Sustainable energy solutions for tomorrow
Advanced technologies for eco-friendly steam and power

Doosan Lentjes’ advanced technologies covering circulating fluidised bed boilers, waste-to-energy, sewage sludge incineration and air quality control systems help customers around the world to efficiently generate environmentally-sound steam and power from both sustainable and conventional fuels.

One-stop partner

As a member of the global Doosan group, we have the resources to deliver complete process solutions from one trusted source, making us the one-stop partner of choice for all your energy requirements. Drawing on Doosan’s global network, we combine international market know-how with proven German state-of-the-art engineering – a winning combination with the experience and capacity to make your project a resounding success.

Global references

Our wide range of global references reflects our rich heritage in developing advanced technologies and state-of-the-art products and services that are perfectly adapted to our customers’ individual needs.

Our history

- 1928: Ferdinand Lentjes founds boiler manufacturing company
- 1982: Company designs, builds and commissions the world’s first commercial CFB boiler
- 1984: Acquisition of Gottfried Bischoff GmbH – a specialist in flue gas cleaning technology
- 1989: Company enters the grate-based waste-to-energy market
- 2011: The Doosan Group acquires the company – renamed to Doosan Lentjes
- 2018: Doosan Lentjes re-enters the market for the incineration of municipal sewage sludge
The way we work

At Doosan Lentjes, we understand that our products and services are only as good as the people behind them, so we work hard to recruit, train and develop the very best in the industry.

Quality, Health, Safety and Environment

Our performance is based on providing high levels of quality, outstanding safety performances and environmental vision – embracing our commitment for the safety and well-being of our people and local communities.

With our approach we aim to make safety transcend all our commercial operations – ensuring full commitment to our employees, partners and the communities we serve.

People Focus

Our people are at the centre of who we are, so we take genuine care in their development, making their cultivation our long-term priority. We are also committed to the development of new design, engineering and project management talent and retain an unparalleled expance of knowledge within our company. Transferring knowledge and experience to the next generation strengthens the stability and longevity of our business and gives our customers reassurance that our engineering competency is sustainable for the long term.

Corporate Social Responsibility

In all territories in which we operate, we embrace customer and community visions for sustainability. Doosan Lentjes’ Corporate Social Responsibility (CSR) programme is built on three pillars: Education, sustainability and community. This provides us with a framework through which to promote excellence in science, technology and engineering, minimise the environmental impact of our operations, and make a positive difference in our local community.
Doosan Lentjes delivers the highest level of customer satisfaction through best-practice procurement of goods and services. Our focus is on optimising cost and efficiency while achieving full regulatory compliance.

Our procurement capabilities

We define global sourcing strategies that draw on the full capabilities of the Doosan group while focusing on a geographically balanced and locally anchored portfolio of best-in-class suppliers who support us to identify the most valuable supply chain solutions.

We, at Doosan Lentjes, understand that our suppliers make a vital contribution to our performance which is why we aspire to create long-term mutually beneficial relationships that help to ensure consistent quality.

In pursuing project interests, we are always mindful of our ethical and social responsibilities and our commitment to sustainability and transparent business practices. In order to achieve this, we have established our Code of Conduct for Contractors that is based on our corporate values. This helps us to make sure our suppliers follow ethical and responsible behaviour, practices and standards while fully complying with all applicable laws and regulations.

Doosan Chennai, India

Doosan Vina, Vietnam

Doosan Headquarters, Changwon, Korea
We understand that flexibility and sustainability are vital to the success of your business, which is why our customised solutions are tailored to your specific environmental and economic goals.

Exceeding your expectations

Doosan Lentjes is proud to be the Doosan group’s global Centre of Competence for circulating fluidised bed boilers, waste-to-energy technologies, sewage sludge incineration and air quality control systems. We continuously invest in the advancement of our technologies to make sure we remain at the forefront of our industry, and consistently deliver products and services that exceed our customers’ expectations. This ongoing investment also underpins a culture of continuous improvement that permeates our entire organisation.

In order to provide our customers with solutions that help to achieve their individual economic and environmental goals, we have developed the Doosan Lentjes Operating Model. This approach helps to maximise cost-efficiency, optimise project execution time and deliver high flexibility by integrating product requirements into modular solutions that are adapted to specific customer requirements. With the continuous integration of all lessons learned into the modular solutions during the project execution phase we ensure a consistent learning process to the benefit of all future projects. In combination with our continuous investment in the advancement of our technologies we are one step ahead when it comes to both state-of-the-art technology and a sustainable business performance, leading your project to an outstanding success – essential in times of changing market requirements.

We are driven by the anticipation of our clients’ needs and differentiation through focused innovation. With the Operating Model we integrate, consolidate and realise synergies to achieve a sustainable performance in a challenging business environment.
Doosan Lentjes is a recognised pioneer and leader in CFB boiler technologies, providing efficient combustion solutions across a wide range of different fuel types.

Shaping the future of CFB boiler technologies

Our engineering and project management excellence is backed by the global capabilities of Doosan Heavy Industries & Construction (DHIC), including 175 GWe installed capacity and a pressure parts fabrication facility with a production capacity equivalent to 9 GWe per year.

At Doosan Lentjes, our CFB boiler technologies cater to multiple fuels, including those with the most demanding combustion properties, such as, low calorific values, high moisture levels, high ash content or lower ash melting temperatures.

Our CFB boiler solutions achieve the highest levels of cost-efficiency by utilising an integrated desulphurisation control system that requires no external emissions control, combined with an integrated design. This unique design gives you effective CFB combustion that fully delivers on your environmental and economic objectives.

Doosan Lentjes’ research continues to shape the future of advanced CFB boiler technologies. Working together with our colleagues at DHIC, we develop products for supercritical and ultra-supercritical steam conditions.

Design
Utility-size circulating fluidised bed boilers ranging from 50 – 350 MW per unit. USC units with up to 600 MW under development

Fuels
All kinds of biomass, coals, waste coals, coal residues, pet coke, as well as, co-firing

References
Over 110 units in operation worldwide

Case study:
Berlin, Germany

Contract award: 1987
Main fuels: Hard coal, lignite, biomass
Number of lines: 1
Plant output: 100 MW,

In 1987, Doosan Lentjes was awarded the contract by BEWAG to provide a circulating fluidised bed (CFB) firing system for the 100 MW, combined heat and power (CHP) plant located in Berlin, Germany. In 1990, the plant received the International Power Plant Award for its efficiency and extremely low emissions. Thanks to the flexibility of the CFB system, the plant is now capable of reliably burning biomass fuels, such as, wood.
Doosan Lentjes is a leader in the generation of energy from waste. With almost 80 units contracted around the world equivalent to converting millions of tons of waste-to-energy every year, we are an experienced partner in planning and building individual process sections, chute-to-stack solutions or full turnkey plants.

Thermal waste treatment is an essential part of a modern waste management concept. At Doosan Lentjes, our technologies can reduce waste volumes by more than 90%, as well as, generate high levels of energy recovery. With our advanced technology, we help you to recover more than 65% of the energy initially contained in the waste, which can be subsequently converted into power and heat for local communities and industry.

Our flexible grate types, such as, reciprocating (air and water-cooled), as well as, roller grate are tailored to suit various waste incineration properties resulting from different waste characteristics, such as, moisture contents, calorific values and waste volumes. Our proven flue gas cleaning solutions achieve reliable compliance with all applicable international emissions regulations by maximising the reduction of pollutants and toxins from your waste, thus, minimising the ecological impact of your plant.

Case study:
Harlingen, The Netherlands

Contract award: 2009
Main fuels: Municipal, bulky and similar pretreated waste
Number of lines: 1
Plant capacity: 1 x 280,000 t/a

In 2009, Doosan Lentjes was selected by RECB V - a subsidiary of Afvalsturing Friesland N.V. to deliver essential components, such as, grate, boiler and balance of plant (BoP) on an EPC basis for the waste-to-energy plant in Harlingen, the Netherlands.

An integrated and highly efficient combustion system enables high plant availability and a substantial reduction of operating costs while simultaneously providing high flexibility to meet the requirements of changing waste qualities.

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Doosan Lentjes designed and built the municipal sewage sludge mono-incineration plant located in Belfast, Northern Ireland. Today, Northern Ireland Water is the owner of the facility while the same is being operated by Veolia Water.

The plant design features a bubbling bed boiler and a multi-stage flue gas cleaning solution. An efficient waste heat recovery concept allows an auto-thermal operation of the entire plant. Designed as a mono-incineration plant, the facility is ready to recover phosphorus from the sewage sludge.

**Case study:**
**Belfast, Northern Ireland**

**Main fuels:**
- Sewage sludge
- Dewatered sewage sludge
- Screenings

**Number of lines:** 1

**Total plant capacity (original substance):**
- 54.6 t/h (sewage sludge)
- 4.14 t/h (dewatered sewage sludge)
- 0.12 t/h (screenings)

**DR*-content at reception:**
- 3.5% (sewage sludge)
- 25% (dewatered sewage sludge)
- 45% (screenings)

Doosan Lentjes has vast experience with thermal treatment of municipal sewage sludge encompassing more than 25 incineration units built in Germany and across Europe. Our competence covers EPC responsibilities.

**Ready to recover phosphorus from sewage sludge**

We provide advanced sewage sludge incineration concepts based on the proven bubbling bed boiler technology. Our capabilities can cover solutions across the entire process chain from dewatering and drying, incineration, heat recovery and steam / power generation to flue gas cleaning and ash separation.

With our tailor-made plant concepts developed on the mono-incineration principle, we help you to comply with the new legal requirements in respect of sewage sludge treatment: An integrated Electrostatic Precipitator (ESP) separates the ash from the flue gas which, in a further process step, allows the recovery of the required phosphorus.

Our proven multi-stage flue gas cleaning applications ensure that even the most stringent emissions regulations are reliably met or exceeded. This is achieved by maximum removals of harmful pollutants, such as, acid gases, heavy metals and solid particles from the flue gas.

Doosan Lentjes’ plant solutions benefit from their compact design and high process efficiency, thus, maximising their cost-efficiency.

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Maximise combustion efficiency
Compliance with all legal requirements
Tailor-made plant designs

*DR: Dry Residue*
Our environmentally-friendly flue gas desulphurisation (FGD) solutions are tailored to your individual requirements to help you achieve maximum sustained emissions reduction and compliance with even the most stringent environmental emissions directives.

Our proprietary proven technologies include:

- **Wet limestone FGD** – the world's most commonly used FGD process, especially designed to meet the specific requirements of high-sulphur applications and large oil and coal-fired power plants by effectively removing sulphur dioxides from the flue gases.

- **Seawater FGD** – a proven alternative for oil and coal-fired power plants located in coastal regions, delivering the same levels of desulphurisation as the wet limestone process.

- **Circoclean® FGD** – a beneficial solution to reliably remove pollutants, such as, dust and sulphur dioxides (SO₂) from the flue gas. The process can be used downstream of coal and oil-fired boilers, as well as, biomass, refuse derived fuel and domestic and industrial waste incineration plants.

- **FER-DI® FGD/flue gas cleaning** – a straightforward process suitable for moderate pollutant concentrations of WTE facilities and power stations fired with coal, oil or biomass. Pollutants to be removed involve acid gases, such as, SO₂, HCl and HF, as well as, hydrocarbons, such as, dioxins and furans and heavy metals like mercury.

A breath of fresh air

With a heritage in air quality control systems that includes more than 50 years’ experience and 150 installations worldwide, Doosan Lentjes is a leading provider of cutting-edge products and services that deliver cleaner, greener energy.

**Case study:**
**Kjeøpsvik, Norway**

**Contract award:** 2017
**DeSO₂ technology:** Seawater FGD
**Application in the cement industry**
**Main fuels:** Waste fuels

In 2017, Doosan Lentjes was awarded the contract by NORLEM AS, part of HeidelbergCement, to supply a turnkey seawater desalination system for their cement plant located in Kjeøpsvik, Norway. With Doosan Lentjes as the sole EPC supplier, the customer receives an integrated solution that meets the challenge of ongoing operations with minimal downtime during retrofitting.
Steam generation in 360º at Doosan Lentjes

Visit our homepage and take a virtual journey through our facilities around the globe – a great opportunity for you to experience our reference plants in an impressive 360º environment and convince yourself of our capabilities! To start the tours, please type the address below in your internet browser and open the Virtual Doosan World.

www.doosanlentjes.com
Doosan Lentjes

Doosan Lentjes is a global provider of processes and technologies for energy production from sustainable and conventional fuels. Our specific areas of expertise include circulating fluidised bed boilers, key technologies for the generation of energy from waste and sewage sludge, as well as, flue gas cleaning systems. We have been pioneering energy solutions for 90 years and convert millions of tonnes of waste into energy every year.

Doosan Lentjes is part of a powerful combination of companies united under the Doosan Group to deliver complementary technologies, skills and value to customers the world over.