

## 1. WHAT IS AEROSTRIP®?

AEROSTRIP® is the trade mark of the strip-shaped fine bubble diffuser made by Aquaconsult. This mark is synonym with high efficiency and longevity in the fine bubble aeration technology.

## 2. WHAT MAKES AEROSTRIP® SPECIAL, WHEN COMPARED WITH OTHER AIR DIFFUSING TECHNOLOGIES AVAILABLE TODAY?

Its form factor, its membrane with a special proprietary perforation, its efficiency, the possibility to be fitted directly on the floor of the tanks, and nevertheless its long lifespan are unique characteristics of the AEROSTRIP® diffuser.

## 3. ARE THERE DIFFERENT AEROSTRIP® MODELS?

AEROSTRIP® fine bubble diffusers are available in two designs:

The T series: built on a flat stainless steel frame

The Q series: built on a plastic extruded profiled structure

## 4. WHAT ARE THE SIZES AND WEIGHTS OF AEROSTRIP® FINE BUBBLE DIFFUSERS?

The T- and Q- diffusers are manufactured in lengths in the range of 0.5 - 4.0m and weigh between 2.8 and 12.1kg.

## 5. SINCE WHEN ARE THE AEROSTRIP® DIFFUSERS AVAILABLE ON THE MARKET, AND WHERE ARE THEY MANUFACTURED?

AQUACONSULT started manufacturing fine bubble diffusers in 1986. The year 1995 marked a milestone through the introduction of the new fine bubble diffuser type „T“, named AEROSTRIP®. The success story was marked by the introduction of AEROSTRIP® type “Q” in the year 2005.

## 6. HOW ARE AEROSTRIP® DIFFUSERS MOUNTED INSIDE THE TANK?

AEROSTRIP® elements may be installed in different ways. The recommended solution implies fitting of diffusers directly on the floor of the aerated basin. This leads to an optimal use of immersion depth, and as consequence a better efficiency in oxygen transfer. Unevenness of tank floor or sometimes power limitations of the blowers may be dealt with by levelling the diffusers using a floating adjustable mounting. AEROSTRIP® fine bubble diffusers may be mounted at request on liftable frames.

## 7. HOW IS THE AIR DISTRIBUTION IMPLEMENTED?

The AEROSTRIP® is connected to the air supply using 1” connectors; the design of the immersing piping is typically offered and delivered in suitable plastic (HD-PE) material.

The manufacturer recommends feeding diffusers in groups of 3-6 elements to provide the possibility of isolation by group using a ball valve, for a better security during operation.

## 8. WHAT ARE THE FIELDS OF APPLICATION FOR AEROSTRIP® FINE BUBBLE DIFFUSERS?

AEROSTRIP® fine bubble diffusers can be used in both municipal and industrial wastewater treatment. Special technologies as MBR, MBBR, IFAS or SAF proved the strip-shaped diffusers as best choice for their aeration.

## **9. WOULD IT BE POSSIBLE TO OPERATE AEROSTRIP® INTERMITTENTLY IN CYCLES, OR HAVE THEM FOR A LONG PERIOD OF TIME IN STAND-BY, NON-AERATING?**

These diffusers can operate intermittently, and also be left in effluent or sludge for a long time without operating. The technology used in membrane perforation creates the check-valve effect, and the membrane itself obstructs the backflow by squeezing all pores off. This behaviour allows a self-cleaning through constriction, too.

## **10. HOW MANY INSTALLATIONS OF AEROSTRIP® ARE OPERATING NOWADAYS?**

Today we can speak of more than 1,500 installations in 40 countries of the world, employing AEROSTRIP® fine bubble diffusers to their satisfaction.

## **11. COULD YOU DEFINE THE OPERATING RANGE OF AEROSTRIP® FINE-BUBBLE DIFFUSERS?**

The main criteria for operation are the so-called flux (specific airflow related to unit of membrane surface) and the system pressure during operation. In terms of flux we can define a range for the continuous operation and long term loading between 10 and 80 Nm<sup>3</sup>/h/m<sup>2</sup>. The upper limit for spikes and peaks shall be considered to be 120 Nm<sup>3</sup>/h/m<sup>2</sup>.

The maximum admissible system pressure across the diffuser shall be limited at 110 mbar. Special measures for cleaning and reduction of head pressure are needed in case of higher pressure than the above mentioned (see question 14).

## **12. ARE THERE ANY SPECIAL DEMANDS TO BE CONSIDERED DURING OPERATION OF AEROSTRIP® FINE BUBBLE DIFFUSERS?**

As a matter of principle there is no difference between operation of AEROSTRIP® fine bubble diffusers and any other fine bubble diffuser system on the market. Monitoring and control of prescribed ranges for airflow rates, pressure and temperature shall be the main criteria to implement. Proper storage and protection against intensive solar radiation (protection against UV radiation) are to be considered.

## **13. CAN WE SPEAK ABOUT A RISE OF HEAD PRESSURE ACROSS DIFFUSERS? IF YES, WHAT WOULD BE THE EXPECTED RANGE?**

Any diffusing system on the market is confronted with the rise of head pressure. This is mostly caused by the sediments and deposits built on top of membranes, and through interaction with the wastewater effluent. Typical expectance for AEROSTRIP® would be an increase of 10 mbar in 10 years of operation.

## **14. WHAT WOULD BE THE RECOMMENDED OPERATIONS FOR MAINTENANCE AND PREVENTIVE MAINTENANCE?**

Preventive maintenance is required in order to count on the longest operation time, as in most technologies. The manufacturers advice to the plant operator for an effective maintenance would be to implement a functional pressure monitoring (ideally real time implementation), and to log all data. In case of increase of system pressure above recommended ranges following countermeasures would be required:

- *Operations: Increase the number of cycles at the automatic relaxation (blow-down).*
- *Chemical dosing: Acid cleaning using atomization through high pressure injection of 80% acetic acid in the related pipework during operation. May be performed to one tank or to all plant at a time.*
- *Physical cleaning: Cleaning AEROSTRIP® elements using high-pressure water blasting with an approved device (after draining and washing the tank of sludge deposits).*

## **15. WHAT WOULD BE THE RANGE OF EXPECTED LIFESPAN FOR AEROSTRIP®?**

The average lifespan for the membranes of AEROSTRIP® fine bubble diffusers may be stated as 10 to 15 years, in close dependence to the implemented plant operation and interaction with the wastewater effluent. There were few cases with up to 20 years operation time between two membrane replacements, due to reduced loads and excellent maintenance.

## **16. ARE THERE ANY DOCUMENTED MEASUREMENTS ATTESTING THE PERFORMANCE OF AEROSTRIP® DIFFUSERS?**

All AEROSTRIP® fine bubble diffusers are fully tested about their functionality at the manufacturer, and all test records are stored in the quality system of the manufacturer AQUACONSULT. Copies of measurements and oxygen transfer tests performed by independent parties in commissioned plants worldwide are obtainable from the manufacturer and its distribution agents by request.

## **17. WHAT MAKES AEROSTRIP® SO EFFICIENT?**

Decisive are the properties of the membrane as much as its perforation technology, both allowing the development of a very fine bubble pattern, and therefore an extraordinary high utilization of oxygen. Another reason for high efficiency would be the installation straight on the bottom of the tank. This leads to the massive advantage of using the maximum blow-in depth. There is no dependence on a grid infrastructure, and the design may be optimized for required flow behaviour of effluent.

## **18. HOW DOES THE STATED EFFICIENCY INDUCED BY AEROSTRIP® DIFFUSERS CHANGE IN TIME?**

This question is subject of many scientific papers nowadays. One of the most documented researches was published by Dr. Michael Stenstrom from University of California Los Angeles (UCLA). They sampled AEROSTRIP® diffusers from the plant of Bremerton, WA, USA after 11 years of continuous operation and conducted plenty of measurements in clean water as well as off-gas in wastewater.

The result showed an efficiency of 80% of the original measured values. A second trial after mechanical washing with high-pressure of the aeration elements brought an efficiency of 90% of the original records, which was a very notable performance.

## **19. WHERE SHALL I PLACE ENQUIRIES AND ASK EVEN MORE QUESTIONS?**

The team of engineers from the manufacturer AQUACONSULT will happily answer any question you might have related to the product line AEROSTRIP® or aeration technology or even about process engineering in biological stage of wastewater treatment; so please do not hesitate. The appointed distribution partners are also available for any enquiries in their designated territories (kindly see the AEROSTRIP® product website [www.aerostrip.at](http://www.aerostrip.at) for a list of local representatives)

The distribution agents worldwide received extensive training in the house of the manufacturer, and most of them collected experience on AEROSTRIP® product range from years and decades ago.

Countries without exclusively appointed distribution agent may address directly to the manufacturer with any request or question they might have.

In Austria AQUACONSULT offers the After-Sales Service to all AEROSTRIP® installations, and manages directly sales, installation and maintenance related activities.