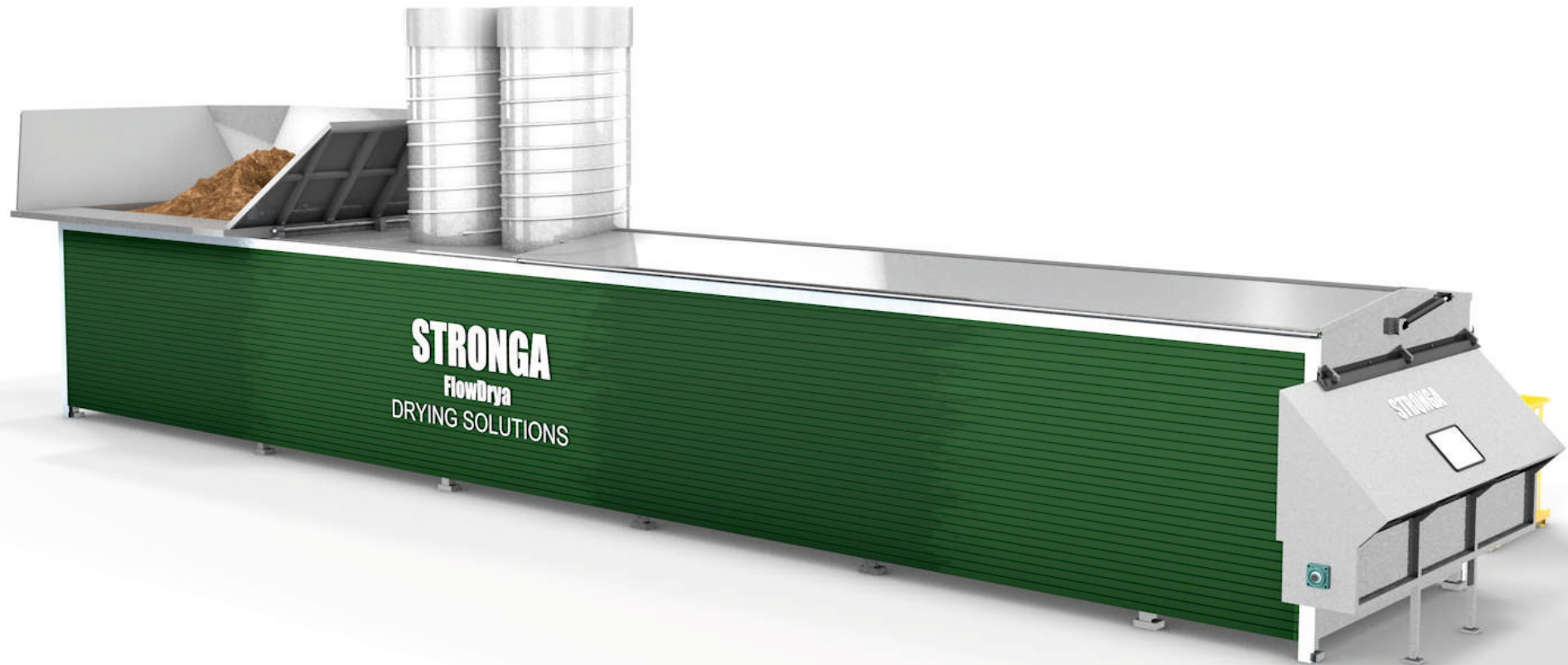


FlowDrya

www.stronga.com

STRONGA





GO WITH THE FLOW

To make the most of your spare residual heat, you need a dryer that leads the way in versatility, Durability and ease of operation. With the Stronga FlowDrya range, you can go with the flow and stay productive, all the time.

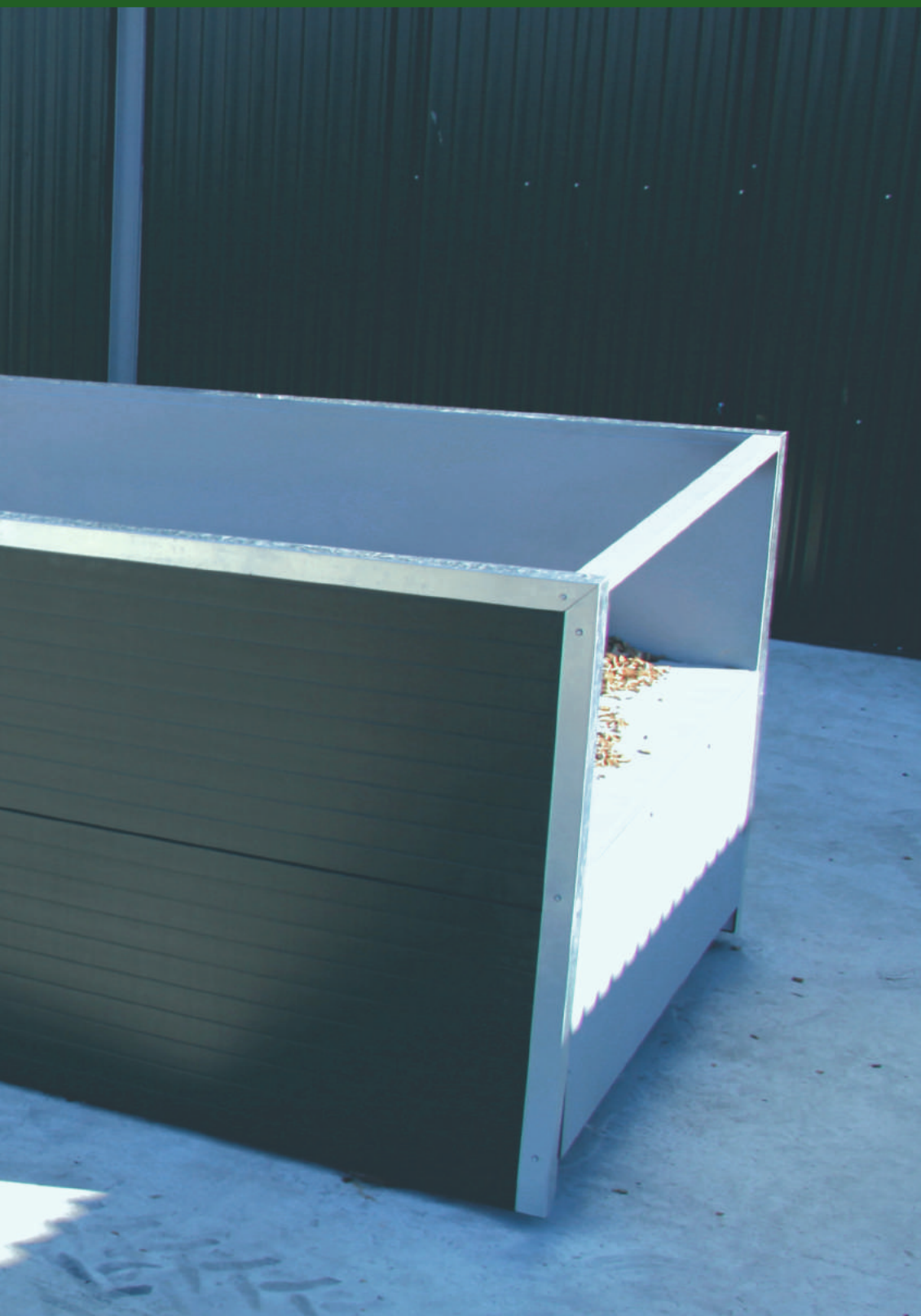


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STRONGA DRYING SOLUTIONS

Stronga are leading advisers, designers, manufacturers and installers of high performance drying systems which match the clients' wide range of wet materials and energy availability. With many years experience, Stronga drying technologies have developed a reputation for quality, reliability and versatility.

Our skilled technicians have developed a wealth of knowledge about drying performance from testing our technologies with various materials. Our technical team use their expertise to build client relationships, leading to designs which maximise system and thermal efficiencies to transform saturated waste into saleable food, fuel or fertiliser.



Food



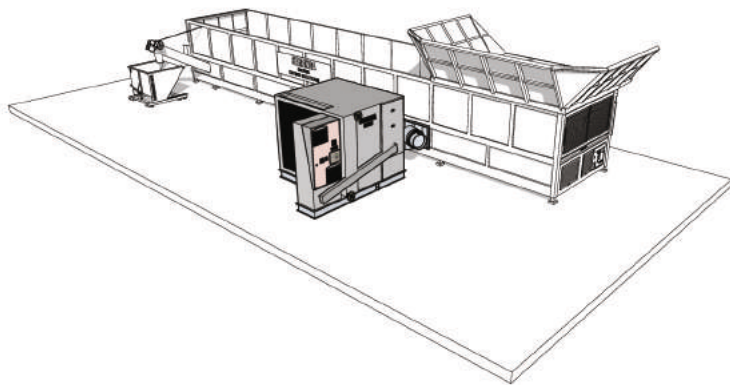
Fuel



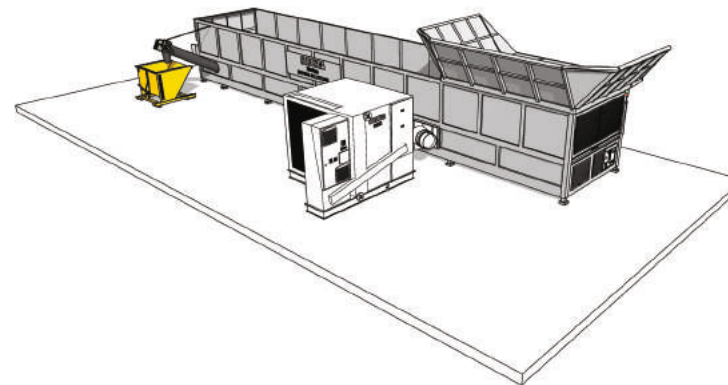
Fertiliser

Our approach of matching modular equipment to the specific needs of the client delivers the most efficient whole system drying solution. Our expert technical team work directly with the client to specify the whole drying system to match the clients' heat source and energy availability. There are 2 primary components of the drying system:

Heatex – Air control module



FlowDrya – All-in-one dryer



Stronga is committed to keeping you up and running. That's why our drying technologies are quality-built, state-of-the-art and efficient. Our team require certain information to allow us to advise clients on drying efficiency. We work with all boiler manufacturers and CHP installers to deliver the most financially and thermally efficient solution.

RENEWABLE HEAT INCENTIVE (RHI)

Stronga FlowDrya is fully compatible for use with the UK Government's Renewable Heat Incentive (RHI) scheme. Our friendly and professional team support clients with the RHI application process by connecting them with our network of technical advisers. We can provide clients with accurate layout drawings, technical data, financial projections and thermal calculations.

Our team are happy to discuss how to add value while optimising waste heat utilisation using the FlowDrya module. We can assist in estimating potential financial income from the RHI scheme as part of an overall investment calculation.



Renewable Heat Incentive (RHI)

Stronga FlowDrya offers clients the opportunity to efficiently convert residual heat into added value. Directing spare residual heat through wet materials in our dryer allows clients to contribute to environmental sustainability while enjoying the substantial financial incentives offered by the UK government.

Stronga highly recommend that clients in the following sectors consider our all-in-one flow drying technologies to add value while optimising waste heat utilisation.

- Anaerobic Digestion (AD) plants or any Combined Heat and Power (CHP) plants that have spare residual heat.
- Gasification CHP plants requiring consistent quality dried fuel.
- Sawmills with saturated wood chip for conversion into dry renewable bio fuel.
- Waste companies who can convert waste streams to valuable renewable fuel supplies.
- Estates with available forestry or timber to be chipped, dried and sold as renewable biomass boiler fuel.
- Bio fuel suppliers growing their business by extending their ability to reliably supply dry wood chip to the biomass market.
- Clients with under-utilised biomass boilers who can use the spare capacity to create dry renewable bio fuel.
- Clients with waste wood who can increase their financial income working as a dry wood chip fuel supplier.



HEATEX AIR CONTROL MODULE

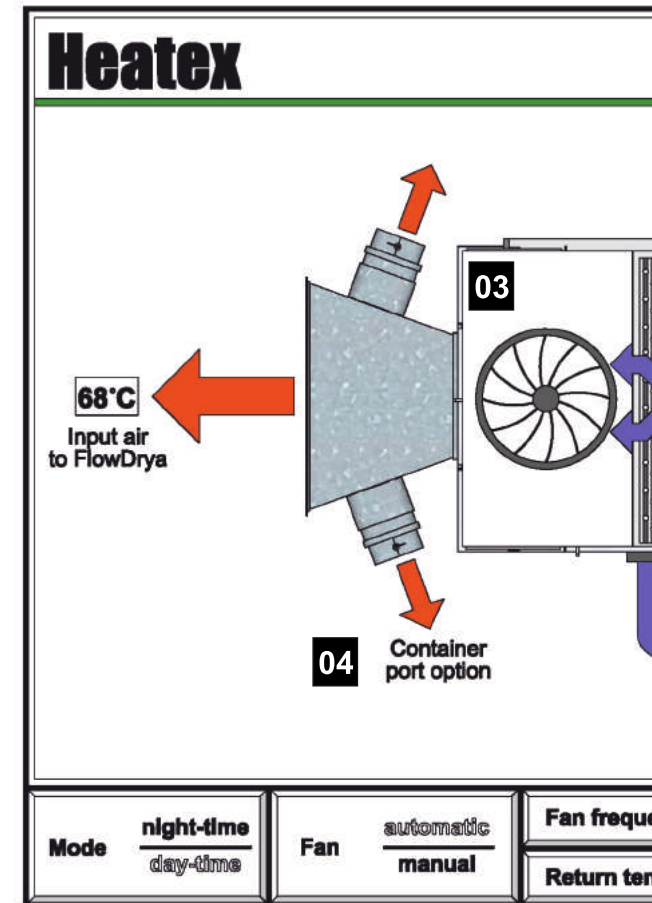
A vital component of Stronga drying solutions is the design of the Heatex air control technology module. While external weather can affect the drying performance, it is important to understand that it is the air quality that does the drying in the end (temperature and relative humidity).

Heatex air control modules are individually designed to optimise drying air performance via optimal air temperature, airflow and air pressure from the energy available. Proven Heatex modules consist of low energy fans and thermally efficient heat exchangers to maximise energy efficiency and optimise the FlowDrya evaporative drying process.

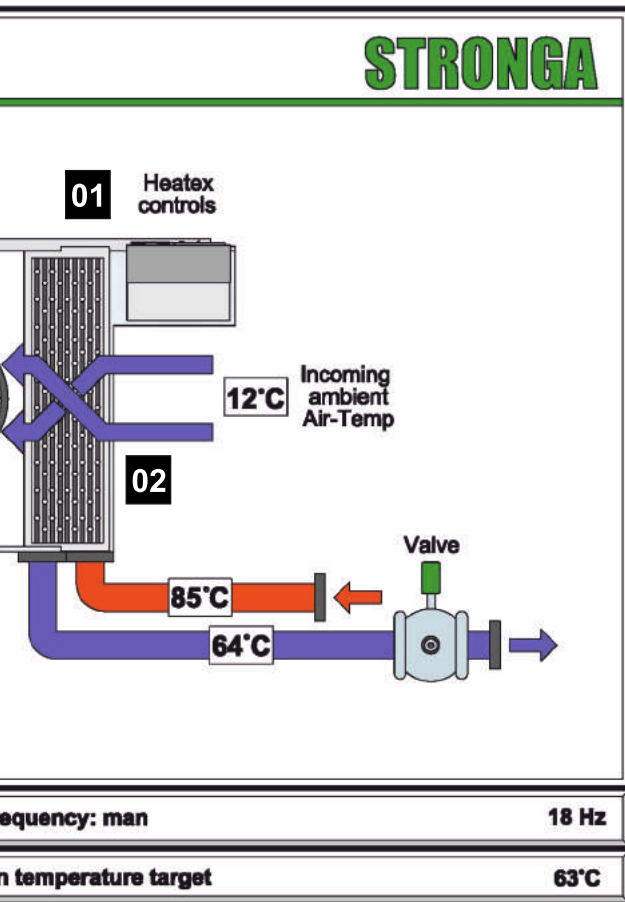
The air control technology module can be individually specified, designed and configured to suit the client's unique site requirements.



HEATEX PROCESS DIAGRAM



- 01** Easy-to-operate Heatex control functions allow the operator to adjust the air control settings to suit a wide range of materials.
- 02** Variable incoming ambient air flows directly through the reliable and proven heat exchanger, efficiently bringing the air to the required drying temperature.

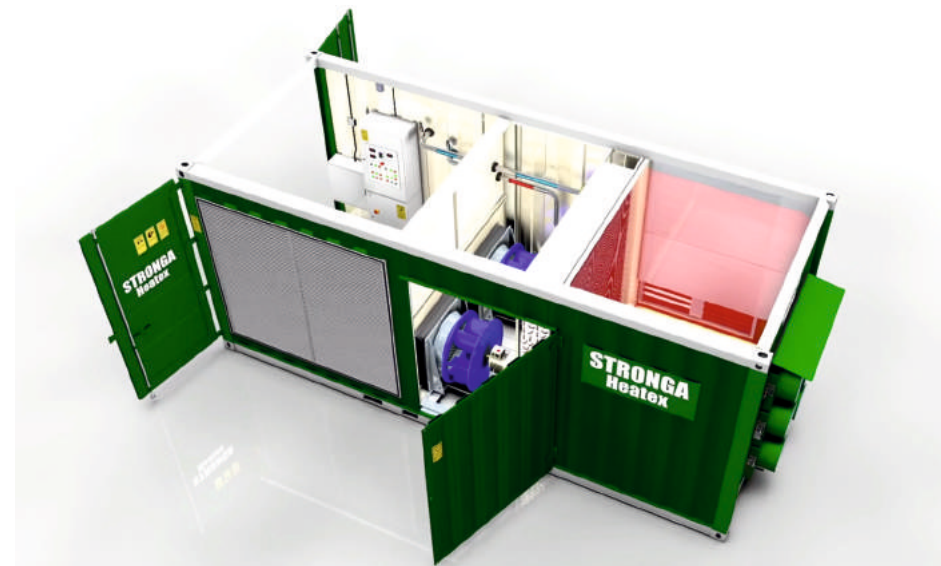


HEATEX SMART AIR CONTROL

Easy-to-operate Heatex modules deliver instant visual control over several important drying parameters via the reliable, high performance and intelligent Programmable Logic Controller (PLC) system.

Discover the key PLC smart control parameters:

- Easy-to-operate Heatex diagram home display screen showing the key air control functions.
- Manual / Automatic operation modes. In automatic mode, Heatex actively communicates with FlowDrya via accurate sensors to control the drying parameters.
- Air temperature sensor (ATS). The ATS is connected to the fan speed controller to optimise the airflow temperature, ensuring a high process drying quality.
- Heatex relative humidity sensor (RHS).
- Return water temperature (option).



03 Special curved fan design scoops the warm drying quality airflow, directing it straight into the FlowDrya sub-floor air plenum.

04 Optional extra container ports can be fitted to the Heatex air control module to allow the operator to increase drying capacities and process multiple materials simultaneously.

ALL-IN-ONE FLOWDRYA

Stronga FlowDrya is designed for optimum efficiency and performance, offering great value in the form of lowest cost per tonne dried. The all-in-one system ensures excellent drying versatility, extending the client's ability to dry a range of wet materials.

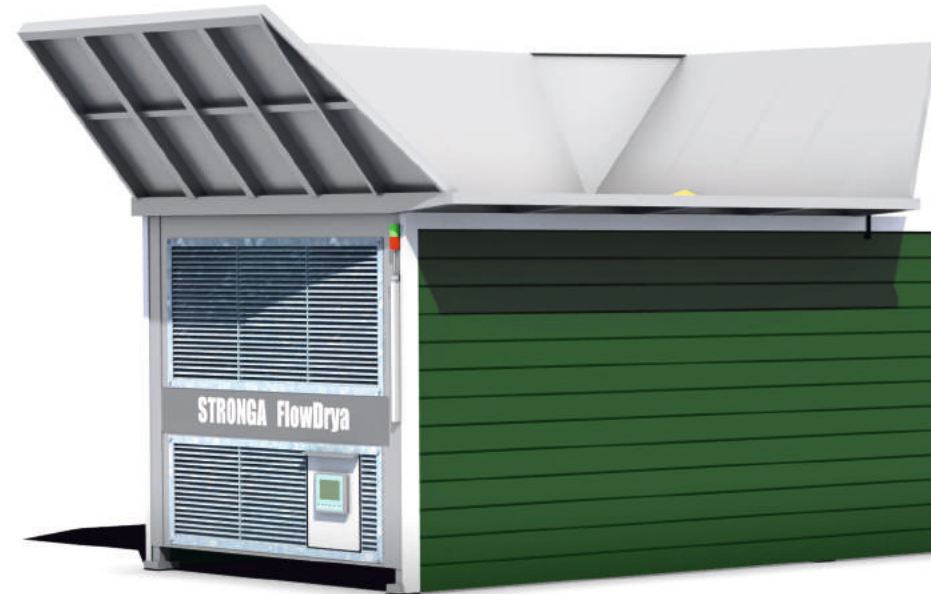
Our environmentally-sustainable designs maximise system and thermal efficiencies to transform saturated products into food, fuel or fertiliser. Now is a great time to add value by drying products while enjoying the RHI income from the UK government.

SIMPLICITY IS PARAMOUNT

FlowDrya positively moves wet materials from a hopper, along a hydraulic-powered moving drying bed, and over a variable flow of temperature-controlled air which is fed from the Heatex air control module. The material drying process is incredibly simple, always reliable and powerfully effective.



No belts, chains or sprockets





VERSATILE DRYING TECHNOLOGY

Stronga FlowDrya has unlimited drying possibilities, leading to long term financial profitability and productivity. FlowDrya users are now drying a whole range of materials.

Woodchip, wood shavings, sawdust, bark, cereals, fruits, nuts, separated and raw digestate, compost, poultry manure, sewage sludge RDF, paper pulp, organic fraction waste and much, much more.

Imagine the drying possibilities for your business.



Wood shavings



Woodchip



Digestate



RDF

Send us a sample of your material and we can test it with regards to its drying qualifications.



Direct UK sales

FLOWDRYA HIGHLIGHTS & BENEFITS

01 FLARED WET MATERIAL HOPPER

The high capacity flared hopper is designed with smooth sloping sides to funnel materials onto the drying bed, allowing increased periods between loading.

02 PRE-HEATING AGITATION CHAMBER

The flared wet material hopper begins the drying process by pre-heating and agitating wet materials before they reach the moving drying bed.

03 DRYSTATION™ - SMART CONTROL CONSOLE

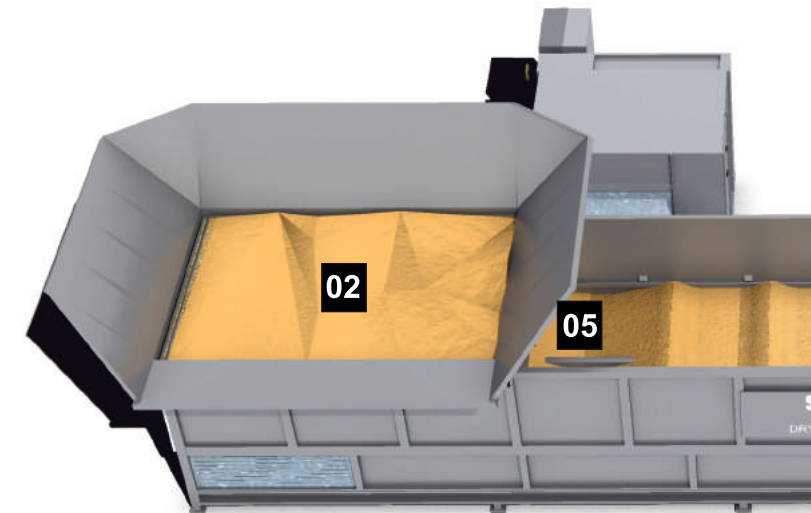
Robust, programmable and easy-touch DryStation™ display functions offer enhanced operator command control for efficient and reliable drying control.

04 VISUAL ANDON STATUS DISPLAY

Visual Andon operation status display allows the operator to readily view the machine working status from distance.

05 ADJUSTABLE DEPTH CONTROL WEIR GATE

Easily adjustable depth control weir gate allows operators to manage the material flow depth according to the density and composition of the wet material.





FLOWDRYA HIGHLIGHTS & BENEFITS

06 HEATEX AIR CONTROL MODULE

Heatex air control modules feature low energy fans and thermally efficient heat exchangers to maximise energy efficiency and optimise evaporative drying.

07 PULSEWAVE™ MOVING DRYING BED

Efficient ventilated moving drying bed evenly distributes hot Heatex airflow through wet materials for a consistently uniform dry output.

08 SUB-FLOOR AIR PLENUM & FINES CHAMBER

The moving sub-floor acts as a natural 'mini-screen', removing heavy fines as they fall through the overlying perforated floor.

09 FINES REMOVAL RAISING AUGER

The reliable fines removal raising auger discharges heavy materials like dirt and sand from the sub-floor into an external container or bunker.

10 DRY MATERIAL DISCHARGE

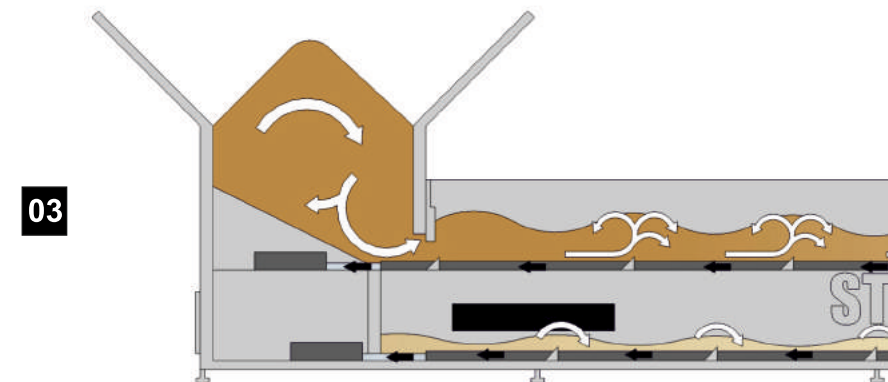
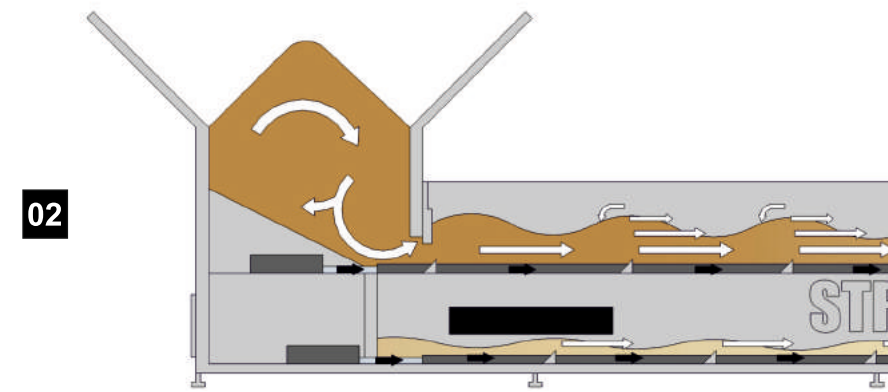
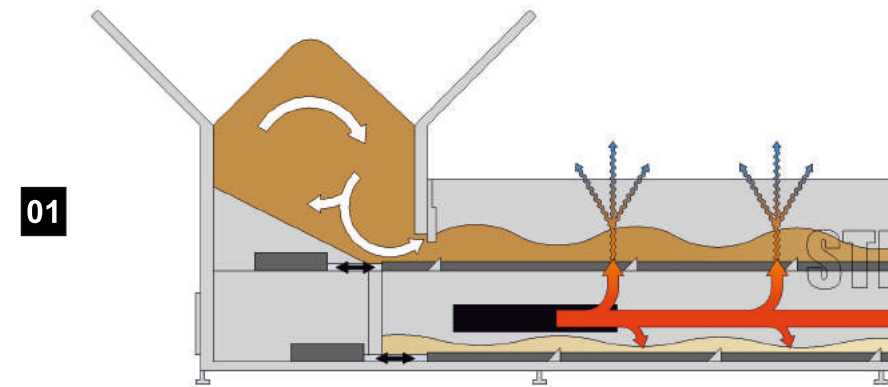
Optional onward discharge loading conveyors automatically transfer dry output from the end of the drying bed to dry material storage bunkers.

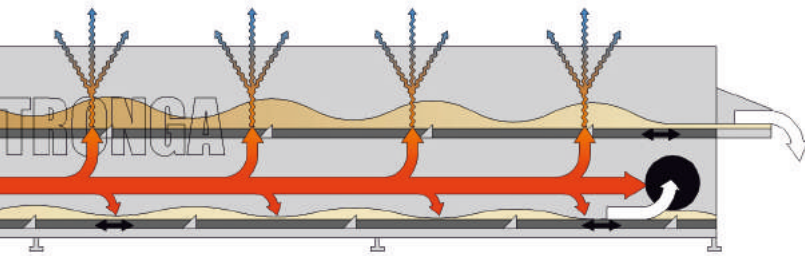
AIRFLOW PROCESS

The injection of high quality air through the wet materials as they pulse along the drying bed optimises the evaporative drying process to reduce moisture content to a desired level.

01 EFFICIENCY IN FULL FLOW

1. High quality drying airflow is controlled by the attached Heatex air control module.
2. Warm Heatex air flows into the FlowDrya sub-floor plenum and fluxes in every direction, interacting with heavy fines and the steel infrastructure. Hot steel transfers thermal energy directly into materials to supplement the drying process.
3. Warm air rises through the upper ventilated moving bed to diffuse through the wet materials and induce evaporative drying. Full length diffusion delivers an even distribution of airflow along the drying bed.
4. Exiting exhaust airflow is dissipated into the atmosphere via roof and flue arrangements or can be further processed using FlowFilta technology. Contact us to find out more about FlowFilta.

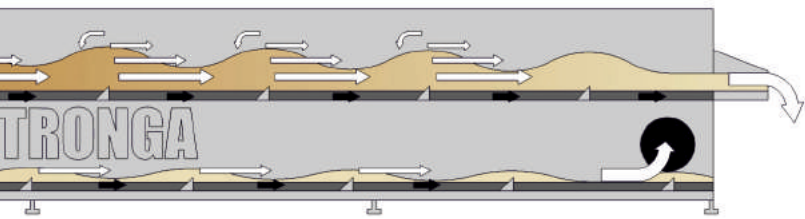




PULSEWAVE™ MIXING MOTION

Highly efficient PulseWave™ thoroughly mixes and tumbles materials on the drying bed. PulseWave™ ensures that every part of the material interacts with hot bed metal during the flow and receives an equal airflow, leading to uniformity of product dryness.

GO WITH THE FLOW

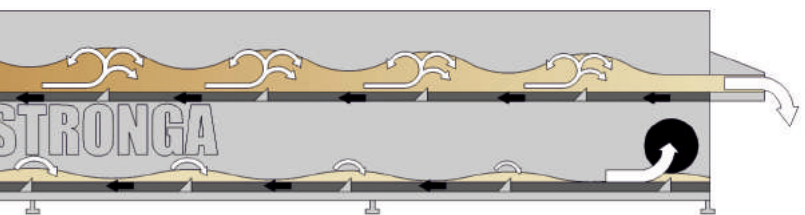


- 02** Forward-stroke - materials are shifted forwards by the pushing blade face, causing a driving force low to the bed.

The driving force is weaker above the pushing blade because the blade face is less influential, causing materials at the wave's crest to lag and tumble onto the drying bed behind.

- 03** Back-stroke - materials are lifted over the tilted axis of the blade to form another wave. As the crest height grows the wave becomes less stable, causing materials to tumble forwards and backwards.

The mixing and tumbling PulseWave™ motion increases the uniformity of product dryness.



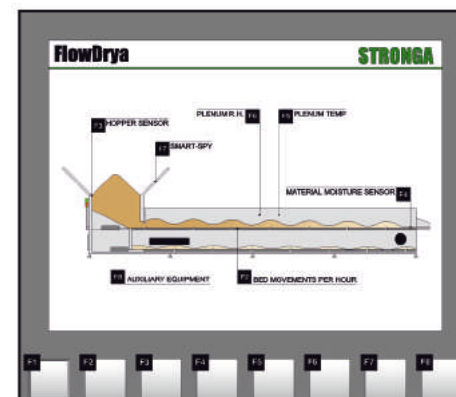
PROGRAMMABLE LOGIC CONTROLLER

FlowDrya functions are managed by extremely flexible and reliable Programmable Logic Controller (PLC) systems. The PLC system, working in total synergy, maximises efficiency and reliability while reducing time and management costs.

Programmable PLC architecture has interfacing for additional inputs and outputs inside the control pod, allowing hardware and software to expand as the client's requirements change. Low maintenance PLC systems have durable infrastructures designed to withstand extreme vibrations, temperatures and humidity.

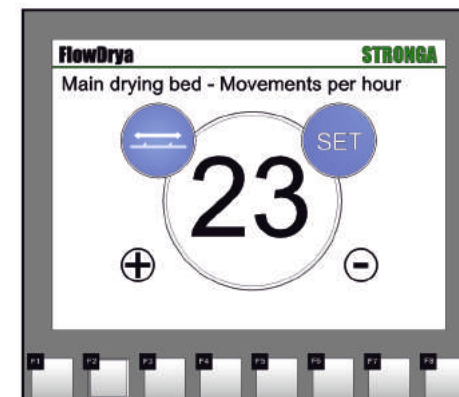
The FlowDrya PLC system comes programmed with a high specification:

DRYER CONTROL FEATURES	DRYER SAFETY FEATURES	DRYER VISUAL FEATURES
<ul style="list-style-type: none"> - Drying bed material depth - Machine dry output - Drying bed movements/hr - Fines removal auger - Infeed hopper (option) - Output conveyors (option) - Liquid spreader (option) - Moisture meter (option) 	<ul style="list-style-type: none"> - Electrical overload sensing - Fail-safe shutdown sequence - E-stop safety shutdown - Hydraulic by-pass valve - Sprinkler system (option) 	<ul style="list-style-type: none"> - Hopper level display - Andon status display - Energy metering display - Service indicator - Plenum temperature (option) - Plenum relative humidity (RH) (option) - Data logging (option) - Remote access (option)



DRYSTATION™ SMART CONTROL s

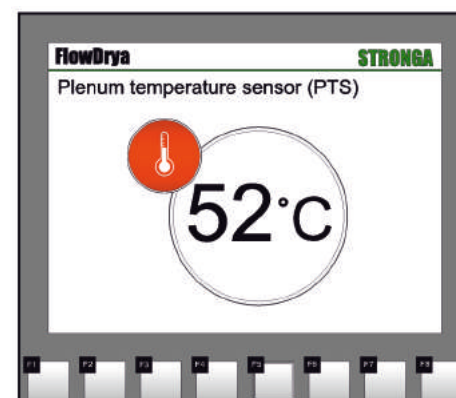
Simple display navigation via the state-of-the-art, programmable 7" DryStation™ touchscreen console. The easy-touch home screen display offers enhanced command control for efficient and reliable drying control.



MAIN DRYING BED - STROKES/HR

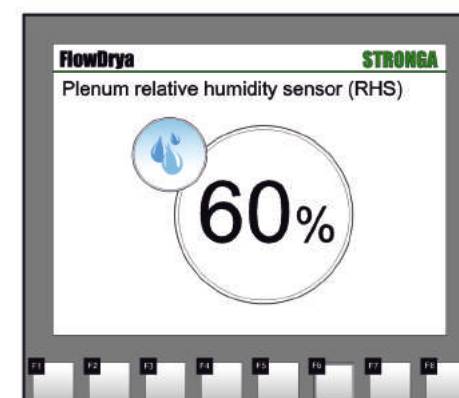
The primary function of the DryStation™ console is the control of the main drying bed strokes per hour. By setting the drying bed movements at any value between 1-60*, the user has control over the dry material output moisture content.

** Depending on hydraulic capacity fitted.*



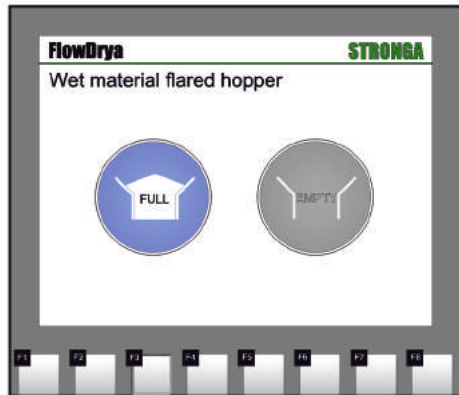
PLENUM TEMPERATURE SENSOR (PTS) & DISPLAY

The PTS display option delivers instant visual temperature data from a plenum sensor to the DryStation™ console. Operators can access plenum temperature data to assist in FlowDrya drying calibration.



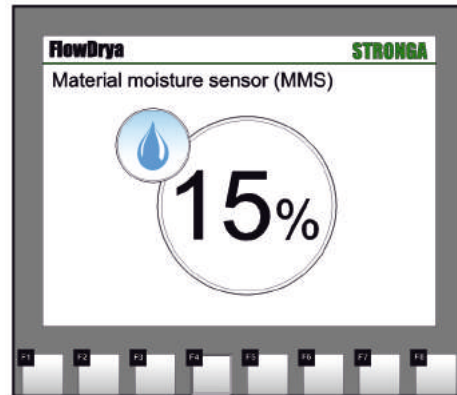
PLENUM RELATIVE HUMIDITY SENSOR (RHS) & DISPLAY

The RHS option offers instant visual relative humidity data from a plenum sensor to the DryStation™ touchscreen console. Operators can access plenum RH data to assist the FlowDrya drying calibration process.



WET MATERIAL HOPPER LEVEL SENSOR

When the volume drops below the critical level, a signal is transmitted to the DryStation™ console for hopper re-loading. When an optional infeed hopper is fitted, the signal automatically starts the wet material hopper refilling process and stops it when appropriate.



MATERIAL MOISTURE SENSOR (MMS) & DISPLAY

Real time dry material moisture sensing is delivered via the MMS located at the end of the drying bed. Instant average moisture values allow the operator to quickly set the drying strokes per hour to achieve the required moisture content. This can be automated.



SMARTSPY™ REAL TIME VIDEO CAMERA

With the SmartSpy™ surveillance system, the user has real time visual control over the whole drying process. SmartSpy™ is accessible via a paired smart device to allow the user to maintain control all the time.



FINES REMOVAL AUGER & DRY MATERIAL ONWARD CONVEYING

FlowDra is equipped with a fines removal auger. Onward dry material conveyors can be configured to automate heaping or loading of dry materials. Programming onward conveying options into the PLC minimises labour costs and maximises material handling efficiency.

DRYSTATION™ CONTROL CONSOLE

The DryStation™ touchscreen console acts as the interface between the PLC system and the FlowDra. The control console features an illuminated 7" read-at-a-glance touchscreen for optimum legibility and excellent durability.

On the illuminated DryStation™ touchscreen, the user has instant visual access to the FlowDra controls and safety parameters.

SUCCESS, ONLY BY CONTROLLING

The DryStation™ console is easy to understand and fast to locate for instant command power on demand. With the optional remote access function, users now have access to the visual DryStation™ display from a paired smart device. That means the operator can enjoy extended unsupervised periods and state-of-the-art data logging for optimum drying performance, all the time.

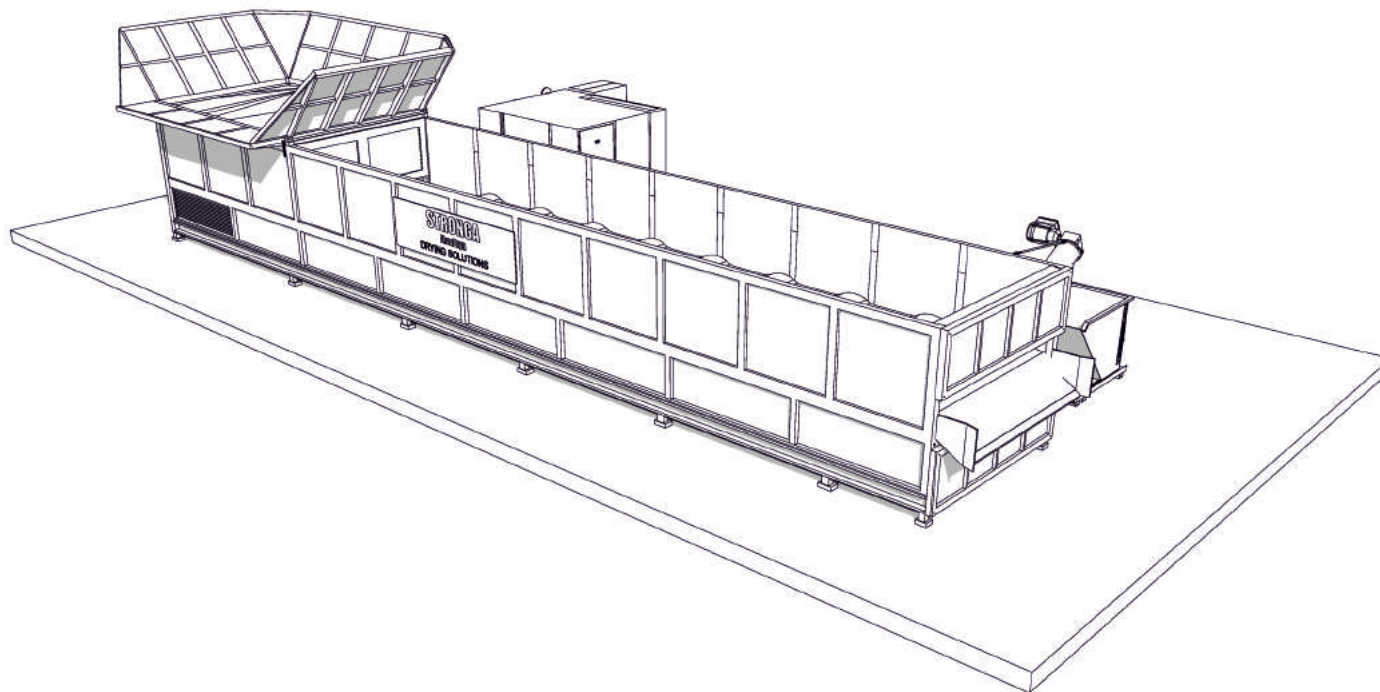


Data logging



Remote access

STANDARD TECHNICAL SPECIFICATION



PRE-HEATING AND PRE-MIXING CHAMBER

The super-structure chamber begins the drying process by pre-heating and agitating the wet materials before they reach the moving drying bed. Pre-heating initiates the evaporative process by ensuring materials quickly reach a drying temperature.

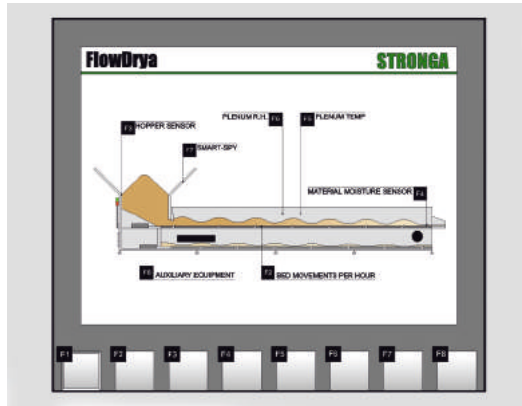


PULSEWAVE™ MOVING DRYING BED

The efficient ventilated moving drying bed evenly distributes hot Heatex airflow through the material for a consistently uniform dry output. PulseWave™ ensures even drying and thorough mixing. The drying bed natural screen separates dust and dirt from the final dry output.

MODEL	FD17	FD30	FD60
Gross weight	5000 kg	7500 kg	14000 kg
Overall length	11000 mm	15000 mm	15000 mm
Width (excluding insulation)	2700 mm	2700 mm	5400 mm
Height (excluding hopper)	2000 mm	2000 mm	2000 mm
Drying bed surface area	17 m ²	30 m ²	60 m ²
Flared wet material hopper capacity *	30-45 m ³	30-45 m ³	60-80 m ³
Fines removal raising auger length	2500 mm	2500 mm	2500 mm
Adjustable depth control weir gate	Standard	Standard	Standard
PLC system with DryStation™ control console	Standard	Standard	Standard
Drying bed strokes per hour control	Standard	Standard	Standard
Drying bed speed control valve	Standard	Standard	Standard
Andon status display	Standard	Standard	Standard
Electrical overload sensors	Standard (2)	Standard (2)	Standard (2)
E-stop safety shutdown	Standard	Standard	Standard
3 phase electro-hydraulic power unit	Standard	Standard	Standard
Side intake air vent	Standard	Standard	Standard
Lifting points	Standard (4)	Standard (4)	Standard (8)

* Extension hopper capacity available.



DRYSTATION™ SMART CONTROL CONSOLE

The robust and programmable 7" DryStation™ touchscreen console offers enhanced command control for efficient and reliable drying control. The user is guaranteed easy display navigation via the visual touchscreen.



FLARED WET MATERIAL HOPPER

The high capacity flared hopper is designed with smooth sloping steel sides to funnel wet materials onto the moving drying bed, allowing increased periods between loading. Capacity can be increased with further hopper extensions. Infeed hoppers can be added for extra capacity.



FINES REMOVAL VIA MOVING SUB-FLOOR

A moving sub-floor removes heavy fines as they fall through the overlying perforated floor. Heavy fines are pulsed to the end of the lower bed where they are discharged via an auger. The benefit of this 'mini-screen' is the removal of dirt, sand and other heavy fines.



SIDE INSULATION FOR THERMAL EFFICIENCY

Steel-coated external insulated cladding (50mm) improves dryer u-values by up to 80%, preserving air temperature. Improving thermal efficiency leads to improved material drying performance and reduced energy consumption per cubic metre dried.



ADJUSTABLE DEPTH CONTROL WEIR GATE

The easily adjustable depth control weir gate allows operators to manage the material flow depth on the moving drying bed. The drying depth can be adjusted according to the density and composition of the wet material.



VISUAL ANDON OPERATION STATUS DISPLAY

Visual Andon operation status display allows the operator to readily view the current status of the machine from distance. The Andon is well-protected and sheltered below the flared hopper to minimise the risk of damage.



EMERGENCY-STOP SAFETY SHUTDOWN

A simple pull on the full length cable-type e-stops immediately halts every electrical function for safety and security. The user can instantly stop machine operations with the FlowDrya e-stops which are compliant with current machinery directive requirements.



OPTIMAL AIRFLOW COOLING LOUVRES

The FlowDrya power and control pod is configured with multiple hinged louvres to allow ambient airflow to cool the system. The design ensures a natural airflow maintains an optimal working environment for the equipment.

OPTIONAL EQUIPMENT



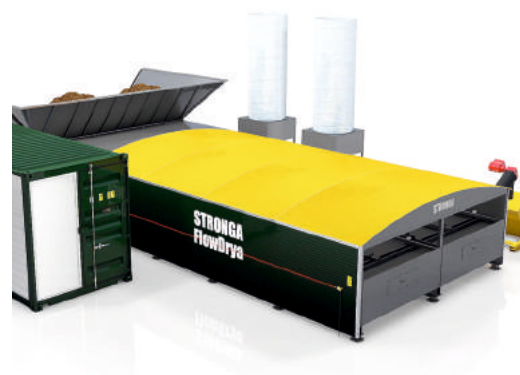
HIGH CAPACITY EXTENSION HOPPER

Extend your loading intervals even further and reduce your labour hours with the ultra-high capacity extension hopper. Extension hopper comes fitted with brackets to accept greedy boards (not included) on the loading side.
** Capacity dependent on material to be dried.*



TOP DECK MOVING FLOOR IN-FEED SYSTEM

The top deck moving floor in-feed system delivers the biggest wet material in-feed capacity for the longest loading intervals. Customers choosing the top deck hopper option must dry using top down air, extracting exhaust air via two side-mounted flues.



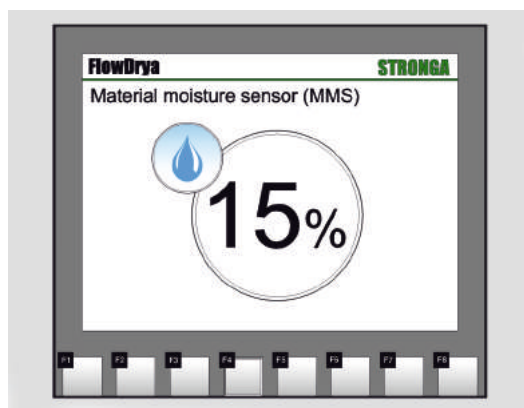
FIXED ROOF WITH FLUE AND EXTRACTOR FAN

The fixed roof option is designed to allow fully modular external use. Operators can comfortably carry out maintenance or service operations. The flue and extractor fan channel the evaporated moisture directly out to the atmosphere or to onward air processing.



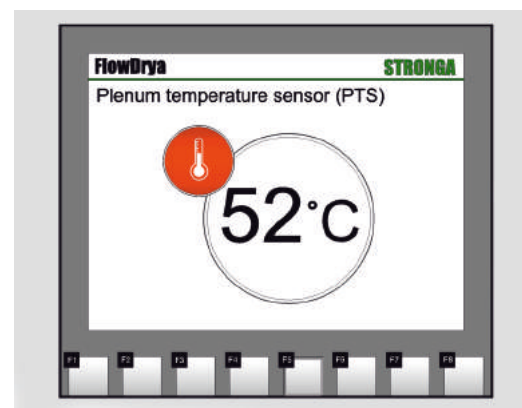
OPTIONAL HYDRAULIC OPENING FOLDING ROOF

The optional hydraulic opening roof is designed to allow the user to have easy access to the drying bed and for evaporated moisture to naturally rise and exit all the way along the drying bed.



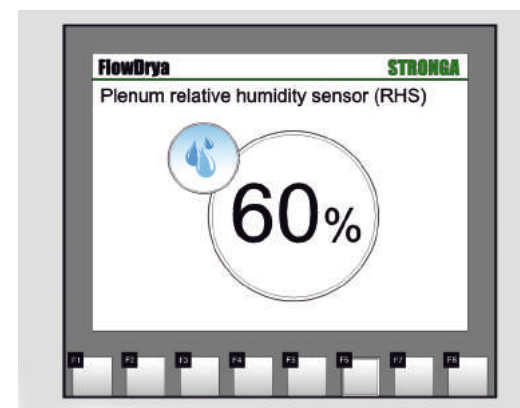
MATERIAL MOISTURE SENSOR (MMS) & DISPLAY

Real time dry material moisture sensing is delivered via the MMS. Instant average moisture values allow the operator to quickly set the drying strokes/hr to achieve the required moisture content. This can be automated.



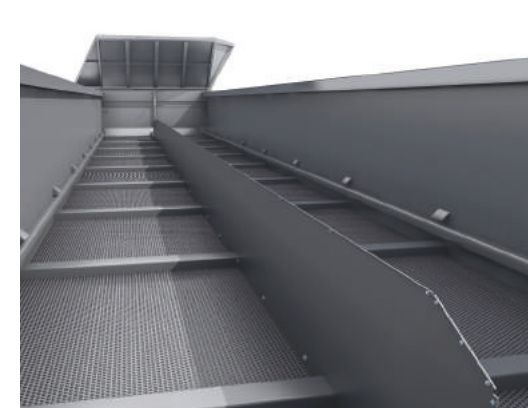
PLENUM TEMPERATURE SENSOR (PTS) & DISPLAY

The PTS display option delivers instant visual temperature data from a plenum sensor to the DryStation™ console. Operators can access plenum temperature data to assist in FlowDrya drying calibration.



PLENUM RELATIVE HUMIDITY SENSOR (RHS) & DISPLAY

The RHS option offers instant visual relative humidity data from a plenum sensor to the DryStation™ touchscreen console. Operators can access plenum RH data to assist the FlowDrya drying calibration process.



CENTRAL GRAIN DIVISION FIN OPTION

Bolted-in grain fin divides the drying bed to improve the flow of; wheat, barley, oats and other cereals, down the full length of the drying bed. The central grain fin ensures the consistently uniform drying of all cereals.



FLOWFILTA ENERGY EXCHANGER WITH DUST & EMISSION CONTROL

The FlowFilta exhaust air heat recovery system re-circulates warm exit air through an air-to-air heat exchanger to reduce energy consumption and increase thermal efficiency by up to 30%. At the same time, FlowFilta screens exhaust air, controlling dust, odour and ammonia.



ENCLOSED DISCHARGE AUGER MODULE

Highly reliable, well proven, safe and secure cross-feed discharge auger module with geared motor and inspection / access door. The auger module is fully integrated with FlowDrya.



DRY MATERIAL DISCHARGE CONVEYOR

Optional onward discharge loading conveyors automatically transfer dry material from the end of the FlowDrya bed to dry material storage. Dry material can be elevated into stores and spread along bunkers or configured to suit client requirements.



ANTI-CORROSION STAINLESS STEEL PACKAGE

The stainless steel drying floor and lining package is designed for clients drying corrosive materials. The stainless steel bundle ensures a long corrosion-resistant life for the equipment, minimising maintenance even in the harshest environments.



SPECIAL GRAIN AND SMALL SEEDS FLOOR

This special floor is for customers wanting to dry finer, less bulky materials such as grain, corn and small seeds. This floor handles the finer product with the same great air distribution as the standard design.



AIR CONNECTION PORTS FOR CONTAINER DRYING

Stronga advise, design and configure container Drying Stations. Clients can couple Drying Stations and FlowDrya through one Heatex module with air connection ports for increased dry output and drying versatility.

STRONGA

Vers 2



Woodchip



Bark



Sawdust



Wood shavings



Cereals



Herbs



Manure



Organic fractions



RDF



Separated digestate



Raw digestate



& much, much more

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Stronga reserve the right to change the specification and design of the products described in the literature without prior notice.