mechanical, electrical and process engineers while faulty components can be replaced in a timely, cost effective manner before an expensive, total rotor replacement is required.

Total rotor replacement involves significant expense, and a typical cost schedule for replacement would include the following:

- Cost of rotor
- Labour
- Temporary treatment measures (SAF hire, tankering, etc.)
- Operator supervision
- Crane hire
- Mechanical and electrical costs and labour
- Re-commissioning and seeding



However, when a plant has reached the end of its design life and rotor replacement is unavoidable, it is often more cost effective to install a RBC rotor into the existing RBC shell, rather than installing a whole new plant.

Jacopa™ can manufacture and install new rotors into most existing RBC shells.