



**Biogest International® GmbH**



# BSK®-Turbine

## The Surface Aerator for Wastewater Treatment Plants

The latest generation of BSK® surface aerators (turbines) guarantees an outstanding oxygen transfer in aeration tanks – combined with intensive mixing of the reactor’s contents. One of the significant characteristics of the BSK® surface aerator is its similarity to the famous Francis-water turbine, an outstanding component of hydropower stations, guaranteeing highest efficiency rates. Clearly, the BSK®-Turbine offers a comparable performance level.

It is well known, that the aeration system of a wastewater treatment plant is the largest power consumer on site. Consequently, it is important to reduce the energy consumption to the lowest possible level. As a result, the efficiency of aeration systems is an important matter concerning the long-term energy balance. BSK®-Turbines play an important part in fulfilling this objective.



Floating BSK®-Turbine (WWTP Krzyz, Poland)

The development of BSK® surface aerators is based on the patented “Crown” turbine, which was invented by the Swiss company Norm A.M.C. AG. Thousands of “Crown” turbines (constructed in GRP) were delivered to hundreds of wastewater treatment plants worldwide. The majority continue to operate; even units delivered more than 20 years ago.

The new BSK® generation of aeration turbines offers two significant features:

- **Made of 100 % stainless steel (AISI 304 / 316)**
- **Vane optimization**

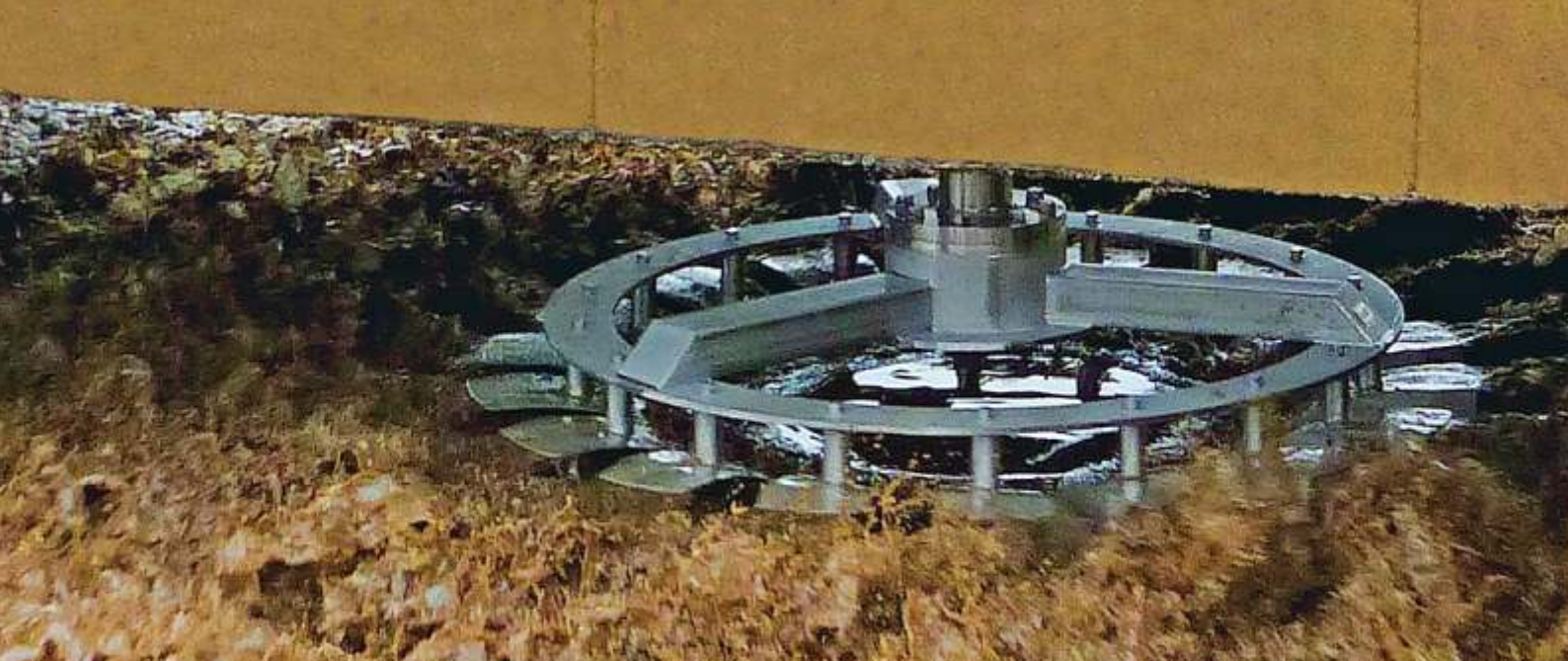
The result is not only an improvement in efficiency of more than 2.5 kgO<sub>2</sub>/kWh. Moreover, the stainless steel material extends the lifetime of the aerator resulting in lower lifetime costs.

BSK® surface aerators are available with different diameters for adjustable O<sub>2</sub> input capacities (see table) according to specific project conditions.



WWTP of a paper factory in Spain

| Turbine Diameter (mm) | O <sub>2</sub> Input Capacity (SOTR) (kgO <sub>2</sub> /h) | Installed Power (kW) |
|-----------------------|--|----------------------|
| 900                   | 13   | 5.5                  |
| 1,100                 | 18   | 7.5                  |
| 1,250                 | 27   | 11.0                 |
| 1,400                 | 37   | 15.0                 |
| 1,600                 | 55   | 22.0                 |
| 1,750                 | 74   | 30.0                 |
| 2,000                 | 110  | 45.0                 |
| 2,250                 | 135  | 55.0                 |
| 2,500                 | 185  | 75.0                 |
| 2,800                 | 220  | 90.0                 |
| 3,000                 | 270  | 110.0                |



By replacing the old surface aerators by BSK®-Turbines, the operation conditions could be significantly improved in the wastewater treatment plant of the German municipality Korkwitz (e. g. much lower power requirements).

Depending on the individual application, BSK®-Turbines can be operated as fixed or floating systems. We offer different shapes for the floating construction to suit site specific requirements. The floating turbines are preferably used in combination with the SBR process.



WWTP (SBR) of the city Celaya, Mexico

service. Our drive assemblies are dimensioned for a bearing life time > 100,000 hours and service-factors > 2.8. The use of synthetic lubrication oil minimizes wear and tear, increases service intervals and guarantees perfect operation performance even under challenging loads and extreme climatic conditions.

Our experience has shown that most installations of BSK®-Turbines and drives must be adapted to

Compared with alternative aeration systems and in particular with fine bubble diffusers, it must be noted that the “ $\alpha$ -value” is at 0.9 – resulting in the reduction of oxygen transfer of not more than approximately 10 % under operation conditions. This illustrates again the outstanding efficiency of BSK®-Turbines.

Our scope of supply includes either the BSK®-Turbine or the complete aeration system. For our gear drives we cooperate with first class manufacturers with world-wide representation, which assures perfect back-up

### Most important features:

- **O<sub>2</sub>-input efficiency more than 2.5 kgO<sub>2</sub>/kWh**
- **O<sub>2</sub>-input capacity up to 270 kgO<sub>2</sub>/h**
- **Completely made of stainless steel**
- **Nearly unlimited service-life**
- **Fixed or floating assembly**
- **Non-clogging construction**
- **Life-long constant O<sub>2</sub>-input capacity**

specific project requirements and operation conditions. Thus, we offer our utmost support to customers and consultants with respect to an optimized correspondence of BSK® equipment and the design of aeration tanks, sludge stabilization reactors, buffer-tanks and similar applications.



BSK®-Turbine Ø 2,500 mm (production phase)

