



Effizon evo Ozone Technology

MAXIMIZE THE OZONE. MINIMIZE THE ENERGY.

WEDECO
a xylem brand

Welcome to the next dimension in ozone oxidation

Ozone oxidation is one of the most effective and environmentally friendly methods employed in water treatment, paper and pulp bleaching, and many other application areas. Use of ozone is uncomplicated – the central element is the ozone generator producing the gas on-site from oxygen. Wedeco has successfully provided the SMO and PDO series of ozone generators for this purpose for more than 20 years.

The new generations of SMO evo and PDO evo ozone systems are delivering maximum performance with a large range of options for system customization. The new systems are based on improvements which include the electrode technology and generator design. This results in unequalled solutions in terms of performance, efficiency and operational stability.

Effizon evo electrodes are the core components that use oxygen and energy in an efficient manner to generate ozone. The ozone production process also requires cooling water for heat dissipation and maintaining an efficient process. It is the sophisticated interplay between all of these components and processes that distinguishes the high efficiency, flexibility and robustness of Wedeco ozone systems.

Elements that achieve high efficiency,
flexibility and robustness

ENERGY

Modern ozone systems require less energy than anticipated. With the Effizon evo generation, we have lowered the energy consumption once again by up to 20%. This means that Wedeco systems are among the most energy efficient ozone plants to be found anywhere.

OXYGEN

The Effizon evo technology allows up to 30 times less nitrogen dosing than comparable competitor solutions. This reduces the formation of nitrogen oxides (NO_x) as well as potential corrosion and performance issues considerably. Furthermore, the technique is insensitive to elevated concentrations of hydrocarbons (THC) in the feedgas supply. This permits a high degree of flexibility when selecting potential gas suppliers. The flexibility even extends to the oxygen feedgas used. The Wedeco generators can be designed and delivered ready to utilize different oxygen sources such as air or liquid oxygen or on-site generated (PSA) oxygen.

COOLING WATER

Cooling of the electrodes with cooling water directly influences the efficiency of the plant. Effizon evo generators achieve maximum ozone production efficiency, even in situations with cooling water temperatures up to 35°C. Improved hydraulic generator design characteristics improve heat dissipation and limit mechanical stress to the electrode at the same time. Cooling of the power supply unit is integrated in the cooling concept using either air or water, depending on the system type.

Maximize the ozone. Minimize the energy

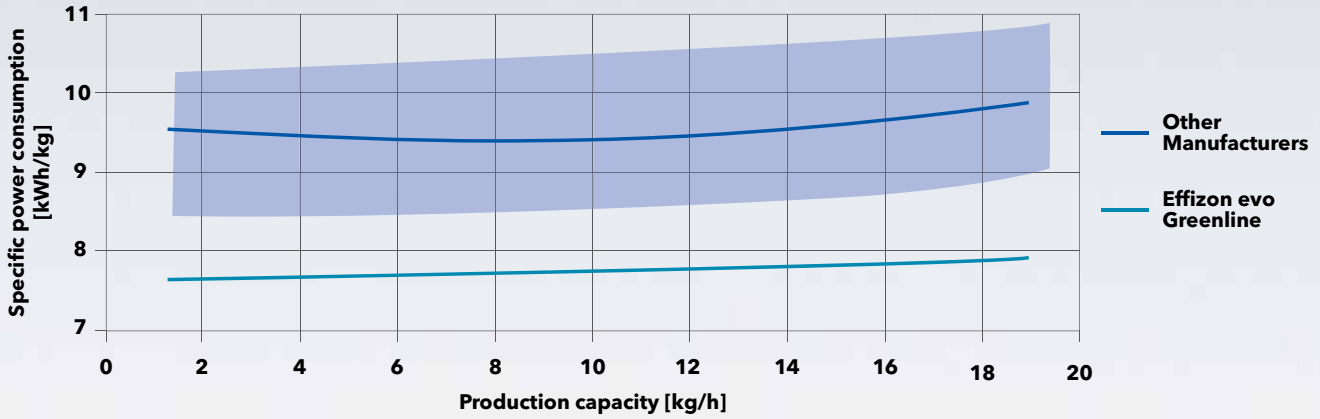
The Effizon evo electrode, the core element of every SMO evo and PDO evo ozone system, enables the achievement of a level of reliability and energy efficiency which is unattainable with most other electrode technologies. The distinctive feature of this electrode is its unique double discharge gap. Ozone is formed on both sides of the dielectric, therefore lowering the applied specific energy and increasing ozone production. This feature is one of the performance factors of Wedeco ozone generators.

The electrodes are manufactured from inert materials making them highly resistant to corrosion. This means that the Wedeco ozone generators are practically maintenance-free, making any regular cleaning or replacement of the electrodes unnecessary. The overall optimized arrangement and vessel geometry are further elements enhancing the ozone production efficiency, while simultaneously achieving low specific energy consumption.

Electrode core, high grade stainless steel connection

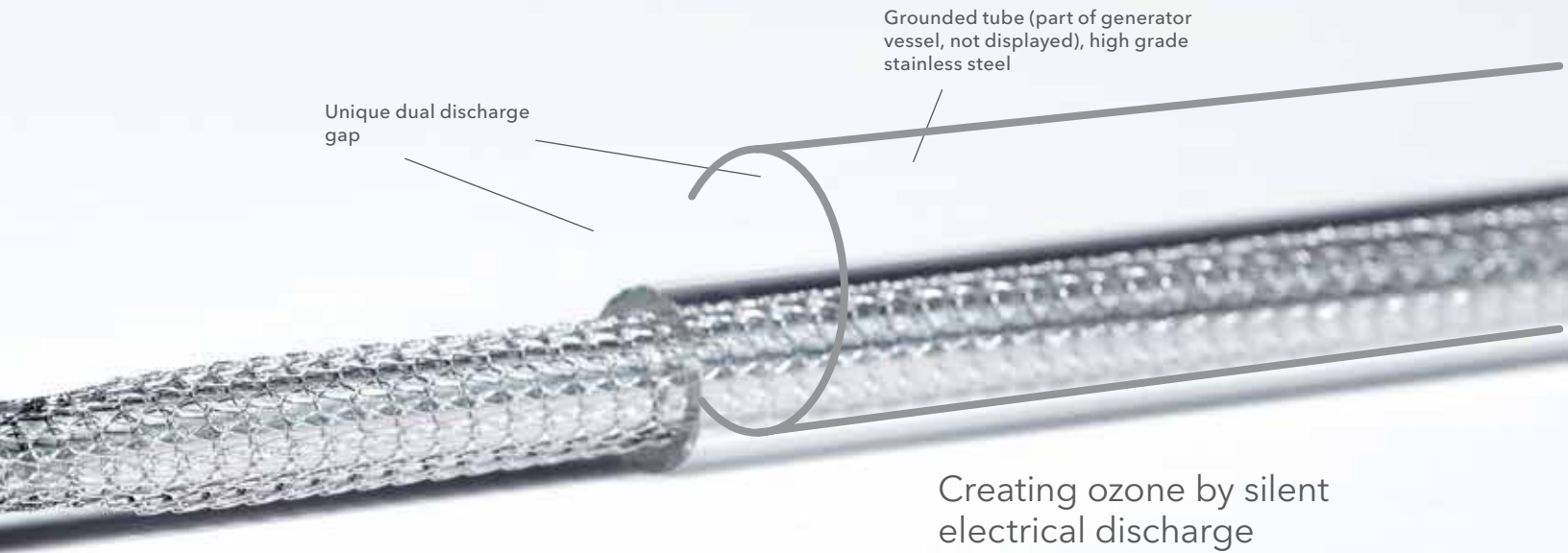


SMO evo Effizon



All SMO evo and PDO evo systems are available in two basic versions: the Greenline version which, with its energy efficiency enhanced by up to 20%, represents the best lifecycle costs available

on the market. The Smartline version emphasizes minimized investment costs without compromising on the high Wedeco system quality.



Creating ozone by silent electrical discharge

Effizon evo electrodes create ozone using the principle of silent electrical discharge, transforming oxygen molecules to ozone. In more detail: the high voltage field is applied between the grounded tube and the electrode, separated by a dielectric. A fraction of the oxygen molecules is split in the electric field and spontaneously form ozone molecules by combining with another oxygen molecule.

SMO evo. Engineered to be the best choice for every application

The SMO evo series combines maximum flexibility and reliable operation for small to medium ozone capacities. The ozone generator system and control unit can be combined and supplemented with numerous option sets that allow project specific customization for almost all applications.

Systems of the SMO evo series are manufactured in two principle configurations: the Greenline with maximum energy efficiency and low lifecycle costs, or the budget-oriented Smartline. Whichever solution is selected – there is always a SMO evo system to suit a customer's needs.

1 The generator vessel and power supply are separate units and can be arranged separately as an option. Forklift access from all sides is also provided, allowing easy transportation and installation.

2 The ozone generator can be arranged in either upright or horizontal fashion to suit local requirements.

3 The pipework is made entirely from stainless steel, providing flange fittings where necessary and is equipped with monitoring and optional concentration measurement instruments.

4 The footprint is reduced by up to 20% as a result of the optimum arrangement of the generator vessel, pipework and electrical cabinets.

5 The power supply unit is equipped with state-of-the-art semiconductor technology (IGBT) for improved system control.

6 The air conditioning system separates the electrical components from the ambient air and ensures protection class IP 54. This allows operation under ambient conditions with high temperatures (up to 35°C), high humidity (up to 90%), and harsh or dusty surroundings.



See the Wedeco Effizon evo film here.



Fast Startup from 0 to 100

The large capacity Wedeco ozone PDO evo systems achieve completely automatic control of ozone production from 1-100% (using 1% increments), depending on the actual required amounts of ozone. Achieving the full rated ozone production capacity requires only a maximum time of two minutes - a decisive contribution to overall process control. The medium-sized SMO evo generators achieve 100% capacity in less than 30 seconds.



Integrated sustainability

Wedeco ozone systems intentionally reduce the ecological footprint through minimized energy consumption and through increased system reliability resulting in the use of less spare parts and maintenance. Consequently, CO₂ emissions are reduced. In addition, our production facilities conform to recognized international environmental management standards (ISO 14001).

PDO evo ozone generators. Customized to fit each and every plant perfectly

PDO evo ozone generators are the first choice by design engineers and end users around the world for reliable and efficient production of large capacities of ozone. The extensive range of options allows designing individual customer solutions for each PDO evo ozone plant on the basis of Wedeco's clear system philosophy. The results are customized systems that integrate perfectly into local conditions and processes. Wedeco engineering, production and service teams are specialized to deliver this flexibility.

PDO evo systems in the Greenline configuration are up to 20% more energy efficient than comparable previous models.

1 The pipework is made exclusively in stainless steel and equipped with all necessary and desired monitoring and control systems. All fittings and instruments are arranged for ease of operation, maintenance and control. Inlets and outlets are designed to suit local conditions completely.

2 The ozone generator is equipped with Effizon evo electrodes from both sides.

3 The power supplies are equipped with 12 or 18 pulse rectifiers and IGBT converter technology to meet harmonic requirements. Mains voltages from 380 to 690 Volts are readily usable.





Monitoring and control

A PLC system with a local HMI control panel takes care of internal control and monitoring of ozone production. Main brands such as Allen Bradley, Mitsubishi, Schneider or Siemens can be implemented depending on customer requirements. Network interfaces such as Profibus or Ethernet are included in the scope of options.



Systems that maximize ozone generation and minimize energy consumption

The new 'evo' generation of Wedeco SMO and PDO ozone systems are designed to achieve maximum ozone availability and minimum energy consumption. The latest Effizon evo electrode technology ensures minimal maintenance, unequalled customization and a reduction in energy use of up to 20%.

SMO evo and PDO evo ozone systems come in two main configurations: Greenline that delivers one of the most competitive lifecycle costs available on the market due to amazingly low energy consumption, and Smartline that supports truly low investment costs, without compromise on reliability and ease of operation.



Technology engineered to deliver superior results to clients worldwide

Maximum ozone availability

- High system availability, thanks to virtually maintenance-free Effizon evo technology.
- The electrodes do not require any regular replacement or cleaning.

Lowest lifecycle costs

- Lowest aftermarket costs on the market, thanks to virtually maintenance-free electrode technology.
- High oxygen supply security at moderate costs as higher THC values pose no technical problem.
- Nitrogen dosing up to 30 times lower than competitors.
- Low specific energy consumption - further reduced by up to 20%.
- The broad system portfolio enables precision design to suit customer requirements.

Maximum operating flexibility

- Ease of choice for local gas suppliers / qualities.
- All Ozone systems can be designed to operate with air, LOX or PSA oxygen.
- Efficient operation at elevated cooling water temperatures (up to 35°C).
- Startup to maximum capacity in under 2 minutes for PDO evo and only 30 seconds for SMO evo, thanks to reliable and thermal shock-resistant electrodes.
- Smooth ozone capacity control (from 1-100%) to suit process requirements.

Customer-oriented solutions

- Extremely high level of system customization for the SMO evo & PDO evo range.
- Fundamental in-house process knowledge through our own R&D department.
- Complete process peripherals and customer solution available from a single source.

Simple implementation and installation

- Experienced team of project engineers, application developers and service personnel.
- Completely preassembled and tested ozone generator - plug & play.
- Container solutions can be built to fit local requirements (preliminary work, building, etc).
- Comprehensive connection options to superordinate controls (e.g. via SCADA, Profibus, etc).

Simple maintenance and operation

- Local control panel (HMI).
- Easy access to all systems and fittings relevant to service.
- Operation & diagnosis via network control (remote diagnostics).

Xylem ['zīləm]

- 1) The tissue in plants that brings water upward from the roots
- 2) A leading global water technology company

We're 12,000 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to xylem.com.



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Let's Solve Water

Xylem, Inc.
14125 South Bridge Circle
Charlotte, NC 28273
Tel 704.409.9700
Fax 704.295.9080
855-XYL-H2O1 (855-995-4261)
www.xylem.com

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