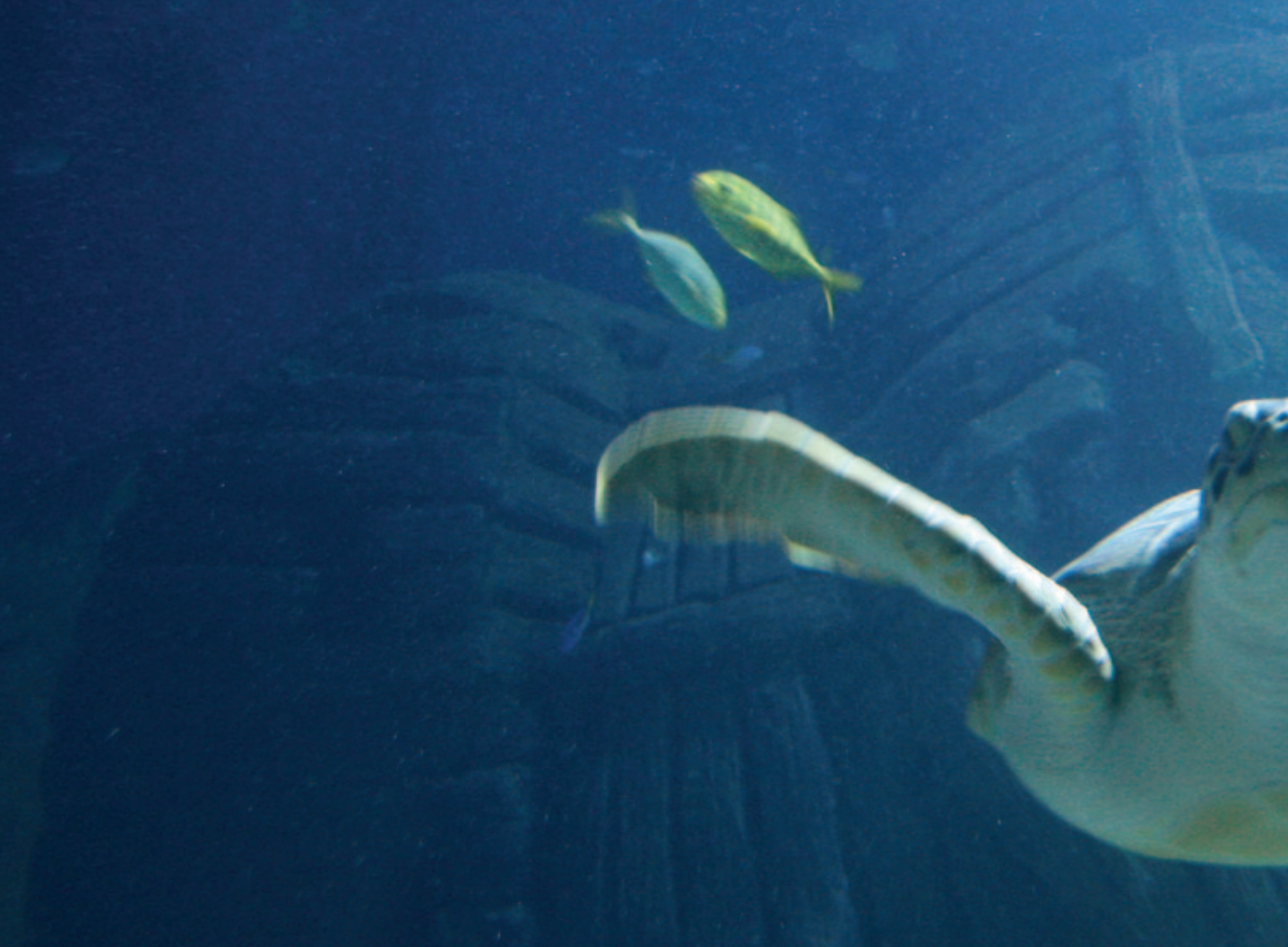


Sander Aquarium Systems

**Products for Fresh and Marine Water Aquaria
and Pond Installations**

**Ozonizers
Protein Skimmers
Measuring Instruments**



Sander means:

For more than 50 years, Erwin Sander Elektroapparatebau GmbH has been developing and producing innovative products for the water treatment of marine water aquaria.

Founded in **1961** by Erwin Sander, the company initially developed and produced small ozone generators for the treatment of marine water aquaria. In the following years, looking for an efficient reactor to introduce ozone into the system, Erwin Sander developed and constructed his first protein skimmer.

In **1971**, the company won a contract to reconstruct the aquarium of the Institute for Marine Science in Kiel: two recirculation systems of 40 m³ each were equipped with protein skimmers and ozone technology. This event signifies a milestone for the company's history: the transition from serving the hobby aquarist to working for public and show aquaria as well, with water volumes of several cubic meters.

Industrial application of Sander ozone generators began with the use of ozone for sterilizing bottles, and water treatment for swimming pools. Accessories, as well as measuring and control technology were developed to optimize the dosage of ozone. Unconventional applications, such as wine bottling plants and industrial greenhouses have been promoting the production of Sander ozone generators.



More than 50 Years of Aquarium Systems

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Expanding towards bigger and more complex water treatment systems for public show aquaria in the **80s and 90s** opened a worldwide market for Sander.

In **2000**, the production of skimmers for fresh water aquaria began, and ozone treatment of pond installations was expanded.

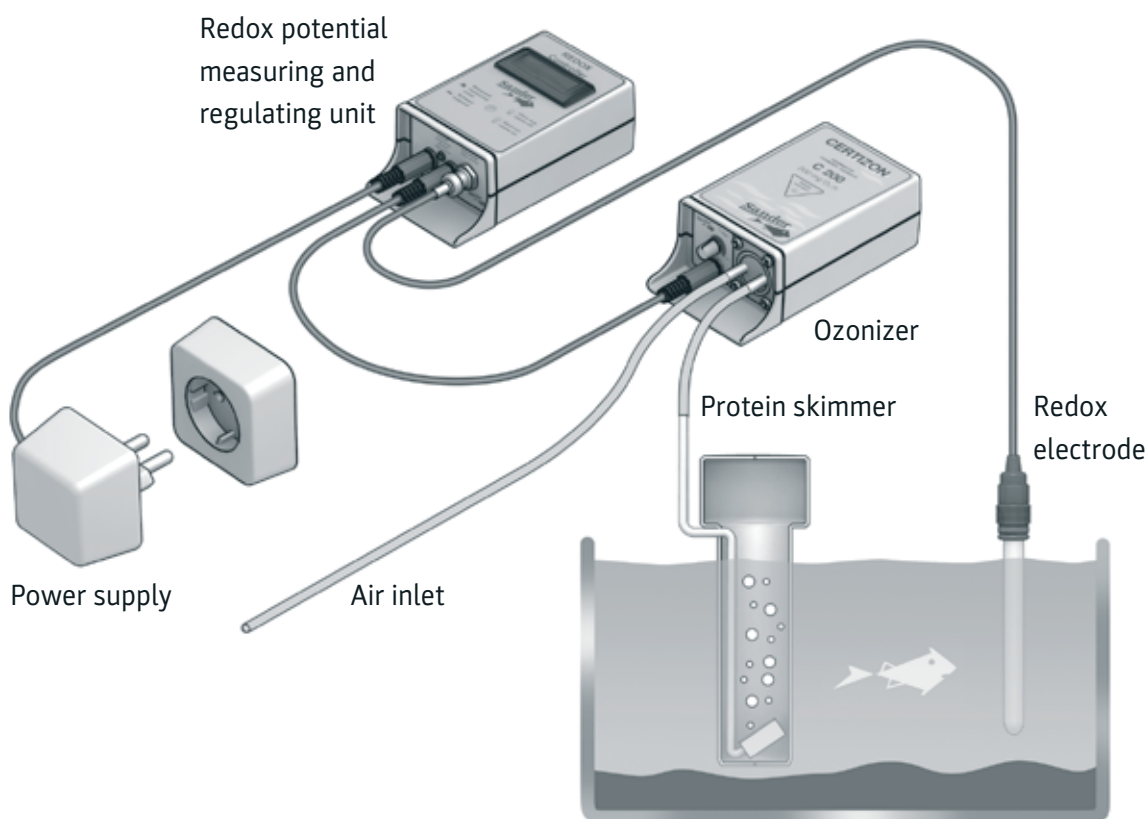
Today, Sander water treatment systems for marine and fresh water are installed not only in Germany and Europe, but also in America, Africa, Asia, and Oceania.



Aquaria are a part of nature in our living room, a window to a different world. Fishes, corals, lower animals or algae – a world of beauty and miracles to be explored and marveled at.

The hobby aquarist is confronted with a complex system. The enjoyment of understanding the processes and interaction in an aquarium requires the necessary biological, chemical and technical knowledge and is fundamental for the well-being of the animals and plants.

Today's aquarium technology offers a variety of products and solutions to the advantage of the hobby aquarist. A combination of different components and the resulting interaction of location, the aquarium inhabitants and the aquarist make this hobby a fascinating passion.



Your aquarium with Sander's ozone technology

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Good filtration is the basis of a healthy aquarium. But in many cases, the filtration alone will not be sufficient. Sander has been developing and producing aquarium technology with the oxidizing gas, **ozone**, as a major component.

When accurately applied, ozone will:

- reduce peak nitrite concentration
- diminish the emergence of germs
- oxidize yellow substance (clear water)
- fight turbidity
- increment and stabilize the redox potential
- oxidize biological substances difficult to decompose
- reduce organic contamination

Ozone is produced in an **ozonizer**. The correct application of ozone in aquaria takes place in a contact column (reactor). Sander **protein skimmers** are ideal for this purpose. The correct dosage can be controlled with the Sander **redox potential measuring and regulating unit**.

Ozonizers

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Ozone generators made by Sander are equipped with unique technology. Ozone is produced using high quality electrode material (ceramics and titanium) to guarantee safe and long-lasting operation.

The compact design is easy to handle and can be installed and operated optionally on a bench, or mounted to a wall. Sander ozonizers are high performance, combined with low energy consumption.

Ozone output is adjustable from 0% to 100% and operation can easily be checked via the active light (LED).

Sander ozonizers can be operated up to a counter pressure of 0,5 bar.

Sander ozonizers can be used for fresh and marine water treatment.



Ozonizer P 2000

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Ozonizer **P 2000** is unique in its line, with a maximum ozone output of 2000 mg/h. Processor-controlled ozone production with high quality components offers reliable ozone output at low energy consumption.

The ozonizer is equipped with a large LCD, and you can choose from several display languages.

Ozonizer **P 2000** is a professional tool for the ambitious hobby aquarist and can be operated in fresh water, ponds and marine water applications.

Ozone output	mg/h	0-2000
Continuous adjustment	%	0-100
Power consumption	Watts	50
Air flow	L/h	50-1000
Fresh water volume up to	L	40 000
Marine water volume up to	L	20 000



Ozonizer S1000

Ozonizer **S1000** has a maximum ozone output of 1000 mg/h. The high quality components guarantee reliable ozone production at low energy consumption.

The ceramic ozone electrode is reliable and can be cleaned easily, if required. A trimmer allows for continuous adjustment of ozone output required for the individual application.

S1000 has been designed for medium-size fresh and marine water aquaria and can also be used in pond installations.

Ozone output	mg/h	0-1000
Continuous adjustment	%	0-100
Power consumption	Watts	24
Air flow	L/h	200-1000
Fresh water volume up to	L	20 000
Marine water volume up to	L	10 000



Ozonizer S 500

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Ozonizer **S 500** has a maximum ozone output of 500 mg/h. All model S ozonizers guarantee reliable ozone production at low energy consumption.

The ceramic ozone electrode is reliable and can be cleaned easily, if required. A trimmer allows for continuous adjustment of ozone output required for the individual application.

S 500 can be operated in fresh water systems (ponds) as well as marine water systems.

Ozone output	mg/h	0-500
Continuous adjustment	%	0-100
Power consumption	Watts	12
Air flow	L/h	200-1000
Fresh water volume up to	L	10 000
Marine water volume up to	L	5 000



Ozonizers Certizon

The Sander **Certizon** range of ozonizers offer from 25 mg/h to 300 mg/h of ozone output. All **Certizon** ozonizers are equipped with a trimmer for easy and continuous adjustment.

The ozone element can be cleaned easily, if required.

The light and compact design can be installed and operated on a bench or mounted to a wall.

		Certizon C300	Certizon C200	Certizon C100	Certizon C50	Certizon C25
Ozone output	mg/h	50-300	50-200	10-100	5-50	2-25
Continuous adjustment	%	0-100	0-100	0-100	0-100	0-100
Power consumption	Watts	10	6	4.8	3.6	3
Air flow	L/h	200-500	100-500	50-500	50-500	50-500
Fresh water vol. up to	L	6000	4000	2000	1000	500
Marine water vol. up to	L	3000	2000	1000	500	250



Redox Potential Measuring and Regulating Unit

The **redox potential measuring and regulating unit** can be operated in combination with Sander ozonizer models **P 2000**, the **S series** and **Certizon** range.

The unit is ready for operation; calibration of the redox electrode is not required.

Adjusting the setpoint is easily achieved by turning the setscrew, using the screwdriver provided with the unit.

Accurate operation of the electrode requires it to be cleaned in regular intervals or on demand. We provide a special cleaning solution for this purpose.

The electrode is equipped with a 3 m cable as well as a plastic bracket for installation.

Protein Skimmers

Sander protein skimmers use very fine air bubbles as the active filtration element.

An active zone builds up on the bubble surface, to which protein compounds adhere very easily due to their molecular structure. A conglomerate of air bubble, protein molecules and fine debris builds up and floats to the surface. Because of the effective surface activity of the protein compounds, a firm foam structure is developed in which the pollutants are bound. This foam is discharged via the foam tube. In this way, toxic substances are removed not only from the aquarium, but also completely from the water cycle. The protein skimmer thus opens a window in the cycle of materials. This fact makes the difference between a protein skimmer and any other mechanical filter.

Examples of substances removed by the skimmer:

- Protein compounds
- Organic compounds
- Fine suspended solids
- Residual feed and feces
- Bacteria biomass and microalgae

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Sander protein skimmers are the best reactors for the application of ozone. All

Sander protein skimmers are equipped with an ozone inlet. The use of ozone enhances the foaming process and offers valuable advantages like the oxidation of nitrite, the inactivation of bacteria and the formation of stable foam.

Sander protein skimmers are characterized by interactions with other filter elements, for instance:

- Substantially supporting the biofilter
- Removing the biofilter's metabolic products
- Optimizing ozone dosage
- Lengthening the intervals between sand filter backwashings
- Treating the outlet water from other biofilters (denitrification) before it re-enters the recirculation system
- Improving the amount of light incidence throughout the entire spectrum



Protein Skimmers Maxi-Skim & Piccolo

The **Maxi-Skim** is ideal for the first-time hobby aquarist. Its compact construction is perfect for small aquaria where there is very limited space for filter technology.

With its very fine air bubbles produced by wooden air stones, **Maxi-Skim** will provide clear and healthy marine water and an ideal oxygen concentration.

The removal of toxic substances and dirt compounds is enhanced by using the **Maxi-Skim** additionally as an ozone reactor.

It is operated by an air pump; the recirculation is produced by the built-in air-lift.

			Maxi-Skim 200	Maxi-Skim 300	Maxi-Skim 400	Maxi-Skim 500
	Piccolo					
Aquarium volume	L	50	100	150	150	150
Water flow	L/h		100	150	150	150
Air flow	L/h		100-200	100-200	100-200	100-200



Power Skimmer and skimmer Model I

Using the so-called counter current principle, Sander **Power Skimmer** (internal) and **Model I** (external) allow for an intensive skimming process and remove toxic protein compounds.

The big reaction tube provides excellent oxygen enrichment of the aquarium water.

The **Power Skimmer** (internal) and skimmer **Model I** (external) can be operated with a water pump (injector) or with an air pump and wooden air stones.

Power Skimmer		WT 350	WT 450	WT 550
Aquarium depth	mm	350	450	550
Model I		AH 400	AH 500	AH 600
Water inlet height	mm	400	500	600

Aquarium volume	L	250
Water flow	L/h	250
Air flow	L/h	100–300



Sander protein skimmers **Model II** and **II P** are perfect as external skimmers for marine water aquaria up to a volume of 3000 L.

Based on the counter current principle, the intensive skimming process removes toxic protein compounds, residual feed, bacteria and algae.

Protein Skimmer II

The big reaction tube provides excellent oxygen enrichment of the aquarium water.

Taking off the foam beaker for cleaning and maintenance is easily achieved by loosening the clip fasteners.

The protein skimmers **Model II** are operated with wooden air stones. **Model II P** is operated with an injection pump. The outlet height of the skimmers can be adapted to the respective height of the aquarium.

Both models are equipped for the operation with ozone and will serve perfectly as ozone reactors.

II P »SE«							
					AH 700...	AH 1500...	AH 1200...
		AH 500	AH 600	AH 700	AH 1400	AH 1900	AH 1600
Aquarium volume L		650-1050	650-1200	650-1500	800-3000	1000-4200	500-3000
Water flow	L/h	350	420	500	500-1000	1000-1400	500-1000
Air flow	L/h	300	300	300	300	300	400



With Sander protein skimmers **Model III** and **III P**, you have the perfect skimmers for marine water aquaria up to a volume of 7500 L.

Based on the counter current principle, the intensive skimming process removes toxic protein compounds, residual feed, bacteria and algae.

Protein Skimmer III

The big reaction tube provides excellent oxygen enrichment of the aquarium water.

Taking off the foam beaker for cleaning and maintenance is easily achieved by loosening the clip fasteners.

The protein skimmers **Model III** are operated with wooden air stones. **Model III P** is operated with an injection pump. The outlet height of the skimmers can be adapted to the respective height of the aquarium.

Both models are equipped for the operation with ozone and will serve perfectly as ozone reactors.

		III AH 700... AH 1000	III AH 1000... AH 1400	III AH 1500... AH 1900	III P AH 1200... AH 1900
Aquarium volume	L	900-3500	1200-5500	2000-7500	1500-7500
Water flow	L/h	900-1200	1200-1800	2000-2500	1500-2500
Air flow	L/h	600	600	600	600

Protein Skimmer

Fresh-Skim

Sander fresh water protein skimmers **Fresh-Skim** have been developed especially for the treatment of pond water and are ideal for the Koi enthusiast. **Fresh-Skim** provides you with crystal clear water, and protein compounds and turbidity are removed before they become harmful for the system.

Fresh-Skim, like all Sander skimmers, is ready for the operation with ozone and will serve perfectly as an ozone reactor.

In fresh water, the use of ozone enhances and increases the efficiency of the skimming process. It offers valuable advantages like disinfection, oxidization of nitrites and yellow substance, and, at the same time, oxygen enrichment of the water.



		Fresh-Skim 200	Fresh-Skim 300	Fresh-Skim 500	Fresh-Skim 700
Total height	m	1.80	2.10	2.10	2.50
Water flow	m ³ /h	3	8	22	42
Pond volume up to	m ³	20	50	140	280
Air flow	m ³ /h	1.0-2.5	1.5-3.5	5.0-10.0	10.0-20.0



Accessories

Wooden Air Stones

Sander wooden air stones are made from lime wood (German natural product) and produce the finest air bubbles.

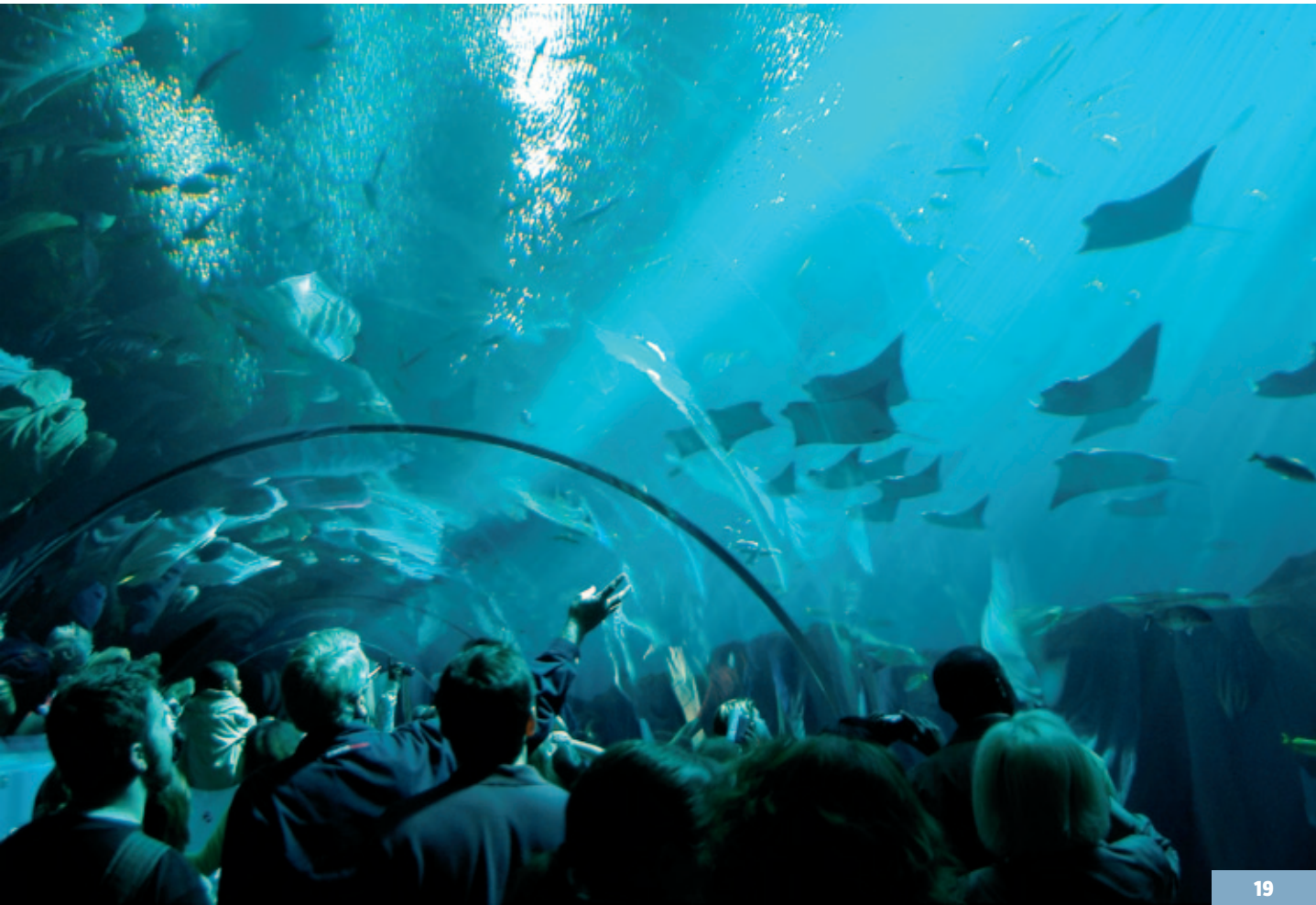
Available in four different sizes, Sander wooden air stones work with only little pressure loss and may be used both in marine and fresh water.

Finest bubbles will allow for perfect oxygen enrichment of the water.

More Accessories

Sander offers accessories for your ozonizers and skimmers to help create an aquarium eco-system appropriate to the animals.

- Ozoflex tube 4/6
- Silicone tube 4/6
- Air flow meter 50 to 1000 L/h
- Hydrometer



The name Sander stands for quality and reliability.

For more than 50 years, **Erwin Sander Elektroapparatebau GmbH** has been developing and producing water treatment systems for the hobby aquarist, and for industrial applications such as show aquaria and aquaculture systems.

Large-scale project planning is carried out by **Sander Aqua Design GmbH** with its team of engineers, marine biologists and technicians who will turn the client's wishes into real-life applications.

Sander Aquatec GmbH handles the execution of planned projects as well as management and logistics.



Erwin Sander Elektroapparatebau GmbH
Am Osterberg 22
31311 Uetze-Eltze
Germany

Phone **+49 (51 73) 9 71-0**
Fax **+49 (51 73) 9 71-197**
E-Mail **info@aqua-sander.de**
Web **www.aqua-sander.de**