

# *TEX-FLEX-Aeration System*

*aeration technology*



**invent**<sup>®</sup>  
umwelt und verfahrenstechnik

- Fluid mechanically optimized
- High oxygen transfer rates
- Robust construction
- Low maintenance
- Simple installation



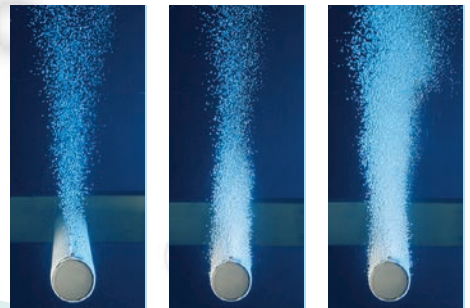
*i n n o v a t i o n   f o r   n a t u r e*

*The growing pollution of our environment is a problem which concerns all of us. For years water pollution, in particular, has continued to grow in threatening proportions. Water is turning into a more and more limited resource. As a consequence, forward-looking technologies are desperately needed for water and wastewater treatment.*

*With great commitment **INVENT** is dedicated to the development and implementation of such technologies, thus creating powerful products which contribute greatly to the preservation of the water quality of our groundwater, rivers and lakes.*

*The protection, the preservation and, where necessary, the restoration of our environment will remain one of the most important tasks of our society in the future.*

**INVENT** *takes on responsibility in this field, with innovative environmental and process engineering.*



## TEX-FLEX

### The Robust Aeration System

**TEX-FLEX –  
for optimal aeration**

**INVENT** develops, produces and globally implements innovative machines, plants and processes for the treatment of water and wastewater.

In water and wastewater treatment several process engineering cleaning and processing steps are always applied. In combination they merge to a complete plant. One distinguishes between physical, physical/chemical and biological processes. The biological stage represents the heart of the plants. Here carbon and nitrogen compounds are biologically decomposed. The basis for this process is the effective mixing and the efficient transfer of oxygen, so that the biologically active bacteria can work effectively.

**INVENT** has specialized in exactly this field and, with its innovative products, is one of the world leaders in the area of mixing and aeration technology for the water and wastewater treatment.



**TEX-FLEX** aeration system in an industrial wastewater treatment plant in Sweden (Pulp & Paper Industry)

The **TEX-FLEX** aeration system described in this brochure has been specially developed and optimized for demanding applications in industrial and municipal wastewater treatment plants. It provides an efficient oxygen supply and optimal mixing during the biological phase. In comparison with conventional membrane systems, it offers the following advantages:

- Its robust stainless steel construction and its textile membrane, which is both

chemically and thermally highly resistant, make it ideal for the most aggressive industrial and municipal applications, and it can even be used in situations where conventional membrane systems have failed.

- The system is quick and simple to install, and can also be supplied as a liftable module. The system can then be installed into and removed even from filled basins.

# TEX - FLEX

## An Overview

### Construction of the TEX-FLEX system

#### The Task

For the conventional activated sludge treatment process in municipal wastewater treatment plants, fine-bubble aeration systems, such as the **E-FLEX**<sup>®</sup> aeration system, are generally implemented. The flexible membranes are mostly made of EPDM, silicone or PU<sup>1</sup>. Such rubber membranes are usually subject to natural ageing and signs of wear, which are more or less distinctive depending on the temperature of the wastewater and the type or concentration of the wastewater ingredients.

Many types of wastewater, especially in industrial applications, allow for only a limited, if any, usage of rubber membranes, or they have to be frequently exchanged in order to guarantee a trouble-free plant operation. Also, in deep tanks the use of rubber membranes is often a great risk, as the air temperatures rise too much and rubber membranes fail. For all of these cases, the **TEX-FLEX** aeration system presents a reliable alternative.

It is especially suited for:

- Aeration in very deep tanks. Due to their high air temperatures large water depths often limit the field of application of many membrane aeration systems.
- When the use of traditional membranes is not possible because of the characteristics of the medium, for example in wastewater that contains oil, grease, acid or solvents.
- When a low-maintenance system with minimal loss of pressure is required.



#### The Solution

The **TEX-FLEX** aeration system is a tube aerator producing fine to medium bubble sizes and is based on a high-tensile textile membrane.

The **TEX-FLEX** aeration system is usually composed of one or more „aeration grids“ connected via a common pipe line with the main supply at the tank's edge.

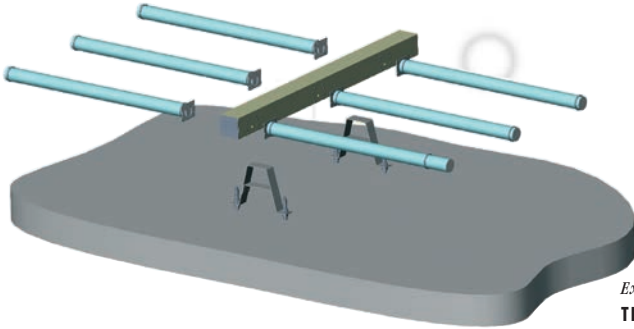
An aeration grid is a square carrier pipe serving as air distributor. Supporting pipes which carry the membrane are mounted onto this distributor at regular intervals.

If an aeration grid is loaded with air, the air distributes along the carrier pipe to the supporting pipes via special openings. Within the **TEX-FLEX** aerating element the air exits via a specially shaped opening that takes care of the even distribution of the air. The loss of pressure at the fine-mesh textile material is minimal and provides favourable yield values even with very high air flows.

<sup>1</sup>PU: Polyurethane

## TEX - FLEX

### The Materials



*Exploded view of a  
TEX-FLEX aeration system*

### Construction Materials

Due to the great demands on durability, sturdiness and freedom from maintenance as well as the demand for a quick and simple installation, construction materials were chosen which fulfil all expectations set by the modern wastewater treatment even under the most adverse conditions.

This is the reason why all parts of the **TEX-FLEX** aeration system, without exception, are made of high-quality, stainless steel in the qualities AISI 304 or AISI 316.

The membranes are made of a special polyester material.



*TEX-FLEX aeration system in a municipal  
wastewater treatment plant in Germany*

*TEX-FLEX aeration system in a municipal wastewater treatment plant in Belgium*



**Robust and  
environmentally friendly**

# TEX - FLEX

## Installation and operation

Safe and  
low-maintenance



*Installation of a  
**TEX-FLEX** aeration  
system in a municipal  
wastewater treatment  
plant in Germany*



*Installation of a **TEX-FLEX** aeration element*

### Installation

The single aerator elements are delivered ready to be mounted. The installation onto the likewise pre-fabricated distributor pipes is executed quickly and straightforwardly with the special tools included in the delivery. The aerator package also contains all tank bottom mountings and anchors.

### Operation

Operation of the **TEX-FLEX** aeration system requires no special precautions. Maintenance work and cleaning of the aerator are not normally necessary.

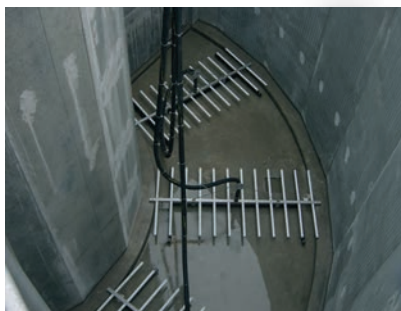
### Liftable version

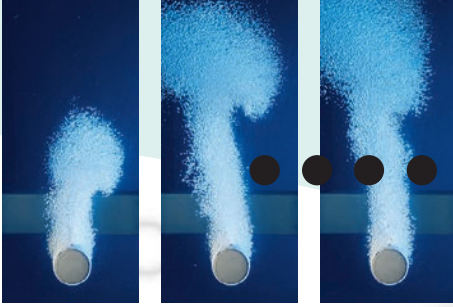
The removable version of the **TEX-FLEX** aeration system consists of a **TEX-FLEX** aeration grid, which is mounted on an additional heavy steel base.

The steel base gives rigidity and acts as ballast. In addition, the **TEX-FLEX** aeration grid is equipped with a steel lifting eye for easy lifting into and out of the tank. In this version, the air supply is provided by a flexible hose.

Modular and removable

*Removable version of the **TEX-FLEX**  
aeration system in an industrial  
wastewater treatment plant in Sweden  
(Pulp and Paper industry)*





**TEX - FLEX**  
The Service

**Professional and innovative**

## The Service

Do you have an application for the **TEX-FLEX** aeration system?

Ask us about it. Our **INVENT** team takes care of all tasks from the dimensioning, the engineering, the installation right through to the commissioning and the service – problem-free for you.

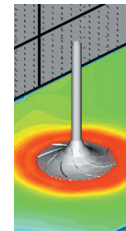
We also offer customer-specific special solutions for the optimisation of your aeration, for example by applying **GPS-X**, the leading software package worldwide for the dynamic simulation of wastewater treatment plants and plant components.

We also carry out oxygen input measurements for you in accordance with all current rules and regulations.

## Further Products and Services

**INVENT** is the market leader for stirrers, stirring and aeration systems and membrane aeration systems for the water and wastewater treatment. If required please ask for information about our other lines of products. We are also happy to offer you complete system solutions for your plants, such as a carefully laid-out and adapted mechanical equipment package. We simulate and optimise your plant with the help of appropriate software packages or we optimise your plant or building in terms of fluid mechanics.

We are your competent partner for all questions in the field of water and wastewater treatment.



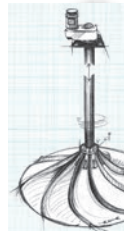
*engineering & consulting*



*software-products*



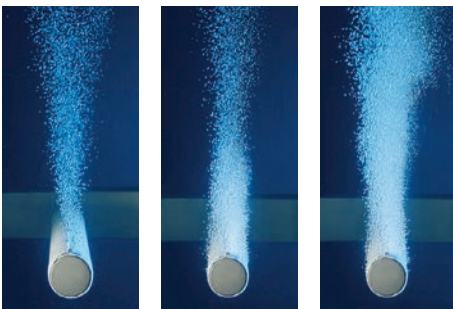
*research & development*



*mixing technology*



*system solutions*





## locations

You can reach us at:

**INVENT** Umwelt- und  
Verfahrenstechnik AG

*Headquarters:*

Am Pestalozziring 21  
91058 Erlangen  
Germany  
Tel: +49 (0) 91 31 690 98-0  
Fax: +49 (0) 91 31 690 98-99  
E-mail: [info@invent-uv.de](mailto:info@invent-uv.de)

*US Office:*

**INVENT** Environmental  
Technologies, Inc.  
218 Little Falls Road  
Units 7 & 8  
Cedar Grove, NJ 07009  
USA  
Tel: +1 973 571 2223  
Fax: +1 973 571 2474  
E-mail: [info@invent-et.com](mailto:info@invent-et.com)

*Pacific Office:*

**INVENT** Pacific Pty. Limited  
Unit 3, 1 Trappit Place  
Orange NSW  
Australia 2800  
Tel: +61 408 997 774  
E-mail: [info@invent-pacific.com](mailto:info@invent-pacific.com)

*Middle East Office:*

**INVENT** Middle East (FZE)  
SAIF Office P8-09-07  
P.O. Box 121720  
Sharjah  
United Arab Emirates  
Tel: +971 (06) 54 89 139  
Fax: +971 (06) 54 89 138  
E-mail: [info@invent-me.ae](mailto:info@invent-me.ae)

*Italy Office:*

**INVENT** Aeration Services S.R.L.  
Via Castellazzo 4  
20040 Cambiago (MI)  
Italy  
Tel: +39 039 2317125  
Fax: +39 039 2302624  
E-mail: [info@invent-as.it](mailto:info@invent-as.it)

*worldwide*

A list of our sales partners  
abroad is available by request  
or on the internet:

**[www.invent-uv.de](http://www.invent-uv.de)**