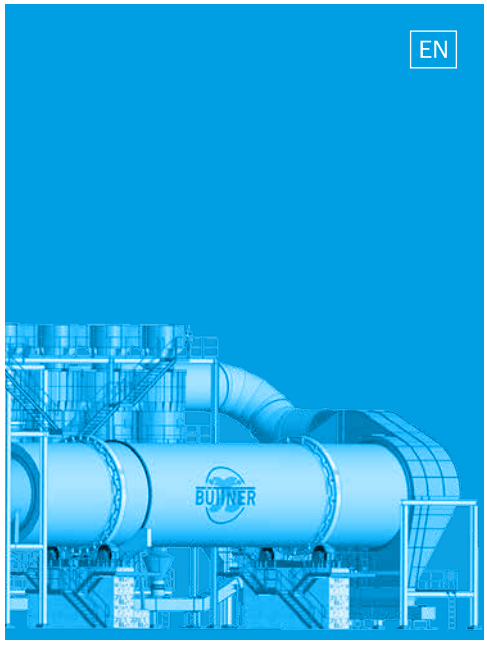
BÜTTNER Energie- und Trocknungstechnik GmbH

EXPERTS IN ENERGY AND DRYING



DRYING SYSTEMS ENERGY SYSTEMS BURNERS

WWW.BUETTNER-ENERGY-DRYER.COM

WELCOME TO BÜTTNER

DRYING TECHNOLOGY, BURNERS AND ENERGY SYSTEMS FOR THE GLOBAL MARKET

Since its foundation by August Büttner in 1874 in Krefeld, BÜTTNER Energie- und Trocknungstechnik GmbH has looked back on a remarkable long tradition. Today BÜTTNER is the leading international supplier of complete plants in the field of heat generation and drying technology.

BÜTTNER assumes responsibility for engineering, supply and installation as well as the commissioning and after-sales service of plants for industrial clients around the world at the highest technical level. Quality, reliability and efficiency are of paramount importance.

The committed team of engineers and service staff supports its customers worldwide over the entire lifecycle of plants and also takes on modernisation, renovation, performance upgrades and services for existing energy and drying systems as well as burners of all types.

The combination of innovation and expertise is the basis of our success.

Benefits for our customers:

- Drying systems for numerous types of bulk solids and fibres
- Energy systems including thermal oil heaters and steam generators for the utilisation of biomass, dust and primary fuels
- Energy systems in combination with power generation
- Multi-fuel burners or combination burners for dust, gas and oil
- Gas line burners
- Engineering, delivery, transport, assembly, commissioning and after-sales service
- Modernisation and performance optimisation for plants and burners of all brands

BÜTTNER is a company of the **Siempelkamp Group.**

OVERVIEW

APPLICATIONS

DRYING SYSTEMS

ENERGY STYSTEMS

BURNERS

SERVICES

CONTACT


MDF

APPLICATIONS

The different dryer systems, the range of burners and the BÜTTNER energy systems are always used with the aim of drying industrial goods or providing process heat. MDF boards from wood fibres, OSB boards from strands or particle boards are just three examples from the wood processing industry of where BÜTTNER systems are used. The fibres for wood fibre insulation boards used in home construction as well as the flakes for the increasingly popular wood pellets also first have to go through an industrial drying process.

Outside of the pure wood industry, bulk solids, animal feed from sugar production, chemicals and biomass products must also be efficiently dried before they can be used.

The dryer systems, burners and energy systems from BÜTTNER have earned their place on the market for all of these areas of application.

Find out more about the individual applications
on the following pages.

WOOD FIBRES FOR **MDF AND INSULATION BOARD**

DRIED EFFICIENTLY IN BÜTTNER FLASH TUBE DRYERS

A preferred material for furniture, flooring or ceiling panelling: medium-density fibreboards (MDF) are in use around the world. Their quality depends on proper production. BÜTTNER supplies the wood-based panels industry with energy systems, drying systems and burners, which ensure that wood fibres are quickly and efficiently dried, before they are pressed.

Medium-density fibreboards (MDF) and high-density fibreboards (HDF) are made of wood fibres and characterised by their particularly homogeneous structure. This allows the edges to be machined directly as well as a direct painting process. MDF is utilised in both furniture construction and in the production of laminate flooring or ceiling panelling.

The interaction between energy system and drying system gives rise to particular requirements:

- The energy system must provide for three or more heat consumers acting partially independently from one another. Waste material from production as well as biomass, oil and gas is burned for this purpose. A sophisticated control concept helps to provide a constant supply of heat to all consumers.

- The wood fibres are dried in a few seconds in the flash tube dryer; as a result very little time remains to compensate for variations in the drying process with the fast control system.

BÜTTNER'S decades of experience constructing energy and drying systems guarantees trouble-free and optimally coordinated plant operation.

STRANDS FOR **OSB**

DRYING OSB STRANDS WITH BÜTTNER SINGLE-PASS DRUM DRYERS

Once called wafer boards, everyone has heard of the OSB boards used in construction and packaging; long, thin flakes (strands) from debarked logs are layered and then pressed into large boards. The wood-based panel industry's modern, highly-efficient presses require a source material which exhibits a permanent uniform degree of moisture.

This is where BÜTTNER comes in:

Our single-pass drum dryers, which are heated with flue gas, ensure that both thick and thin strands always have the proper moisture content. BÜTTNER'S energy and drying systems allow for the precise pre-treatment and drying of the wood material; this ensures that the OSB boards are always of the same high-quality. The entire process is precisely modulated and monitored.

The flue gas required for heating the dryer is generated either in the grate firing system or in special combustion chambers with multi-fuel burners. Manufacturing wastes, for example bark, screening and waste material from board production, are used as fuel. Under certain conditions primary fuels such as oil or natural gas can also be utilised.

At large factories an energy system must often provide for two or more heat consumers acting partially independently from one another. BÜTTNER'S sophisticated control concept for energy systems helps to provide a constant supply of heat to all consumers.

BÜTTNER'S single-pass drum dryers make a significant difference to the quality of the finished OSB boards. With an efficient and reliable drying process, they allow for optimal, smooth production processes in the wood industry. And all of this globally.

BIOMASS FOR ENERGY RECOVERY

BÜTTNER DRYING SYSTEMS AND ENERGY SYSTEMS, A COMBINED SOLUTION

The utilisation of renewable raw materials is attracting ever more attention and the application of biomass as a fuel is now commonplace. Bark, waste from the wood industry, from roadside maintenance and from landscaping, as well as agricultural waste such as straw or palm fibres serve as fuel. Although the composition of biomass is extremely heterogeneous, all materials have one thing in common: in most cases their water content must be significantly reduced before they can be used for energy.

BÜTTNER'S drying systems and energy systems are excellently suited to drying biomass.

The technical solutions are as varied as the materials. Depending on the raw material, application and water content involved, BÜTTNER designs, builds and supplies the right dryer for the job and combines it with a precisely matched energy system with robust burners.

In addition to a precisely controlled drying process, another important factor for drying biomass is the facility's cost-effectiveness – making use of free waste heat. The materials, often very inhomogeneous, require specific dryer internals and special handling. BÜTTNER'S biomass drying systems are designed to be robust and flexible. They can be retrofitted in many different ways – even if the fuel's water content varies from that of the system's original design.

Thanks to the proven combination of drying and energy systems, BÜTTNER'S facilities make an important contribution to efficiency across the entire production process. This allows for a highly feasible and cost-effective utilisation of biomass fuels.

WOOD FLAKES FOR PARTICLE BOARDS

HIGH QUALITY STANDARDS THANKS TO BÜTTNER FLASH TUBE PRE-DRYERS AND DRUM DRYERS

Particle boards have a special place among wood-based materials. They were traditionally, and are still to this day, used to a great extent in furniture production. Chipped waste wood, wood thinnings and recovered wood are the raw materials used to produce particle boards in the wood industry. For particle board production, wood flakes are glued, sorted according to size and then pressed; the larger flakes form the middle layer and fine flakes the hard surface.

A uniform moisture level for the flakes used in production is important for the quality of the particle boards. This is why BÜTTNER'S efficient and high-quality drying systems are in very wide use around the world: our single-pass drum dryers, which are heated directly by flue gas, always ensure that wood flakes have a uniform and optimal moisture content.

BÜTTNER'S various firing systems generate the flue gas used for operating single-pass drum dryers. Wood dust, heavy oil, light oil or natural gas are burned inside special combustion chambers with combination burners or muffle burners. Alternatively, grate firing systems are also employed to burn chipped biomass products such as waste wood, bark or particle board scraps.

Flash tube pre-dryers upstream of drum dryers are used for wood with high moisture content. These dryers dramatically reduce the moisture content of the wood within seconds, before the dried goods reach their final moisture level in the drum dryer.

Steam-heated dryers are preferred when utilised in combination with cogeneration (combined heat and power or CHP). Here either the tube bundle dryers (rotary dryers) or the tube drum dryers are used. Both types of dryers are indirectly heated with turbine exhaust steam and are therefore an excellent complement to a cogeneration system's heat utilisation.

BÜTTNER ensures optimally dried materials for particle board production with smooth interaction between burner system, flash tube pre-dryer and single-pass drum dryer.

Our systems have proven themselves worldwide at countless facilities in the wood industry.

FLAKES FOR THE PRODUCTION OF **WOOD PELLETS**

FUEL PRODUCTION WITH BÜTTNER ENERGY SYSTEMS AND SINGLE-PASS DRUM DRYERS

Wood pellets are popular as fuel for private homes and industrial firing systems. The rod-like pellets are produced mainly out of wood wastes from saw and planing mills, as well as from debarked and shredded logs. BÜTTNER'S drying systems ensure that wood chips are dried efficiently with energy savings in mind and at the required moisture level before they are made into pellets.

Both small and large flakes must have a constant level of moisture before being pressed into the ring die or flat die presses; operations would otherwise be disrupted. For this reason, BÜTTNER provides single-pass drum dryers with a sophisticated control concept: variations in the wood's moisture content are effectively eliminated. With the highest energy and thermal efficiencies available, BÜTTNER'S drying systems are a proven component for optimal product quality.

Single-pass drum dryers generally utilise flue gas from the grate-firing of chipped biomass products such as waste wood or bark. Steam-heated or hot water-heated tube bundle dryers can also be used in combination with cogeneration (combined heat and power or CHP) for the production of pellets.

BÜTTNER supplies both custom-made drying systems for pellet production and compatible energy systems to customers around the world; combining decades of experience with technical innovation.

DRYING OF **BULK SOLIDS**

SINGLE-PASS DRUM DRYERS AND OTHER DRYING SYSTEMS FOR FREE-FLOWING MATERIALS

Free-flowing bulk solids represent very different challenges to the drying process because of their heterogeneous nature. Wood particles, beet pulp and other biomass products are processed differently from fertiliser, soil, fodder or coal.

Based on decades of experience with a variety of materials, BÜTTNER has established a comprehensive spectrum of drying solutions and related thermal energy systems. In addition to a customised drying process for bulk solids, with single-pass drum dryers or tube bundle dryers for example, BÜTTNER also provides solutions to supply the systems with heat when the need arises.

Directly heated single-pass drum dryers lend themselves to drying and conditioning. Flue gas functions as a heating medium and is produced by a variety of firing systems. Special combustion chambers with muffle burners are employed for burning either dust, heavy oil, light oil or natural gas.

Alternatively, grate firing systems are also installed to burn chipped biomass products such as waste wood or bark.

BÜTTNER has developed steam-heated dryers for use with cogeneration systems (CHP). Here, either tube bundle dryers (rotary dryers) or tube drum dryers are up to the task. Both types of dryers are indirectly heated with turbine exhaust steam and thus an excellent complement to a cogeneration system's heat utilisation.

The drying systems developed by BÜTTNER for free-flowing bulk goods are designed, manufactured and installed individually for any industrial requirement.

In this way, each material is dried professionally and efficiently. BÜTTNER'S drying solutions have proven themselves reliable and low-maintenance in global operation.

SUGAR BEET PULP FOR PRODUCTION OF **FODDER**

ANIMAL FODDER FROM SUGAR PRODUCTION – DRIED WITH BÜTTNER'S DRYING SYSTEMS

In Central Europe sugar is generally produced from sugar beet, and in the tropics from sugar cane. After waste materials are dried and made into pellets they serve as energy-rich animal fodder. To this end, BÜTTNER supplies flexible drying and energy systems, which together ensure that the dried pulp has a homogeneous moisture distribution. This is the only way that pellet presses can operate without interruption.

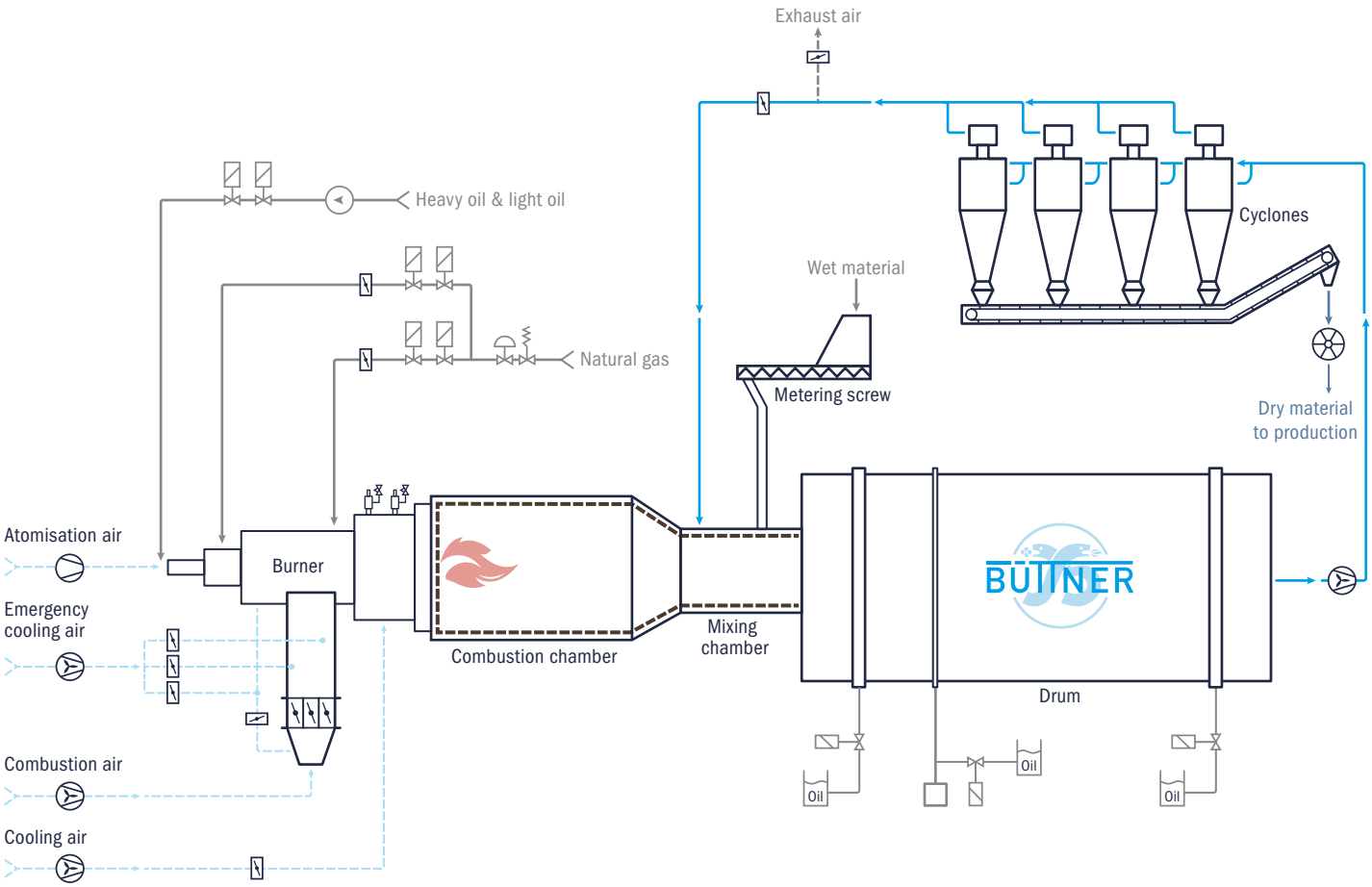
After cleaning, sugar beet is initially shredded for sugar extraction. The sugar is separated from the beet pulp and impurities are removed. The remains are then cleaned, allowed to concentrate and subsequently crystallised. The remaining beet pulp is first dewatered mechanically and goes into the drum dryers, where it is dried within a short time and then sent off to be pressed into pellets.

In this way, high quality animal fodder is produced from sugar production wastes. BÜTTNER makes an important contribution to the process by supplying coordinated dryer and energy systems. By ensuring a homogeneous drying level, the presses are able to operate efficiently and without interruption.

In tropical regions, waste material from the production of sugar cane accumulates and forms bagasse, which is employed as fuel for process heat generation and also as a part of cogeneration (combined heat and power or CHP). Bagasse is dried in drum dryers or flash tube dryers.

BÜTTNER also supplies efficient and robust drying solutions for this process.

SUGAR BEET PULP FOR PRODUCTION OF **FODDER**



DRYING SYSTEMS

Drum dryers, rotary tube bundle dryers and flash tube dryers: Efficient heating technology can be diverse. BÜTTNER offers the best in drying systems for a range of industrial applications.

The directly heated and the indirectly heated drum dryers are primarily suited to drying wood flakes, OSB strands, biomass products, sugar beet cuttings and bulk solids. Bulk solids are also often dried with the tube bundle dryers.

The powerful flash tube dryer is particularly suited to the production of MDF and to the pre-drying of wood chips.

The dryer systems are heated with the appropriate BÜTTNER burner or energy system.

Plant components are planned and designed by BÜTTNER engineers and comply with the highest international standards. The dryer control in combination with burners and energy systems is fully automatic with state-of-the-art switch systems and its own integrated software without interfaces.

Find out more about the BÜTTNER drying systems
on the following pages.

BÜTTNER DIRECTLY HEATED **DRUM DRYERS**

DRYING SYSTEMS FOR FLAKES, OSB-STRANDS AND OTHER BIOMASS ARE EFFICIENT, VERSATILE AND ROBUST

BÜTTNER'S directly heated drum dryers are distinguished by their diverse heating possibilities, efficiency and robustness. This single-pass dryer is used for drying wood chips, OSB strands, beet pulp as well as all types of free-flowing wood material, biomass products and other bulk solids.

Products to be dried enter the rotating single-pass dryer drum through an air-tight rotary valve. The dryer drum is equipped with specific components, depending on the type of product. This results in an increase in surface area and with it an increase in efficiency.

The product is transported slowly through the dryer drum, by the internals of the dryer drum and the flow of the hot gases. Hot gases from the dryer flow around the product in a continuous current, heat it up and remove the moisture.

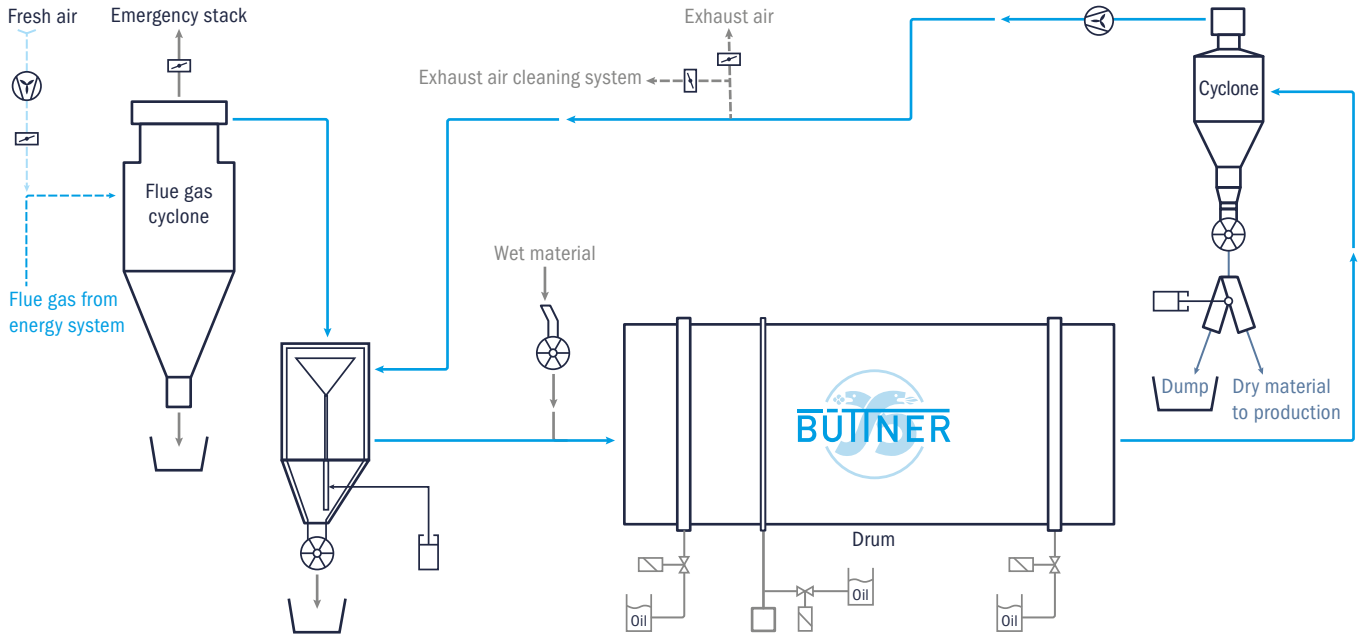
After the product has passed through the dryer drum, cyclones separate it from cooled and moist dryer gases. Dependent on the product and systems involved, mechanical pre-separation with a drop box is also available for use.

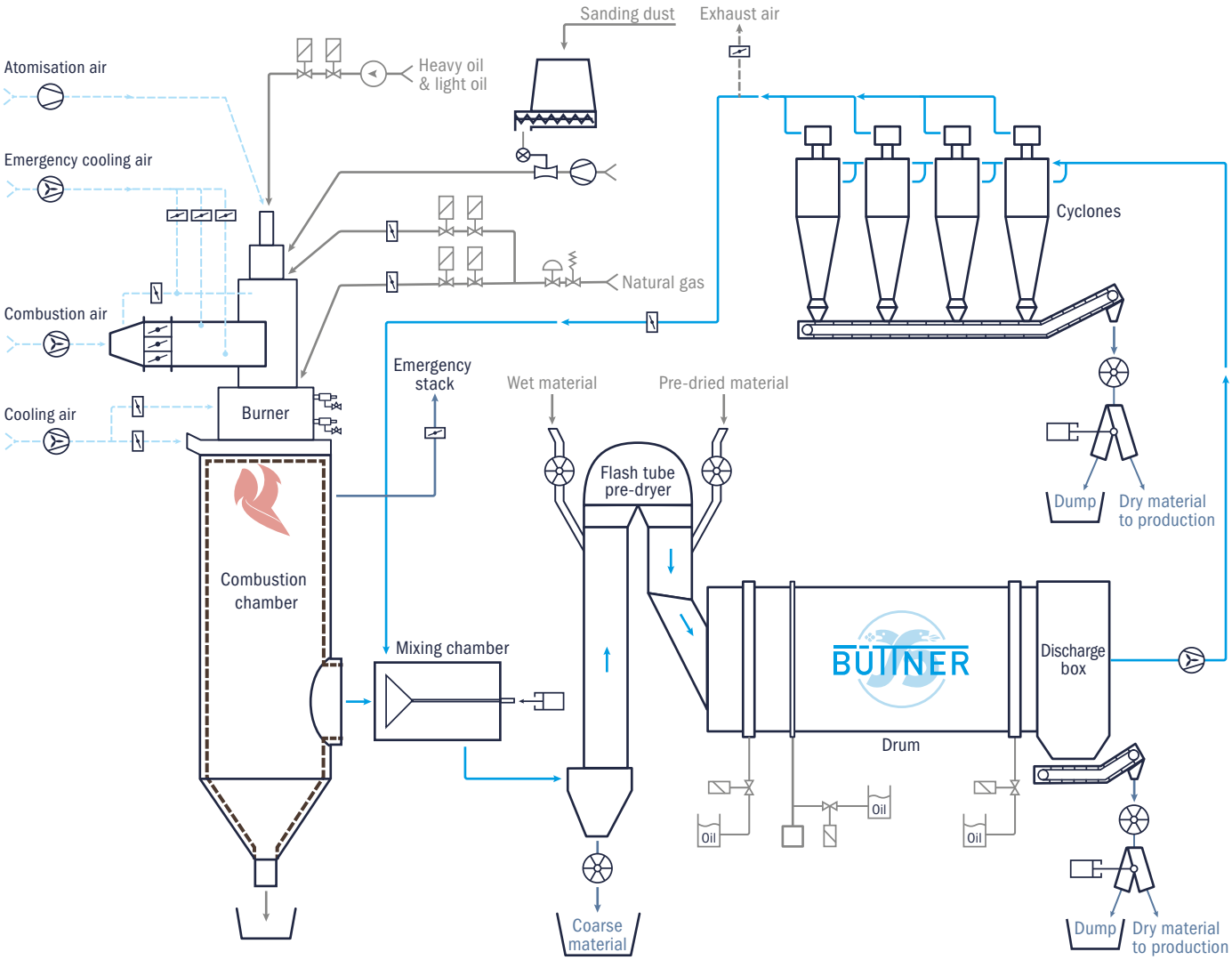
At the end of the process, the dried product is discharged from the drying process through an air-tight rotary valve. To make use of the residual heat, dryer gases are partly recycled back into the mixing chamber. The other part is released as exhaust or sent through filter systems and cleaned.

At a glance:

- Water evaporation capacity of up to 80 t/h, depending on the product
- Heated directly by multi-fuel burners in combustion chambers
- Heated directly by flue gas from energy systems
- Heated directly by exhaust gases from turbines or motors
- Any combination of these heating methods is possible
- For high moisture content levels, a flash tube dryer can be attached to pre-dry and separate coarse materials
- Dust extraction takes place by means of cyclones or exhaust air cleaning systems

BÜTTNER DIRECTLY HEATED **DRUM DRYERS**





BÜTTNER INDIRECTLY HEATED **TUBE DRUM DRYERS**

INDIRECTLY HEATED DRYING SYSTEMS DESIGNED TO WORK WITH COGENERATION SYSTEMS (CHP)

BÜTTNER'S indirectly heated tube drum dryers are specifically designed to work in combination with co-generation systems (CHP). They function as reliable and efficient dryers for wood flakes and other finely dissolved and free-flowing wood material, biomass products and bulk solids.

The product to be dried enters through an air-tight rotary valve and into a rotating single-pass dryer drum with the installed tube bundle. The product then flows through the heated tube bundle, which turns with the drum casing and warms the product. The water contained in a product is then evaporated into the dryer air, which is preheated by heat exchangers.

At the end of the dryer drum, the dried product is separated in a discharge box and discharged through an air-tight rotary valve. Warm and moist dryer air is extracted and dedusted in cyclones or bag filters.

At a glance:

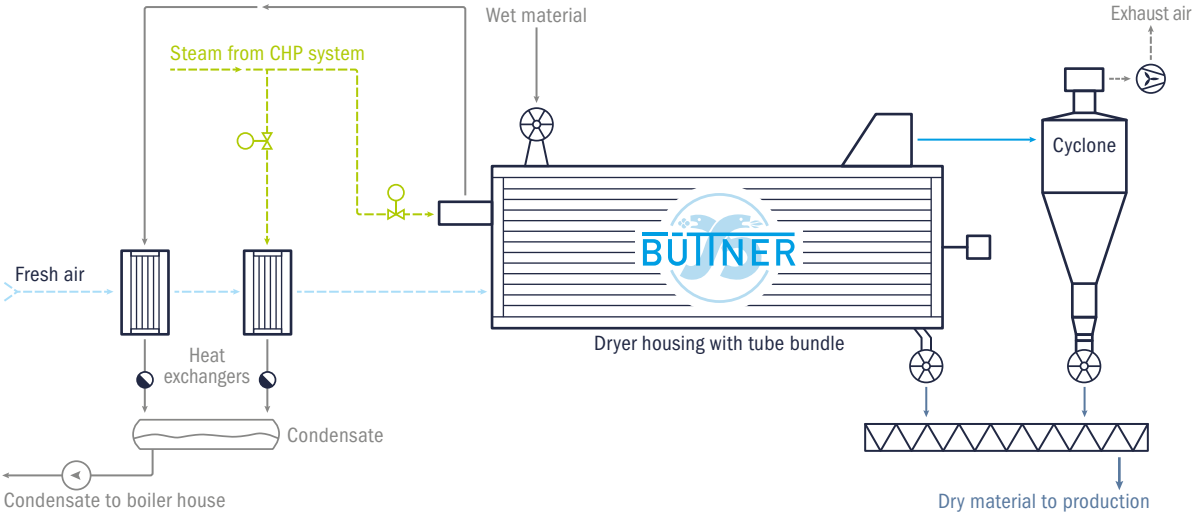
- Water evaporation capacity of up to 25 t/h, depending on the product
- Heated indirectly by steam, hot water or thermal oil
- Application in combination with CHP
- Product separated via discharge box
- Exhaust air filtering by means of cyclones or bag filter

BÜTTNER INDIRECTLY HEATED **ROTARY TUBE BUNDLE DRYERS**

DRYING SYSTEMS FOR FLAKES AND BULK SOLIDS – DESIGNED FOR LOWER CAPACITIES IN COMBINATION WITH CHP

BÜTTNER'S indirectly heated rotary tube bundle dryers are specifically designed to work with co-generation systems (CHP). They provide reliable and efficient drying of wood chips and other free-flowing wood material, biomass products and bulk solids.

The water contained in a product is evaporated into the dryer air, which is preheated by heat exchangers. At the end of the dryer housing the dried product is discharged through an air-tight rotary valve. Warm and moist dryer air is extracted and dedusted in cyclones or bag filters.



The product to be dried enters a stationary casing with a rotating tube bundle through an air-tight rotary valve. Depending on capacity, the dryer can be used as either a single or double rotary bundle dryer.

The product trickles through the heated tube bundle, which turns inside of the dryer housing, and is heated up. Heating medium and product do not come into direct contact.

At a glance:

- Water evaporation capacity of up to 10 t/h, depending on the product
- Heated indirectly by steam, hot water or thermal oil
- Combined application with CHP
- Product discharges directly from the dryer housing
- Exhaust air filtering by means of cyclones or bag filter

BÜTTNER HIGH PERFORMANCE **FLASH TUBE DRYERS**

DRY CHIPS AND FIBRES IN SECONDS – PARTICULARY WITH HIGH MOISTURE CONTENT

BÜTTNER'S flash tube dryers are highly versatile and extremely high performance. They are employed for drying goods with high surface moisture content or a very high specific surface. They serve, for example, to pre-dry wood flakes before the material makes its way into a drum dryer.

Flash tube dryers are also used as lead dryers for the drying of fibres in medium-density fibreboard production. For many years BÜTTNER'S flash tube dryers have successfully been in global operation in a variety of industrial sectors for many years.

Flash tube dryers can be heated in various ways, for example:

- by flue gas from a grate-firing system or combustion chamber
- by BÜTTNER'S gas line burner
- by hot gas from a gas turbine or gas motor
- indirectly through heat exchangers for steam, hot water or thermal oil
- indirectly by means of electric heat exchanger
- by any combination of the heating types mentioned

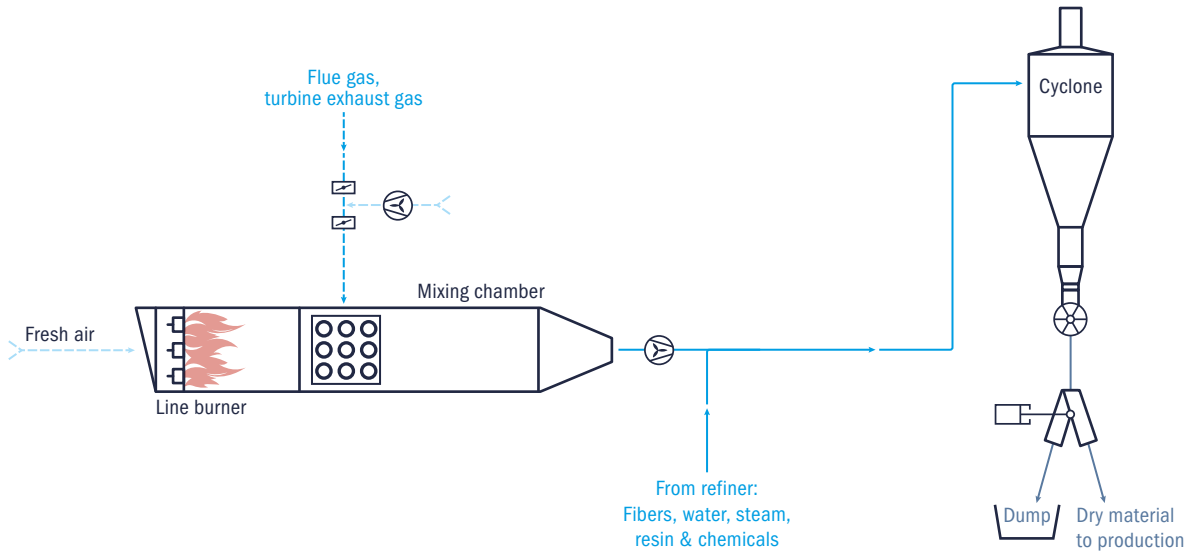
Flash dryers primarily consist of a duct through which heated dryer air flows. The product to be dried is brought into the dryer and conveyed further by the dryer air. Water evaporates in a matter of seconds.

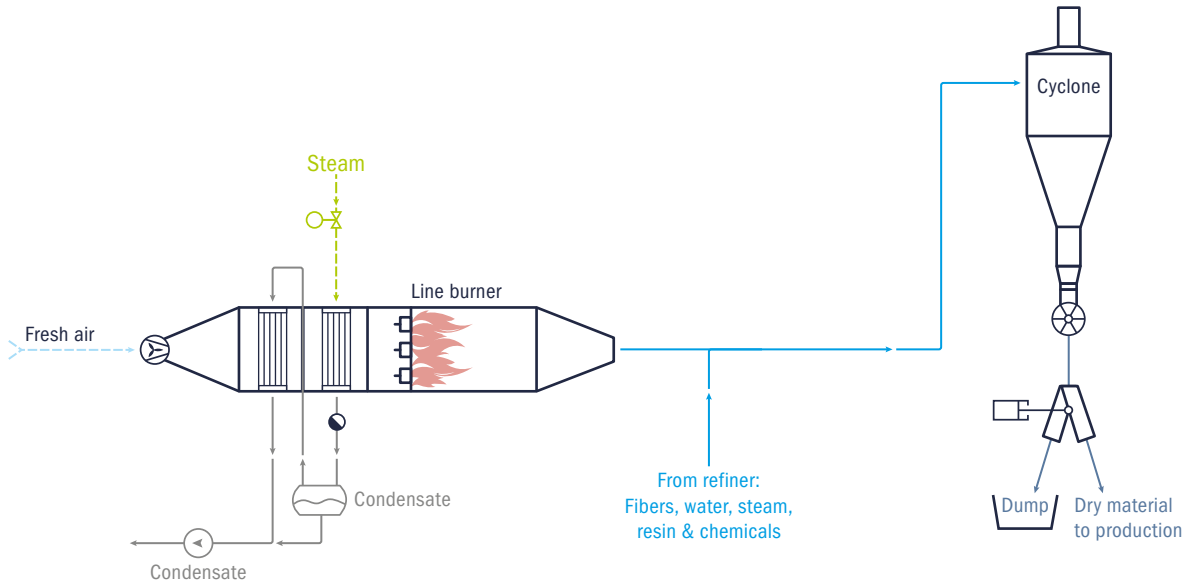
At the end of the flash tube, the material is separated from the air stream by means of cyclones. If the flash tube dryer is utilised as a pre-dryer, the material is fed into the drum dryer at the end of the process.

At a glance:

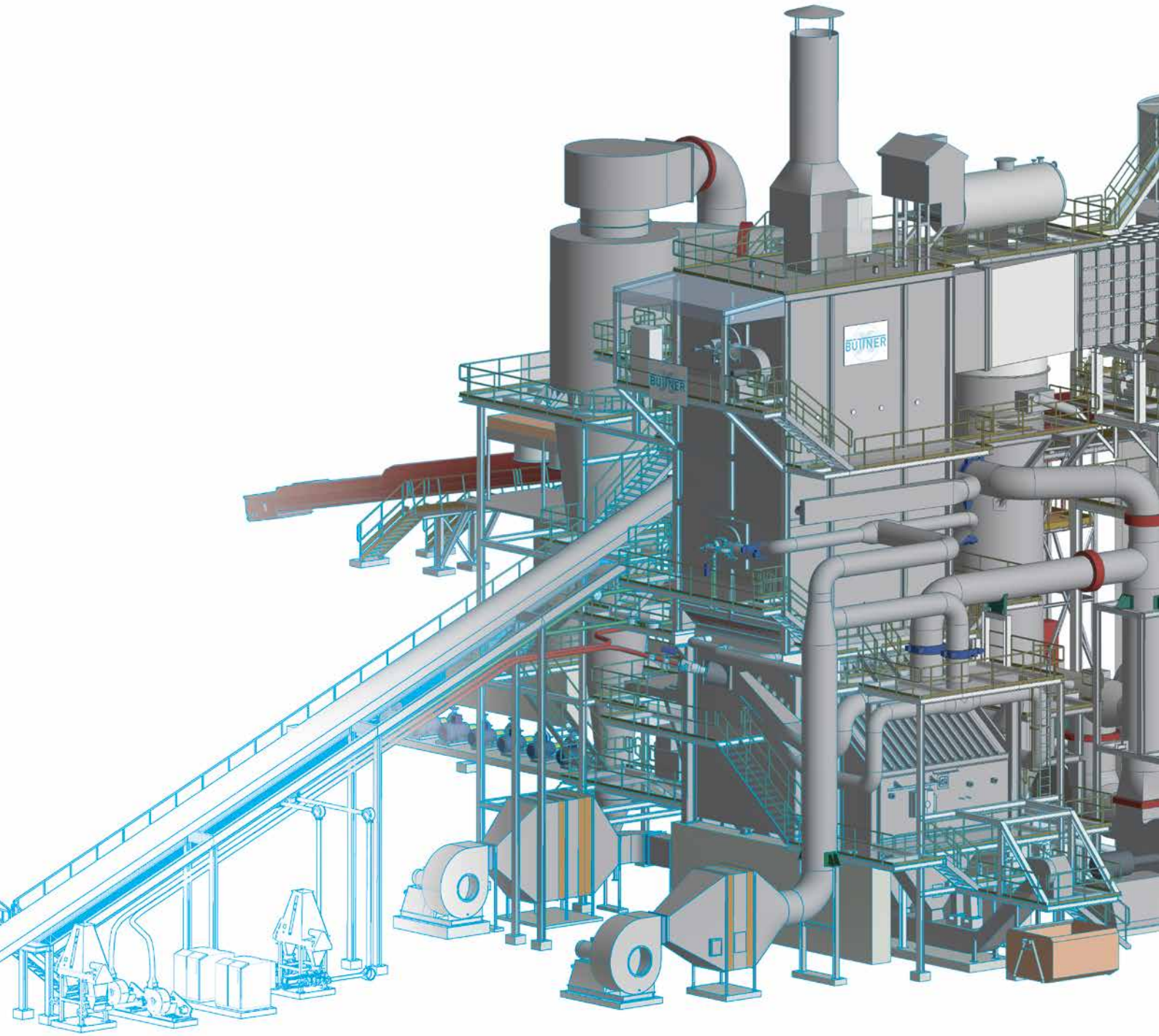
- Water evaporation capacity of more than 70 t/h per unit, depending on the product
- Drying takes place in a few seconds, afterwards the material is separated mechanically or carried through into the attached drum dryer
- Single-stage dryer or two-stage dryer
- Fresh air dryer or dryer with return air operation
- Exhaust air filtering by means of cyclones or exhaust air cleaning systems

BÜTTNER HIGH PERFORMANCE **FLASH TUBE DRYERS**

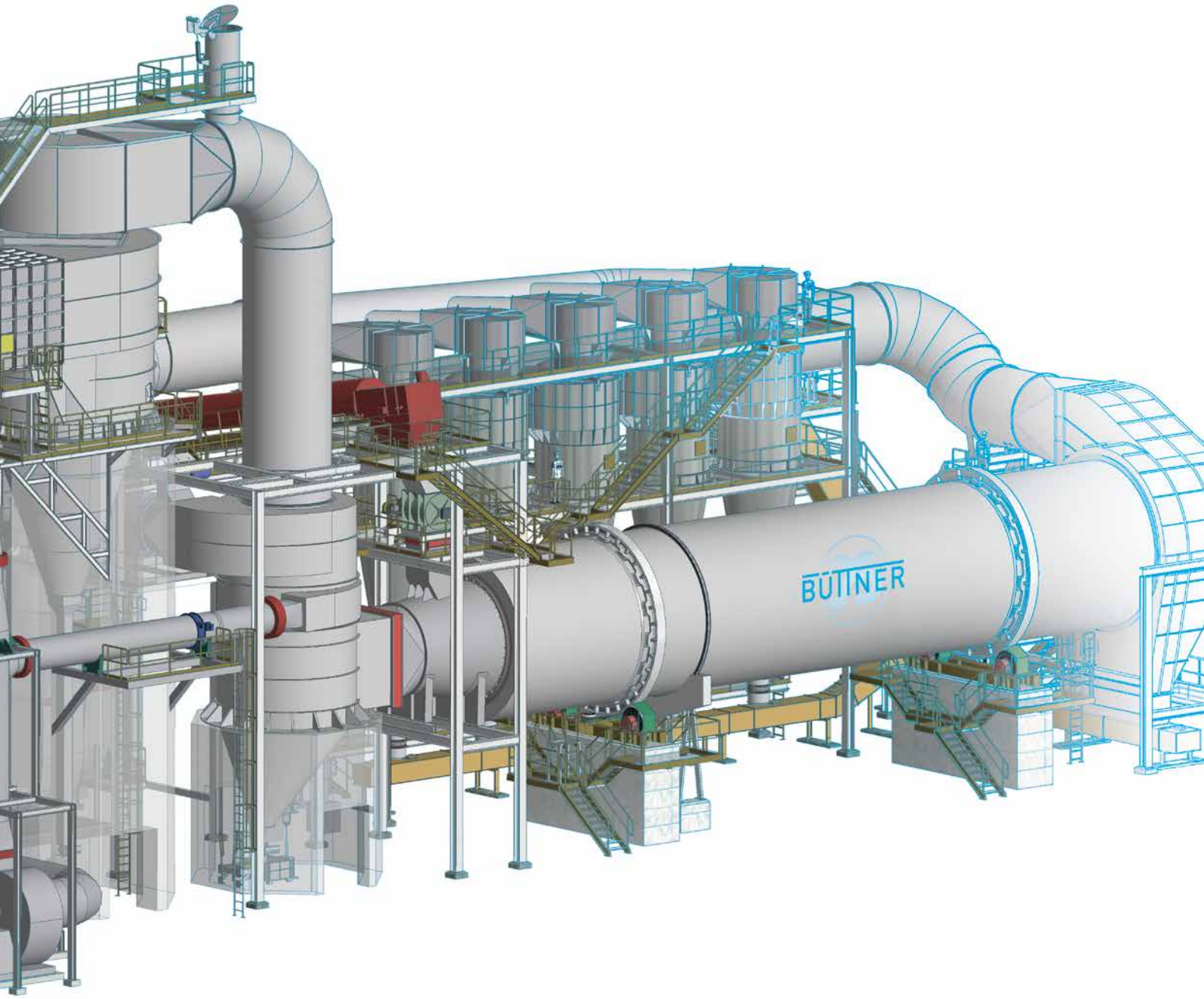


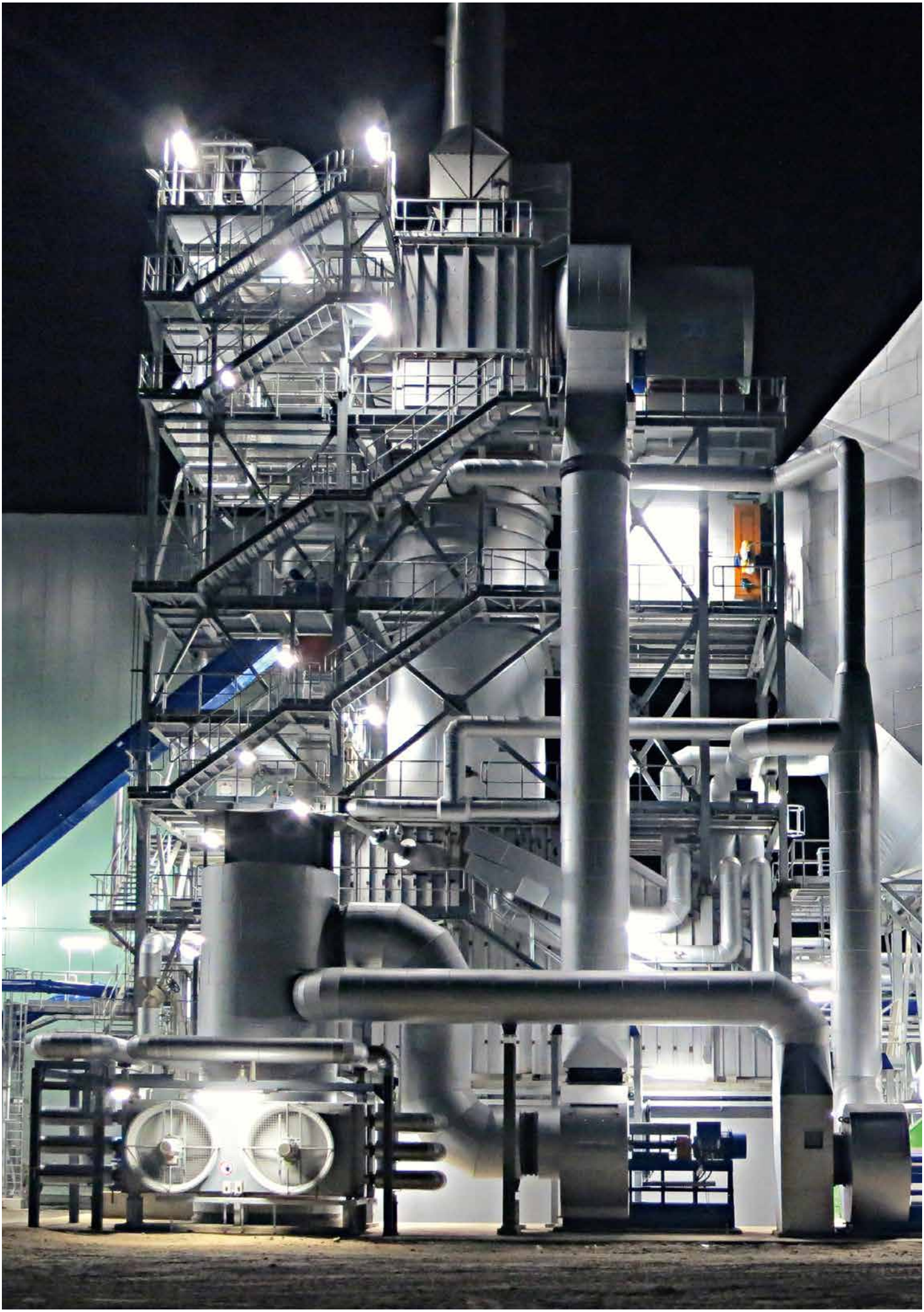


HIGH-EFFICIENCY DRUM DRYER



GRATE FIRING SYSTEM WITH THERMAL OIL HEATER AND DE-ASHING





ENERGY SYSTEMS

The right industrial energy system and technology is vitally important for the processing industry. With the grate-firing system, steam generator and thermal oil heater from BÜTTNER, you are investing in the best in energy technology – depending on whether your aim is to use solid fuel, a range of applications or a wood processing system.

Energy systems with grate-firing can be run with wood, bark, peat, coal or biomass products, for example, while steam generators are operated using thermal oil or flue gas from biomass combustion.

The thermal oil heater primarily provides process heat for the wood processing industry and is heated with flue gas.

Plant components are planned and designed by BÜTTNER engineers and comply with highest international standards.

Control of the energy systems in combination with dryers and burners is fully automatic with state-of-the-art switch plants and its own integrated software without interfaces.

Find out more about the BÜTTNER energy systems
on the following pages.

BÜTTNER **GRATE-FIRING SYSTEMS**

ENERGY SYSTEMS FOR SOLID FUELS: CLEAN, VERSATILE, LOW-MAINTENANCE

Grate-firing systems are used very frequently in processes involving energy generation with solid fuels. BÜTTNER'S grate-firing energy systems are individually customised to the operator's needs and are flexible when it comes to the fuel needed – whether it be waste wood, bark, chips, coal, peat or another type of biomass.

Grate-firing systems from BÜTTNER are made to operate continuously and designed with a fully automatic de-ashing system. They allow for fuels with a very high moisture content of up to 150 % to be burned.

The grate surface is adapted to the volume of the combustion chamber and thus ensures that the flue gas is clean and burnt off. Numerous technical innovations increase the profitability of BÜTTNER'S grate-firing systems. One example is that additional flakes or fibres can be blown into the lower combustion chamber. Sanding dust, gas and oil are burned in the upper part of the chamber.

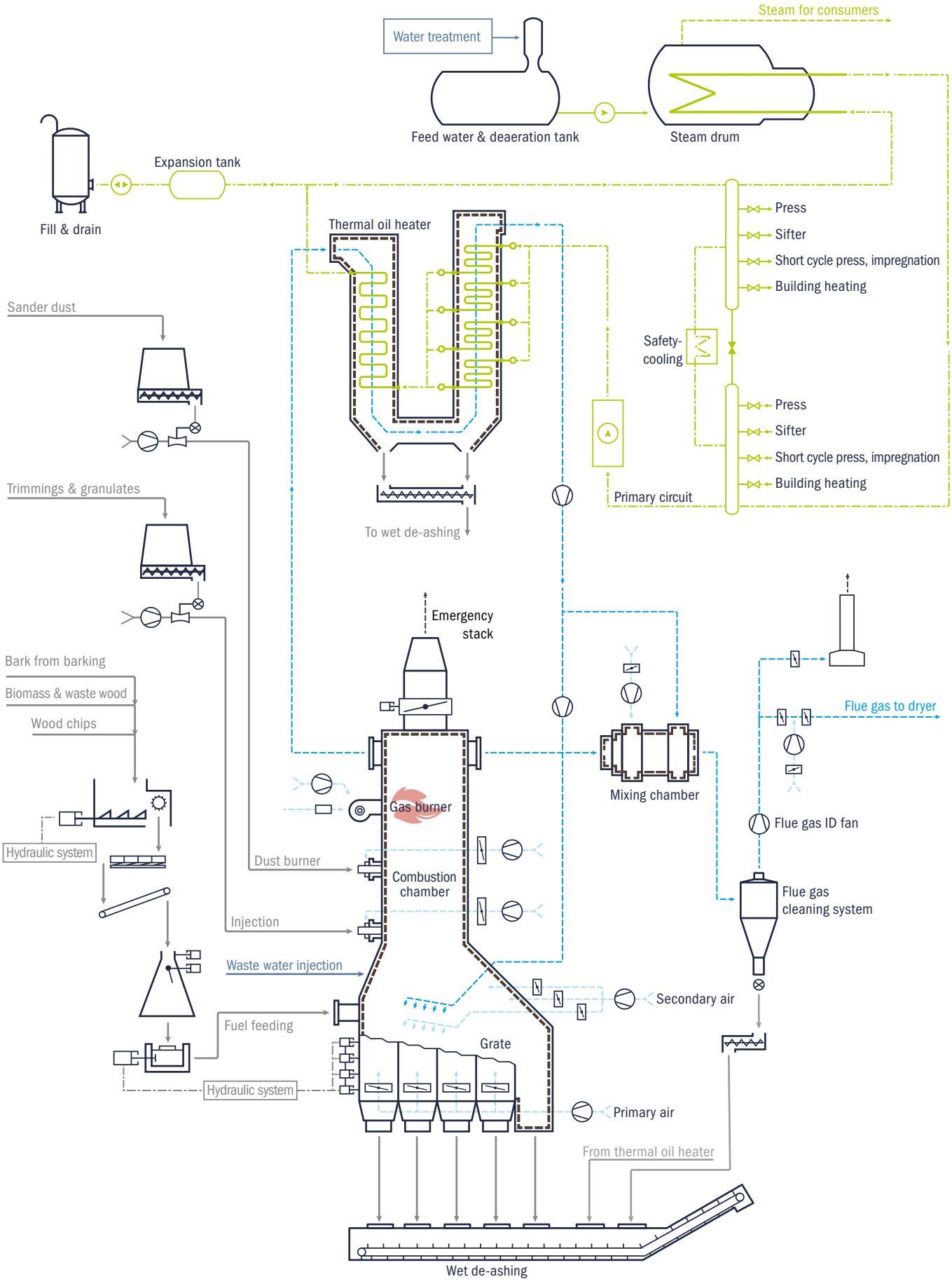
Flue gas from these substances is then utilised to heat thermal oil or generate steam. Thanks to efficient utilization of flue gases in the dryer system, an efficiency level of more than 95 % is attainable in the wood based panel industry.

BÜTTNER'S grate-firing systems are reliable and low-maintenance, which results in a high availability. Our combustion systems operate in every climate of the world and demonstrate their high profitability.

At a glance:

- Fuels with a moisture content level between 20 to 150 % based on bd
- Combustion of waste wood, wooden board wastes (MDF, PB and OSB), bark, wood chips, coal and peat
- Air-cooled step grate sized from 12 to 90 m²
- Firing capacity from 10 to over 100 MW
- Automatic de-ashing system
- Graduated air-inlets
- Low emissions
- Efficiency > 95 %

MDF PROCESS


Steam for consumers
Water treatment
Feed water & deaeration tank
Steam drum
Expansion tank
Fill & drain
Thermal oil heater
Press
Sifter
Short cycle press, impregnation
Building heating
Safety-cooling
Press
Sifter
Short cycle press, impregnation
Building heating
Primary circuit
To wet de-ashing
Sander dust
Trimmings & granulates
Bark from barking
Biomass & waste wood
Wood chips
Hydraulic system
Emergency stack
Gas burner
Mixing chamber
Flue gas to dryer
Flue gas ID fan
Flue gas cleaning system
Dust burner
Combustion chamber
Injection
Waste water injection
Secondary air
Fuel feeding
Grate
Hydraulic system
Primary air
From thermal oil heater
Wet de-ashing

BÜTTNER **STEAM GENERATORS**

PROFITABLE AND SAFE OPERATION WITH EITHER THERMAL OIL OR FLUE GAS

Many branches of industry rely on production methods utilising process steam. BÜTTNER'S steam generators supply steam both indirectly with thermal oil and directly with flue gas produced from biomass combustion – safe, reliable steam for diverse applications, customised to meet the individual needs of each facility.

For the construction of its steam generators, BÜTTNER uses its experience in steam boiler construction established from the end of the 19th century and combines this with modern technology, guaranteeing safe and profitable facility operations.

At a glance:

- Steam capacity of over 40 t/h
- Indirect steam generation with thermal oil
- Direct steam generation with flue gas from biomass combustion
- Defibrators or refiners, wax smelters, sifters and heating for buildings are just some of the applications for steam generators
- Design, construction, assembly and inspection of steam generators in compliance with EN, ASME or GOST norms

BÜTTNER **STEAM GENERATORS**

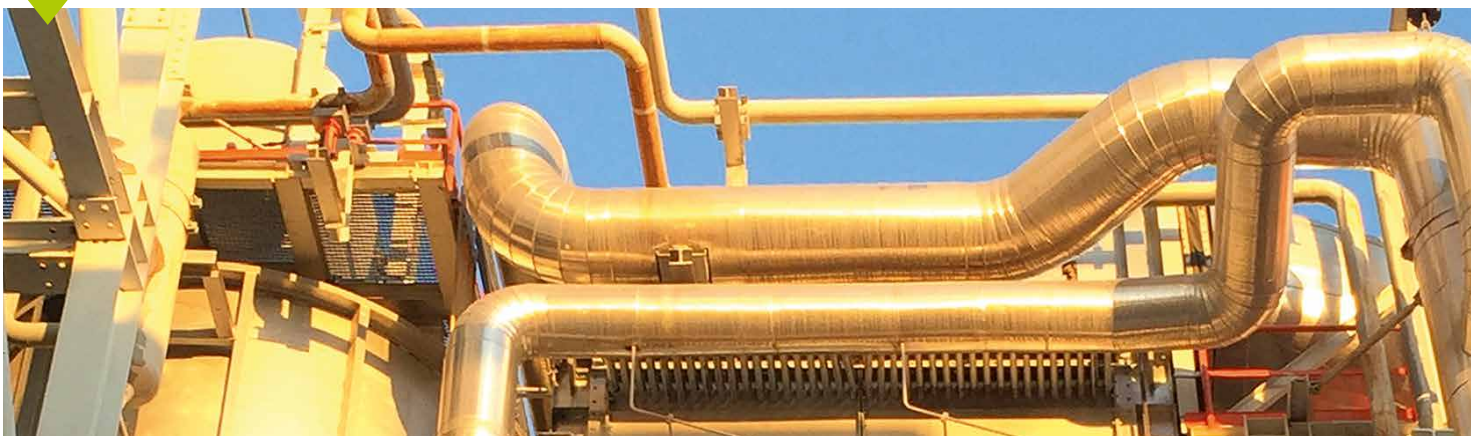
INDIRECT STEAM GENERATOR

For indirect heating, steam is generated with thermal oil. The steam generator consists primarily of a pressure tank with a coil through which the thermal oil flows. The feedwater pump moves feedwater into the pressure tank, where it is heated until it boils and the water-steam mixture is then separated. The separated steam then makes its way to the consumers. Indirect steam generation is utilised for saturated steam.

DIRECT HEATING

For the direct method, steam is produced directly from flue gas combustion. Here the steam generator consists mainly of a preheater (economiser), an evaporator and a steam drum. The feedwater pump carries feedwater through the preheater and into the steam drum. From there the water flows through the downpipes to the evaporator, where part of the feedwater is turned into steam. The water-steam mixture is injected through riser tubes and into the steam drum, where it is separated. Afterwards, the separated steam is sent out to the consumers. The difference in the density between cold and hot water drives the stream of water and steam from the steam drum down to the evaporator and then up to the steam drum again (natural circulation).

BÜTTNER **THERMAL OIL HEATERS**



PROCESS HEAT FOR THE WOOD-PROCESSING INDUSTRY AND OTHER INDUSTRIES

Thermal systems are used in countless production methods and a variety of industries require thermal oil to transport process heat. BÜTTNER'S proven thermal oil heaters are heated with flue gas and operate as a single-pass system.

For thermal oil heaters, the boiler system serves to heat the oil, using the heat generated from the flue gas. The thermal oil, in forced circulation, is directed into the inlet headers on the convection boilers and flows through meandering, curved coils and the adjoining radiation heat exchanger. Sub-flows are brought together again in the outlet header.

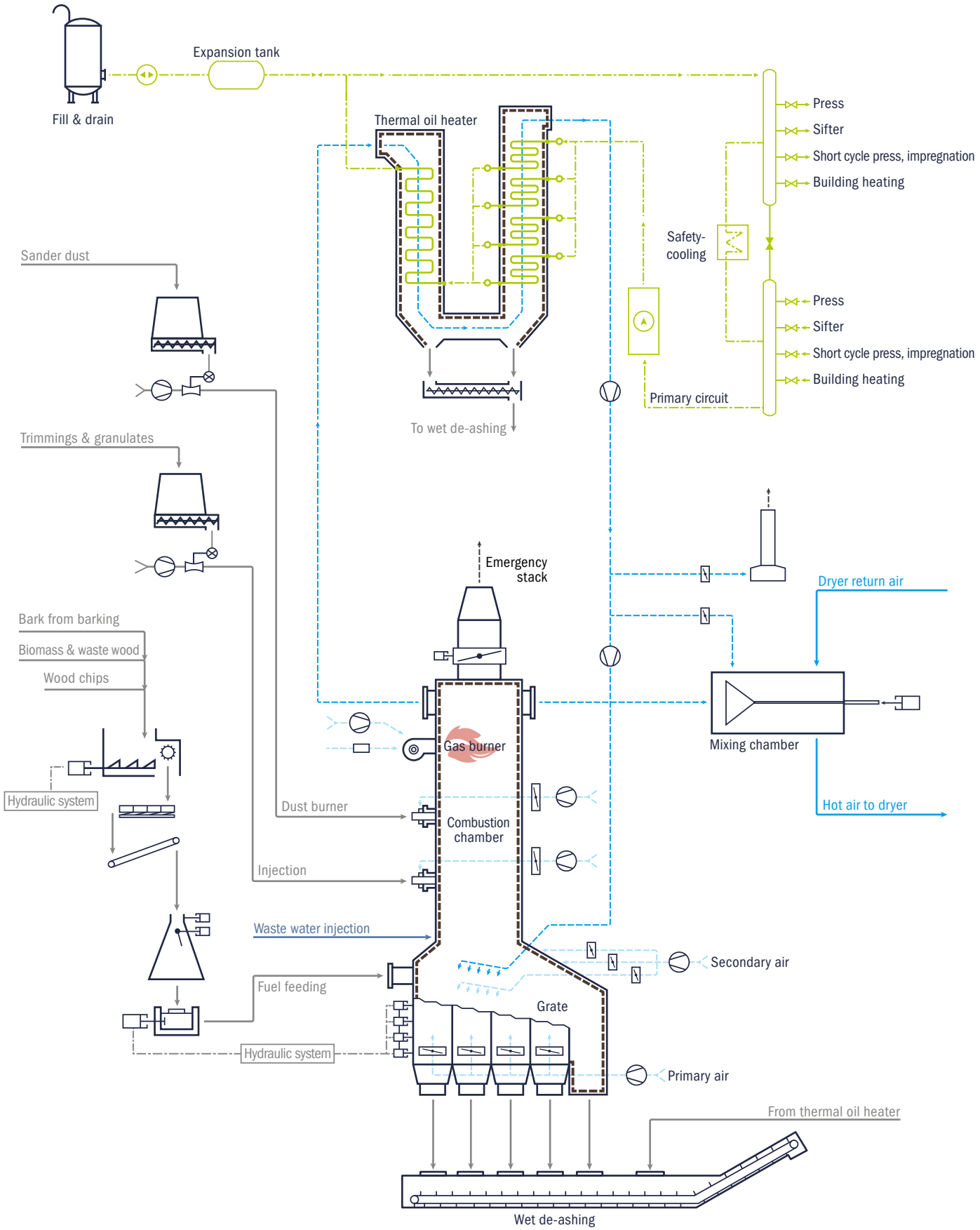
Soot blowers automatically clean deposits from the heater's convection boiler. The cleaning system's deployment and operating frequency is carried out depending on the level of contamination. The entire quantity of flue gas is sucked through the heater by a fan placed behind the convection boiler.

In the thermal oil circulation cycle, multiple temperature gauges and safety switches monitor the oil temperature. The primary cycle pumps keep the quantity of the circulating thermal oil constant in all operating conditions. They carry the thermal oil from the distributor to the heater and then back to the distributor. In case of a power failure, an emergency pump takes over the circulation of the thermal oil and directs it over an emergency cooler.

At a glance:

- Capacities up to more than 40 MW
- Single-pass thermal oil heaters, heated with flue gas
- Robust design with high availability
- Automatic cleaning of convection system with soot blowers (steam or pressurised air)
- Fully automatic de-ashing system

PARTICLE BOARD OR OSB PROCESS



BURNERS

Whether it is the combination burner, multi-fuel burner or line burner: BÜTTNER has the right industry burner for the required industrial process – for the wood-based panel industry, for example, or the sugar industry, pellet industry, cement industry and many other industrial sectors.

The BCB combination burner system burns dust, oil and gas individually or in combination in order to produce flue gas. The multi-fuel burners generally heat drum dryers and energy systems.

When used efficiently, type BLB line burners produce heated gas, which is used to heat drying systems. They are run using natural gas or LPG.

All of BÜTTNER'S burners are extremely robust, safe and low-maintenance.

Components of the plants are planned and designed by BÜTTNER engineers and comply with the highest international quality standards.

Control of the burners is fully automatic, with state-of-the-art switch plants and their integrated software without interfaces.

Find out more about the BÜTTNER burner systems
on the following pages.

BÜTTNER TYPE BCB **MULTI-FUEL BURNERS**

COMBINED OPERATION: COMBUSTION OF DUST, OIL AND GAS

The combination BCB burner system from BÜTTNER functions as a flue gas generator for diverse industrial processes. Multi-fuel burners are commonly used to heat drum dryers.

BÜTTNER'S multi-fuel burners are capable all-rounders and burn sander dust, screen dust and gaseous or liquid fuels.

BÜTTNER'S combination burners make reliable, profitable and low-emission facility operations possible thanks to a flexible combination of combustion methods. BÜTTNER'S burner systems are each specially designed to meet the demands of the individual customer.

BÜTTNER also supplies the type BCB burner system for just one type of fuel (Dust, gas or oil).

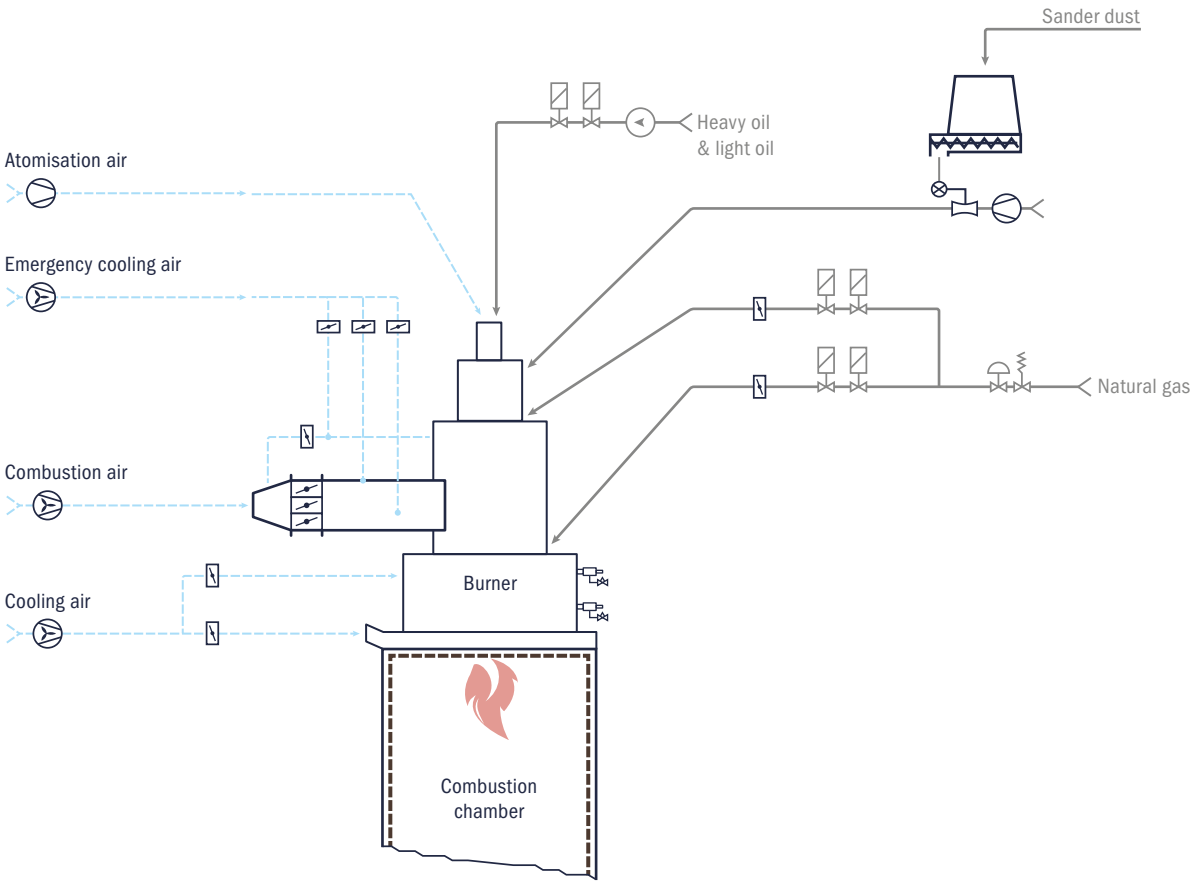
Depending on the design, the burners have a gas train, an oil pump and metering station, as well as a dust metering and conveyor station. The entire operation is fully automatic, including adjustments to the optimal air-fuel ratio, and regulated electronically depending on the load requirement.

The entire system, including all main and auxiliary units and all components for the feeding, regulation, and metering of fuel, meets the most current technical safety requirements. In particular, this concerns the flame monitoring system, which employs type tested UV and IR flame sensors.

At a glance:

- Capacities from 5 MW to more than 80 MW
- Dust fuels: Sander dust, screen dust, coal dust
- Gaseous fuels: Natural gas, Liquid gas LPG
- Liquid fuels: Heavy oil, Light oil
- Turn down ratio up to 1:10
- Low-emission combustion

BÜTTNER TYPE BCB **MULTI-FUEL BURNERS**



THE MECHANICS OF OUR COMBINATION BURNERS

- Ring gap for dust output, an even distribution of dust thanks to BÜTTNER'S patented rectifier unit
- Adjustable swirl air intake – the length and width of the flame can be adjusted depending on dust quality and the dimensions of the combustion chamber
- Dust metering without cleaning interval
- Numerous metering screws for a uniform material discharge
- Gas train and safety systems, completely installed, wired and tested to ensure no leaks are present
- Oil train with pre-heating station, pumping station and metering station

CONTROLLING OUR COMBINATION BURNERS

- The amount of air combustion is measured and given in nm³ (pressure and temperature correction)
- Lambda oxygen sensor (control of combustion air amount according to actual amount of fuel)
- Unlimited number of adjustment curves – to ensure that varying fuels and conditions at the facility can be addressed
- Controlled by means of a PLC with display (no black boxes)
- Minimisation of production downtimes: if dust is unavailable, the burner automatically switches to operate from gas or oil

BÜTTNER TYPE BLB **GAS LINE BURNERS**

HOT GAS GENERATION FOR DIRECTLY HEATED DRYING SYSTEMS

Hot gases are needed for various industrial processes, particularly for the direct heating drying systems. BÜTTNER'S line burners are designed to produce hot gas robustly and efficiently and operate on natural gas. They have proven themselves worldwide in the wood-based panel industry, the cement industry, in mill construction and at many other industrial facilities. BÜTTNER'S line burners are extremely robust, safe and low-maintenance.

BÜTTNER'S line burner, or BLB, consists of so-called ramps, which are assembled from individual modules and pre-installed in a piece of the duct. The ramps, which can be turned on and off individually, are supplied with fuel via sub channels. In this way, control ranges of 1:20 or beyond are possible. The scope of delivery includes the pre-mounted gas train as well as the sub channels with all safety-relevant armatures.

BÜTTNER'S gas line burners are characterised by an especially maintenance-friendly design and low cost replacement parts. The electrodes can be replaced and the flame detectors adjusted from the outside, while mixing plates, nozzles and modules are individually replaceable.

At a glance:

- Output range from 0,8 MW up to more than 48 MW
- Easy to service modular construction
- The burner ramps can be fitted with multiple gas sub channels, which can be shut off individually. This allows for a very broad control range of 1:20
- Very slight pressure loss throughout the burner (approximately 2 mbar) means energy savings of over 50 %
- The mixing device is specially designed to allow for exhaust gas with a very low pollutant level, whilst simultaneously cooling the components effectively
- Very high flame stability
- Vacuum and pressure operation possible
- Ignition takes place electronically for each ramp – a separate ignition torch is not needed
- Flame monitoring by means of a UV flame detector for each ramp

BÜTTNER TYPE BLB **GAS LINE BURNERS**

SERVICES

No matter what requirements you may have, we want to exceed them. Whether you order single components or a turn-key drying plant: We guarantee you a first-class service from the planning to handover and professional customer support.

We guarantee you fast and easy processing for the total life time of your plant. Worldwide.

Our commitment and quality awareness strengthen our long-standing customer relationships.

Find out more about the BÜTTNER service features
on the following pages.

INSTALLATION AND COMMISSIONING

OUR ENGINEERS – ACTIVE WORLDWIDE IN THE ASSEMBLY OF DRYING AND ENERGY SYSTEMS

Drying systems and energy systems from BÜTTNER are delivered in individual parts or assembly groups and are later installed on site and commissioned.

Because the quality of these operations is important for the functionality and performance of the facility, we have our own installation supervisors and engineers for the assembly and commissioning. They assemble the facility in accordance with the contract and bring it into operation on time.

Together with customer's future operating personnel, the facility is started up and further optimised. During this time, the customer's personnel are trained at the location. At the end of the process the final acceptance test is carried out, which demonstrates the contractually agreed characteristics of the facility.

BÜTTNER also offers a full installation service with experienced specialists.

INSPECTION AND MODERNISATION

PROTECT YOUR INVESTMENT WITH LONG-TERM SAFEGUARDS FOR SYSTEM QUALITY

BÜTTNER'S drying systems and energy systems are incredibly durable investments that simultaneously operate in a high-load environment. They are designed to operate for decades and to run reliably on a permanent basis over this time.

To keep our systems running reliably and at the highest efficiency, even after a long time in operation, they must be maintained. Our experts take a closer look at the systems and make recommendations in terms of wear and tear and other damage and suggest possible modernisations.

Modernisation work and modifications always have to conform to the existing infrastructure and space available. For this reason, the company conducting the inspections requires a great deal of practical experience and know-how.

BÜTTNER has been producing steam boilers and drying systems since the 19th century and combines expertise gained from this long tradition with technical innovation.

For this reason, we don't just offer inspections and modernisation measures for our own systems, but for other company's fabrications as well. For this task in particular, BÜTTNER views the interaction between energy systems and dryers as a systems solution.

SPARE PARTS

BÜTTNER COMBINES YEARS OF TECHNICAL EXPERTISE IN FACILITY CONSTRUCTION WITH A HIGH LEVEL OF INNOVATION

This has allowed us to develop our know-how, which allows us to offer service and replacement parts for drying and energy systems, even for those of other manufacturers.

We supply spare parts globally for our own machines and facilities. We also supply spare parts for the dryer, burner and energy systems of other suppliers.

We provide spare parts, particularly for equipment supplied by the following companies:

- Babcock BSH
- Bison
- Fläkt
- Metso
- Overhoff & Altmeyer
- Pesch
- Sunds Defibrator
- Texpan
- Valmet

CONTACT US:

- **service@buettner-energy-dryer.com**

BÜTTNER Energie- und Trocknungstechnik GmbH
Siempelkampstraße 75
D-47803 Krefeld
Phone +49 2151 448-0
Fax +49 2151 448-310

Branch office Hanover:
BÜTTNER Energie- und Trocknungstechnik GmbH
Lohweg 8
D-30559 Hannover
Phone +49 511 58979-0
Fax +49 511 58979-377

BÜTTNER Energie- und Trocknungstechnik GmbH

Siempelkampstraße 75
D-47803 Krefeld
Phone +49 2151 448-0
Fax +49 2151 448-310
info@buettner-energy-dryer.com

Branch office Hanover:
Lohweg 8
D-30559 Hannover
Phone +49 511 58979-0
Fax +49 511 58979-377
info@buettner-energy-dryer.com

www.buettner-energy-dryer.com