

Willems
baling equipment



Refiner





Long, short, coarse or fine

Precision-made fibers in all conditions.

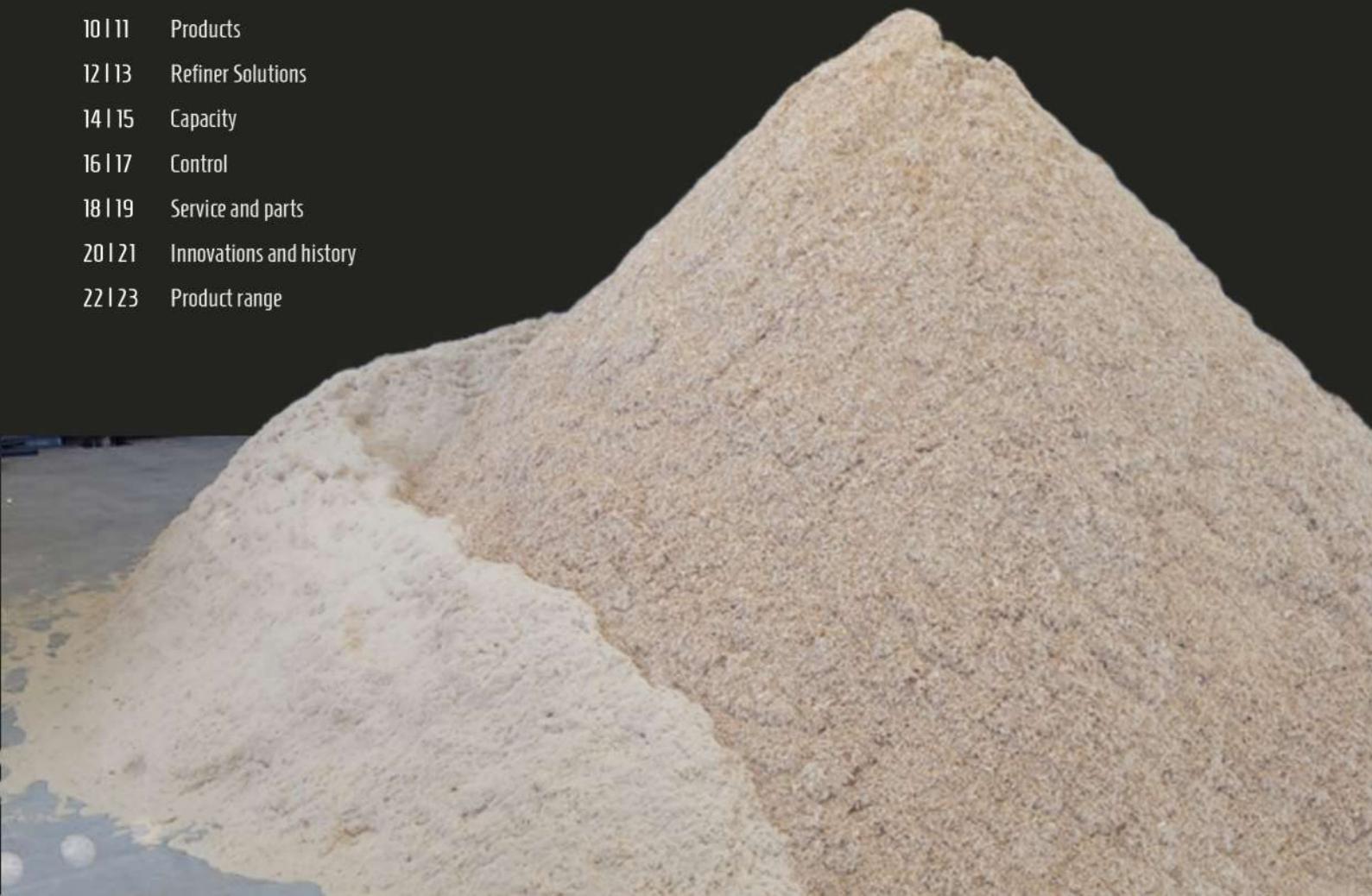
All around the world are different fibers produced. The main reasons are that you can use them for multiple purposes, and they are easy to handle. That's why it is often used for the production of MDF, Paperpulp, Insulation, hydroseeding etcetera.

But, Fibers also have great opportunities for growing media. It is a Sustainable source which you can produce locally. Due to its good physical and chemical growing characteristics it has a increased porosity, high waterholding capacity, and due to its good airiness it stimulates root growing.

Wood chips is an example of raw material that is used for producing high quality wood fiber. The Refiner line is the answer for producing these high quality fibers.



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The Refiner sets a new standard in fiber production. Using a rotor and stator with specially designed friction plates, raw materials are processed into high-quality fibers with precision and efficiency.

Benefits of the Refiner:

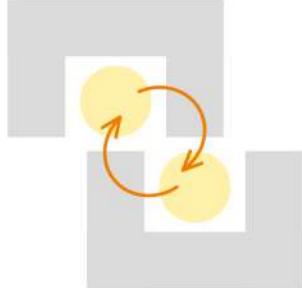
- Adjustable precision.
- Easily customize fiber coarseness at the touch of a button.
- High capacity, low energy use. Maximum output with minimal consumption.
- Consistent quality. Reliable results under any conditions.

Ideal for substrates, horticulture, hydromulch and other purposes, the Refiner combines efficiency with flexibility.



Check our
website for further details





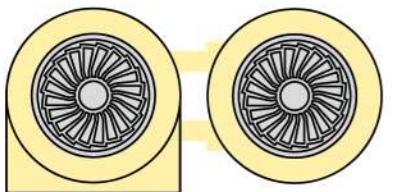
Fiberization



24/7 around the clock



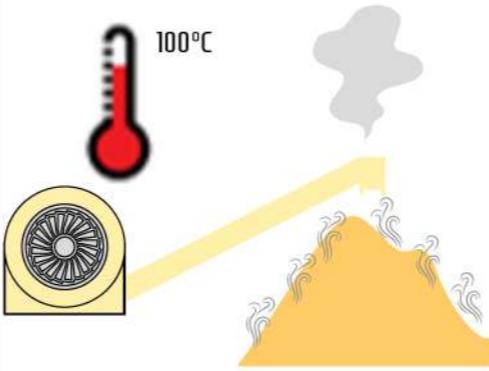
Transportation using augers



Easy acces to refiner plates



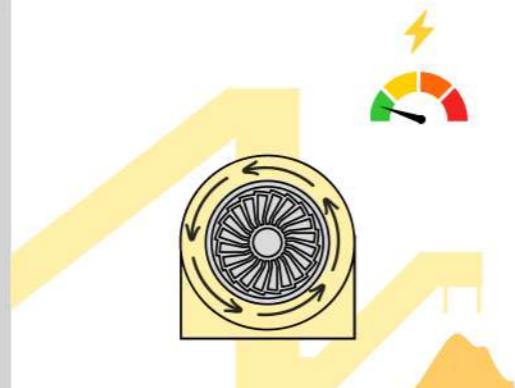
Optimum monitoring via touch screen



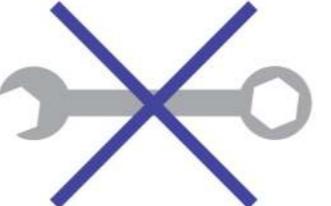
RMP process ≤ 100 °C



Adjustable size of the fiber



Low specific energy usage



Minimal Maintenance

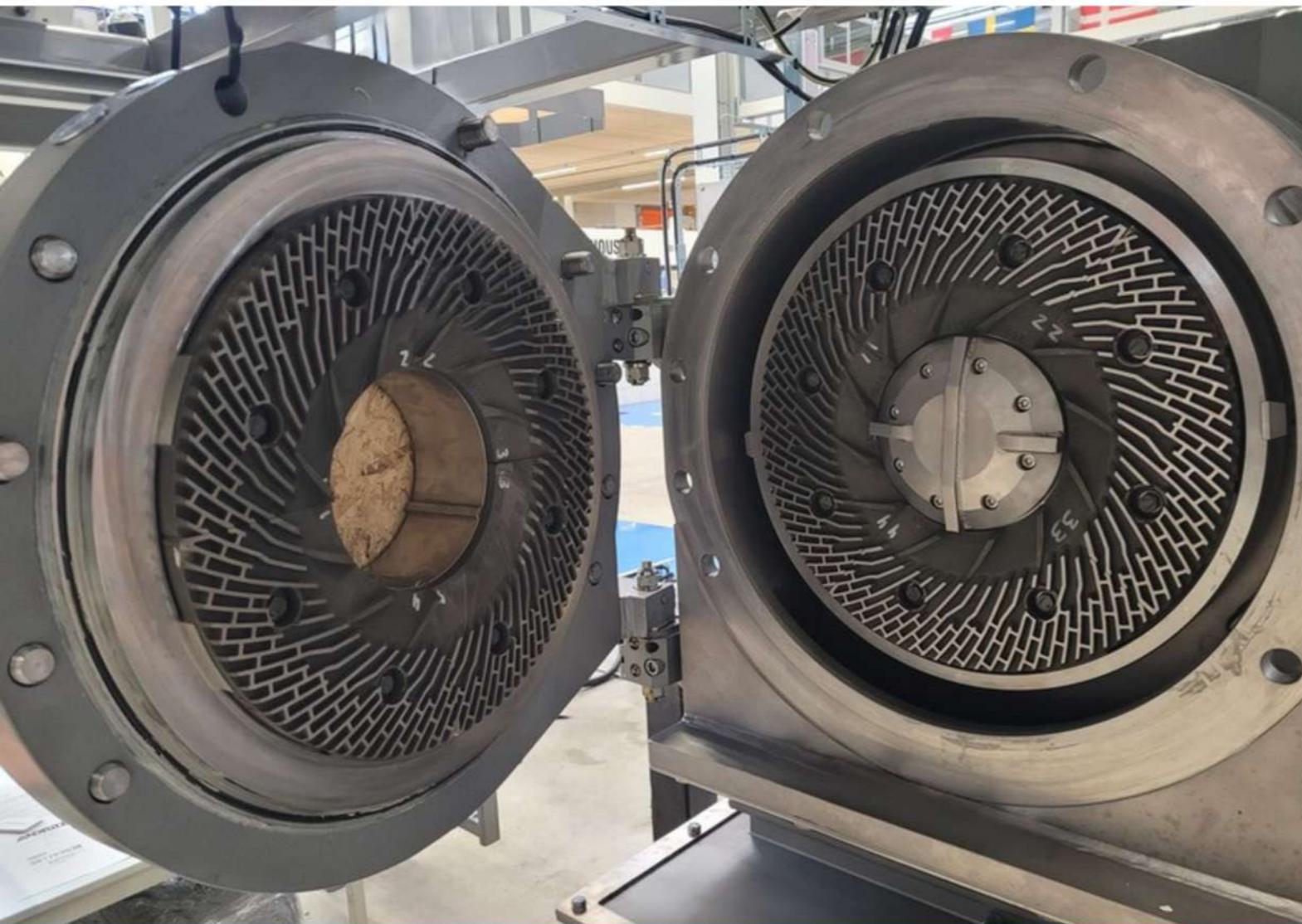


Willem is a leading manufacturer of state-of-the-art production lines. We build turnkey lines for fiberizing different raw materials into excellent fibers.

Our production is suited with the finest equipment, which allows them to work accurately and efficiently. We employ highly-qualified specialists and utilize extremely advanced facilities for designing, fabricating, assembling, and thoroughly testing our machines lines. Our experts have a lot of experience designing and developing complete refiner lines

Willem Baling Equipment was established in 1992. With pride we are looking back at many successes in designing and developing the ultimate packaging machines. When the ideas of experienced engineers and creative young designers meet, special things are happening. Together we generate a massive capacity in solving complex packaging challenges. Every day. For 30 years already. And... the best is yet to come.

Working principle



The Refiner consists of a housing with 2 large friction plates. These friction plates are equipped with a specially shaped friction pattern.

Raw material is fed between the stationary and rotating friction plate. The rotating movement pulverizes the material and pulls it apart. This creates fibers. An integrated mechanism ensures that the gap between these plates can be adjusted larger and smaller. In combination with a variable turning speed, different types of fibers can be produced.

This gap adjustment ensures that a constant fiber quality can be achieved, as well as good reproducibility. This machine has a low specific energy consumption and a high degree of flexibility.



Refiner Mechanical Pulps

The Refiner Solutions works according to the RMP principle (Refiner Mechanical Pulps). This means that the refiner works in atmospheric pressure conditions.

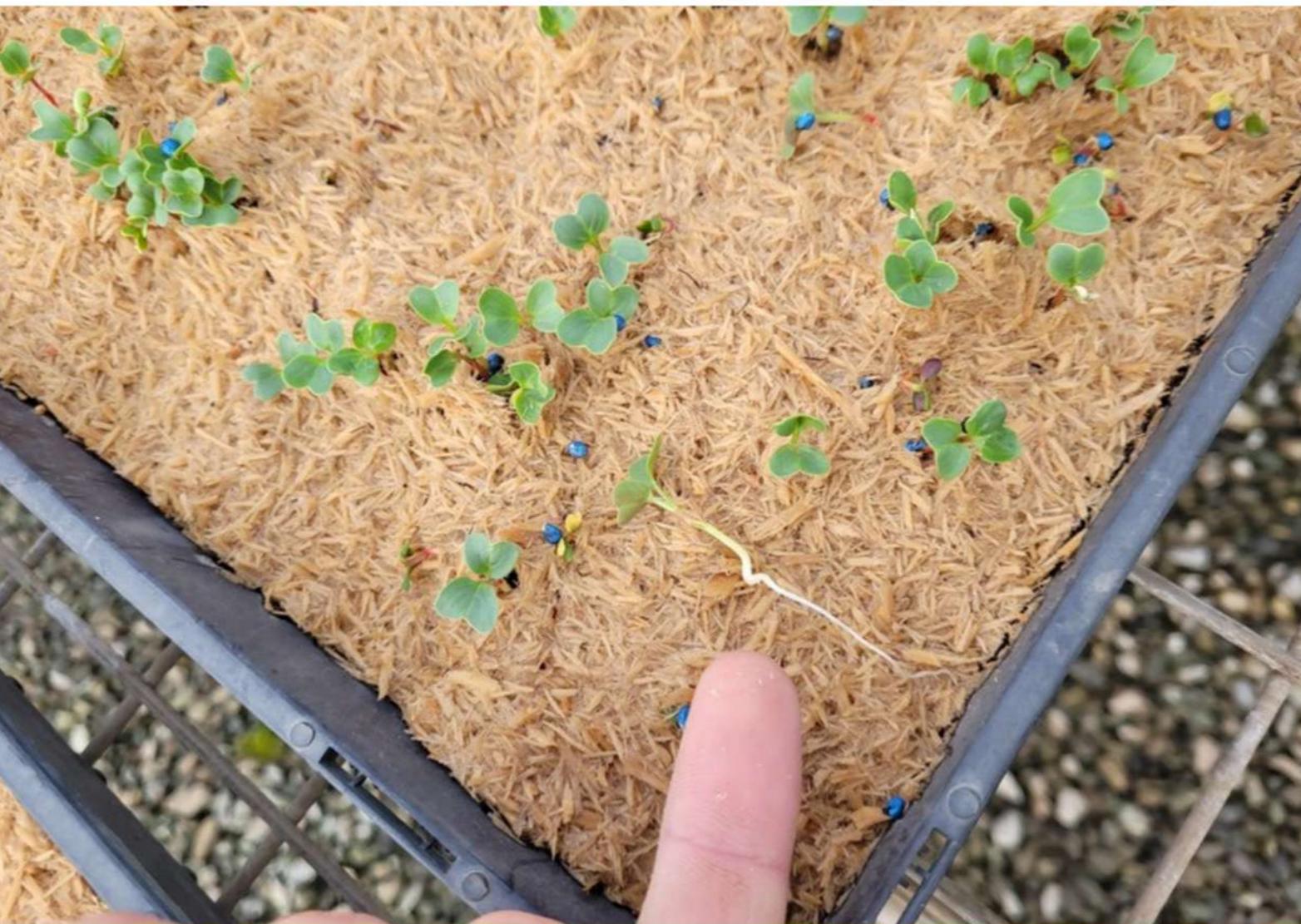
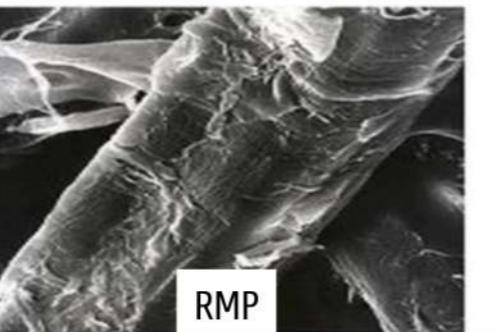
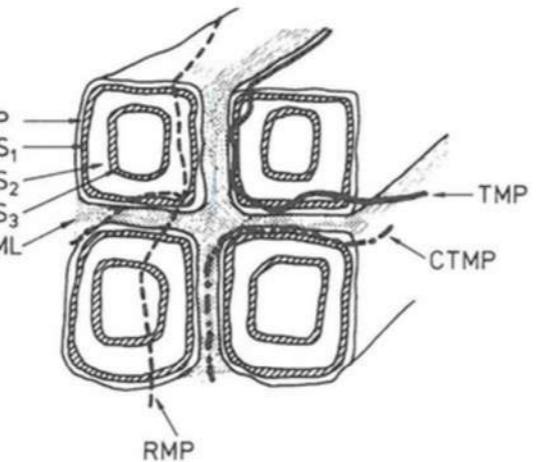
The RMP process is distinguished by the fact that it is not the entire cell itself that is affected but the structure of each fiber is pulverized and broken through. This results in a very open structure of each fiber.

Benefits of the RMP process are:

- Temperatures can reach up to 100 C.
- Low specific energy consumption
- No need of chemical treatment
- Cost efficient

Benefits of the RMP produced Woodfiber are:

- Good physical and chemical growing characteristics
- Open and rough structure of the fiber
- High water holding capacity
- Non-hydrophobic



Products



- a Woodfiber
- b Wood & Miscanthus mix
- c Woodfiber
- d Miscanthus
- e Treeroots fine
- f Treeroots coarse
- g Miscanthus
- h Bark
- i Woodfiber



Refiner Solutions

Willem's offers a wide range of turn-key Refiner lines. From the infeed bunker to the outfeed auger, the refiner itself or its user friendly control. Depending on your requirements we can offer a solution that suits your purposes.

We can customize each Refiner line:

- Customer specific layout
- Different size refiners
- Motor power
- Different size infeed bunkers
- De-lusion systems
- Magnet roll
- Product temperature monitoring
- Stainless steel execution
- Extra outfeed augers, with or without selection slides



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The capacity really depends on factors such as: product species, product type, age of the product, product density, moisture content and fraction size of the raw material. Factors that influence the outgoing product being produced are: rotation speed, gap distance, plate pattern, and plate diameter. Capacity indications at different refiner types:

Based on Pinechips, 50% moisture under normal conditions.

*Bd = Bonedry ton contains 0% moisture.

*EN = According to EN12580 volume determination.

32 inch refiner, 250 KW

Ingoing approx

$1.2 \text{ Bd}^* \text{ t/h} = 2.4 \text{ t/h wet (50\% moisture)}$

Ingoing approx

$6 \text{ m}^3/\text{h}$

Outgoing approx

$1.2 \text{ Bd}^* \text{ t/h} = 2.4 \text{ t/h wet (50\% moisture)}$

Outgoing approx

$12 \text{ m}^3/\text{h} \approx 18 \text{ EN}^* \text{ m}^3/\text{h}$

38 inch refiner, 400 KW*

Ingoing approx

$2 \text{ Bd}^* \text{ t/h} = 4 \text{ t/h wet (50\% moisture)}$

Ingoing approx

$12 \text{ m}^3/\text{h}$

Outgoing approx

$2 \text{ Bd}^* \text{ t/h} = 4 \text{ t/h wet (50\% moisture)}$

Outgoing approx

$25 \text{ m}^3/\text{h} \approx 37.5 \text{ EN}^* \text{ m}^3/\text{h}$

38 inch refiner, 710 KW

Ingoing approx

$4 \text{ Bd}^* \text{ t/h} = 8 \text{ t/h wet (50\% moisture)}$

Ingoing approx

$25 \text{ m}^3/\text{h}$

Outgoing approx

$4 \text{ Bd}^* \text{ t/h} = 8 \text{ t/h wet (50\% moisture)}$

Outgoing approx

$50 \text{ m}^3/\text{h} \approx 75 \text{ EN}^* \text{ m}^3/\text{h}$

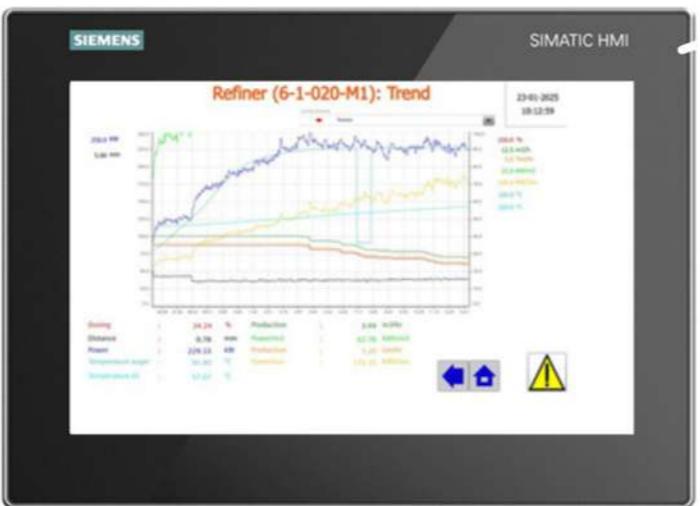
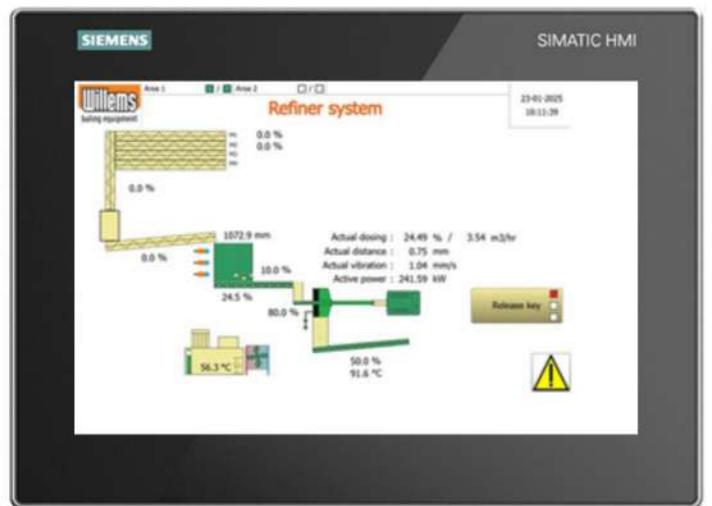
Control

The refiner line can be operated from the central placed console.

A user friendly Siemens Touch Screen makes it easy to operate the entire refiner line.

Each setting of the production process can be changed by selecting the desired symbol on the screen.

Beside of control, the system contains data visualisation. Here you can find trendlines from the machine like: performance, capacity's or energy consumption. It also contains the advanced Siemens automatic error messaging.



Service and parts

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Quality

In manufacturing, a measure of excellence or a state of being free from defects, deficiencies and significant variations. It is brought about by strict and consistent commitment to certain standards that achieve uniformity of a product in order to satisfy specific customer or user requirements. ISO standard defines quality as "the totality of features and characteristics of a product or service that bears its ability to satisfy stated or implied needs."

Reliability

1. The ability of an apparatus, machine, or system to consistently perform its intended or required function or mission, on demand and without degradation or failure.
2. Manufacturing: The probability of failure-free performance over an item's useful life, or a specified timeframe, under specified environmental and duty-cycle conditions.

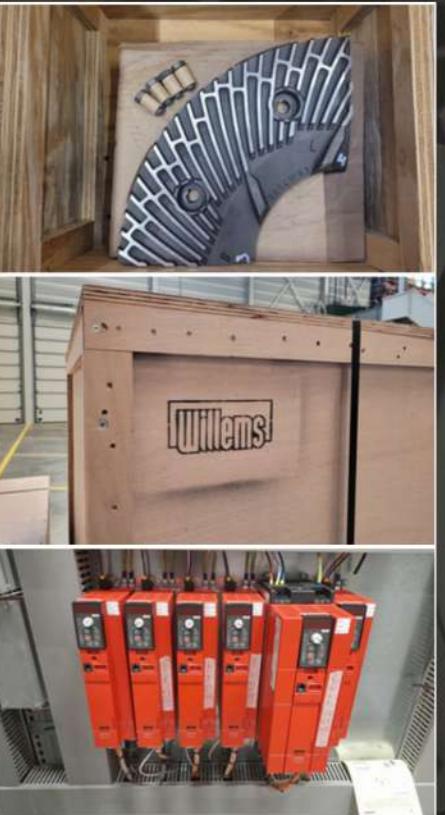
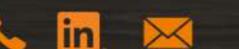
Efficiency

The comparison of what is actually produced or performed with what can be achieved with the same consumption of resources (money, time, labour, etc.). It is an important factor in determination of productivity.

Willem's builds robust machines to last for long. All integrated systems and electronics meet the highest standards so reliability is guaranteed. Our involvement does not stop when the system has been sold. Willem's feels responsible for trouble free operation of the total production line, 24/7. Via built-in modems in machines, we can monitor data online and any malfunctions can be cured or even prevented from a distance. If necessary, we ensure that experienced specialists are available at your location to keep your production line in good condition. Everywhere, worldwide.

Spare parts **Maintenance** **After sales** **Responsible partner** **Teleservice**

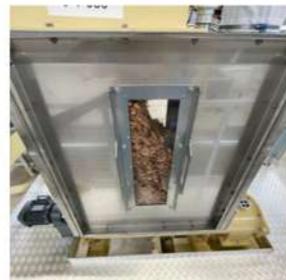
Reach us on:



A family owned business



Clever design
smart in every small part



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Since its foundation in 1992, **Willens** has grown into one of the industry leaders. Nowadays the Willens brand is synonymous with innovation and top quality. We invest in the latest developments in machine construction. Our designers work on machines that are safer, faster, more efficient and even more precise. Modern techniques and continuous improvements result in reliable machines that meet the highest standards of effectiveness.



All disciplines are represented in our enterprise; designers, constructors, production staff, service engineers. From the first ideas and sketches up to installing and adjusting machines on your location, our professionals are prepared for the job. Brilliant ideas from experienced engineers and creative designers come together to create smarter solutions. Everyday.