

GRAIN Wood^{A/s}

Drying • Pelletizing • Conveyor



- Bioethanol
- Dry steam system for bio-mass
- Bio Powerplants
- Wastewood handling
- Grain handling
- Partner CPM



GRAIN Wood

GRAIN Wood has since 1989 served the grain and feed industry with everything from replacement of defective bearings, installing new production equipment to counselling and sales of new constructions.

Technology Driven

We have evolved to be one of Denmark's leading, project companies where Danish common sense and engineering has paved the way to the many-faceted enterprise we are today with many years experience in sales and installation of machinery and silos.

Our office situated on Mors is the breeding ground for development, sales and installation. All technical staff are specialists in their field. They are always ready to advise and guide.

Mechanical Fitters

The servicing of our customers are taken care of by well educated mechanical fitters who service and installs plants throughout Northern Europe. Our teams are continuously updated with the latest knowledge to ensure hands on and an excellent experience for our costumers.

We work fast and focused and use our experience to find the best solution.

Mechanical Fitters beside their "running" workshop photographed in Bjergby Mors.



Grain & Wood

It all began with the development of a conveyor which could work both horizontally as well as vertically.

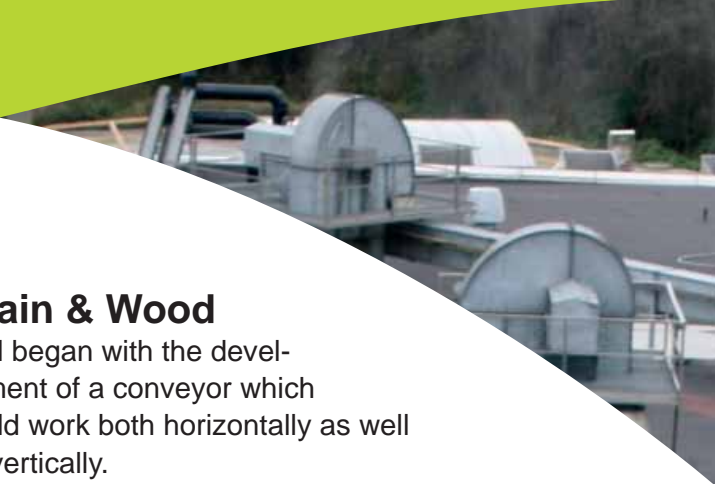
These experiences were successfully transferred to the furniture and woodworking industry. Today our first model "Wood Systems 450" is installed all over in companies transporting waste-wood from wood-chips filter to waste-silos and directly to the incinerator.

Operating & environmental savings

GRAIN Wood products create such significant savings, that the profit instantaneously finances the investment

Development facility

GRAIN Wood's specific skills has lead us to our involvement in development facilities were dry steam system is used as well as development of 2nd. generation bioethanol and gasification facilities. Here we utilise wasteproducts.



Inbicon development facility · established 2010

Energy Furture

Biofuel is the most interesting alternative to petrol and diesel in the next 15-20 years.

Large quantities of biofuels can be grown in fields and retrieved out of the woods - without having to destroy nature and create hunger.

Pure Danish energy

The straw in Danish fields can replace 20 percent of all Danish petrol - and with almost no CO² emissions.

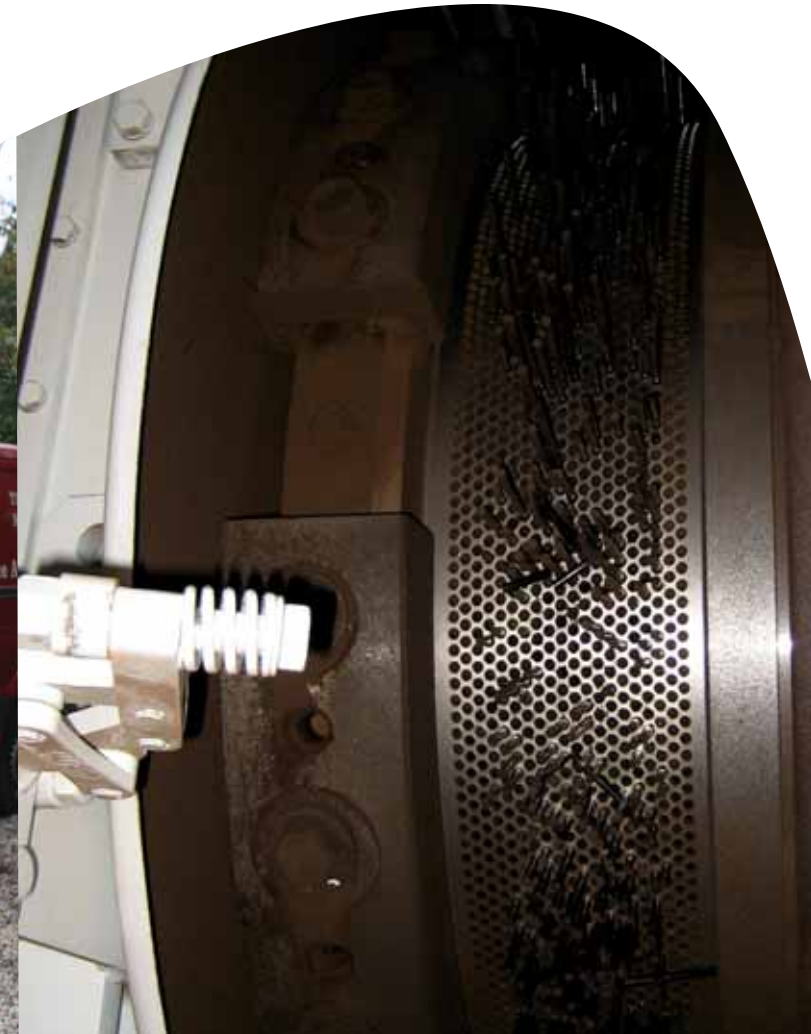
3 noble products

There is no waste in the process, giving 99 percent pure alcohol, C5-molasses can be used for cattle feed, and lignin which can be used as energy pills.

Lignin

GRAIN Woods share in this project is transport and processing of lignin which is pelletized and used as biofuel.

CPM die



Lignin pellets extruded from pellet mill.



Dry steam system for biomass



Drying facility for dewatering of manure fiber from biogas plant

Recycle waste Save money and protect the environment

One of the world's biggest environmental problems is the ever increasing waste volume. Handling and recycling of waste is costly, energy consuming and in most cases, extremely damaging to the environment. Simultaneously Earth's energy resources are limited and therefore alternative forms of energy are needed in the future.

Grain Wood and Cimbria introduces a unique and cutting edge drying system "Dry Steam System" which allows you to dry and re-apply a variety of wasteproducts on an unprecedented energy and eco-friendly method.

Dry Steam System is developed and tested in close coherence between GRAIN Wood and Cimbria.

Drying with superheated Steam

The outstanding principle in the Dry Steam System is the drying process. Instead of conventional hot air drying, we use dry steam as energy source.



The material to be dried is heated to above 100°C where the liquid is cooked out of the product. The fluid - now in vapor form - is pulled out of the drying chamber and condensed. The thermal energy in the condensate can then be recovered as another source of energy such as district heating. Drying using Dry Steam system provide energy savings up to 85% compared to conventional drying with hot air.



Condensate from the drying process

Gentle for the environment - good for the economy

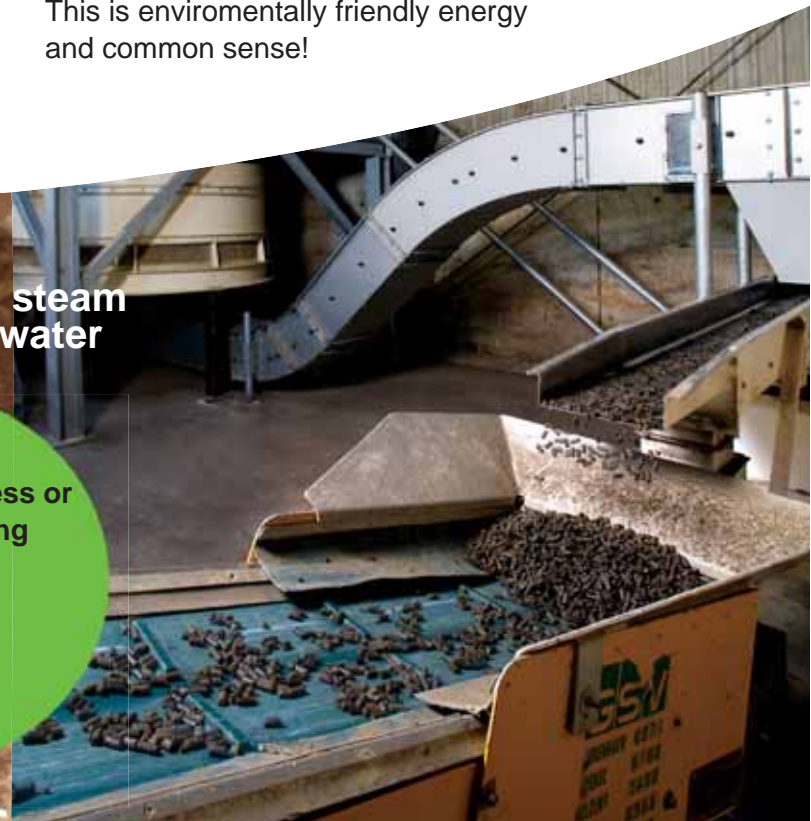
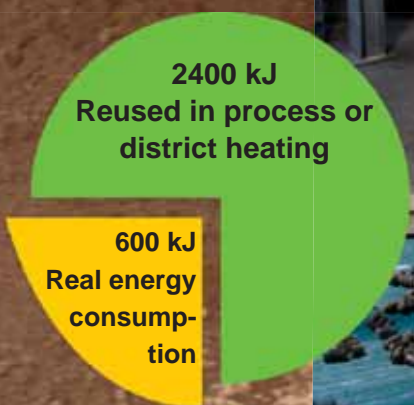
The drying process in the Dry Steam System is done without any environmental impact as there is no emission of air, dust or smell. The facility can dry various materials, such as wood chips, manure fibers, sawdust, straw and pulp. The only condition for drying is that the product can be penetrated with steam circulation. The residual product is storage stable as fiber slurry from biogas plants after drying is converted into fertilizer or fuel pellets. The waste is thereby converted to an easily manageable commercial product.

This is enviromentally friendly energy and common sense!

Traditional drying with hot air
3500 kJ / kg.water



Drying with superheated steam
3000 kJ / kg.water



Bio Powerplants

Wood pellets

GRAIN Wood has extensive knowledge about pelletizing of wood and other biomasses. We assist clients through the entire process when they for example wants to start their own pellet production. Depending on the raw material GRAIN Wood and the customer can assemble an installation that seamlessly manage the handling of the material from arrival to drying, grinding and on to the pelletizing and subsequently cooling.

We also have the equipment for further handling, such as power screening, storage and supply - both in bags and bulk.

Optimisation

As the price for raw material keep rising the production of biofuel must be as effective as possible. We create solutions that are both energy efficient and reliable whether its optimization of existing facilities or construction of new plants.

Conveyors

Powerplants heated with biomass demands larger capacity and flexibility to the conveyor facilities that carries the energy to the boiler.

Woodsystem

GRAIN Wood has matched this challenge and developed a series of conveyors that due to their special construction meets these requirements. Wood systems transport materials such as wood pellets, sawdust, paper, most types of wood chips and straw with capacities of more than 300 m³/h at any angle from 0° to 90° in a very energy efficient system.

Development

Grain Wood has chosen to invest in research and development to be ahead regarding the increasing demands for environmental friendly machinery.

Automatic handling of raw material

All Wood systems conveyors meet the demands of the ATEX directive.

One-tenth power consumption

Simultaneously Wood system is capable of transporting in all degrees from horizontal to vertical with a free span of up to eight meters.

It is quiet, reliable, fireproof, easy to maintain and energy saving by using only one tenth of the power compared to traditional air transportation. Wood Systems is therefore the ideal conveyor for biofuels in bio powerplants.

Development facilities

Our most recent Wood System model 700 has been tested on the old district heating facility in Skive. The success has led to an order to their newly built bio powerplant.

EU and U.S. follow us

EU and U.S. who both have supported the construction of the new gasification plant in Skive, with 35 million danish kroner for future investments in green energy is Wood Systems 700's ability to transport biofuels, followed closely. This is also the case in some other countries where biofuel will replace more traditional fuels like coal and oil

Production facility for pellets

8 mm die to wood pellet production



Wastewood handling

Wood System

Unique Products

GRAIN Wood 450/650 system is developed based on many years of experience in handling dry material.

We have combined the capacity and gentle transport of the chain-driven conveyor with the cup-lift potential for vertical transportation.

Common for all our chain-driven conveyors is that they can move large quantities material i angles from 0 til 90 degrees.

The single-chain GRAIN Wood Type 450/650 is a different way to transport wastewood from dust filters to the waste silo and for example directly to the boiler.

180m3 an hour

With capacities up to 180 m3 an hour most transportation needs are fulfilled with this type.

GRAIN Bio

GRAIN Bio Type 450/650 is the right choice for rough work. Externally there is no difference between it and GRAIN Wood but inside there is not one but two chains and a single carrier in the entire transport width.

This means that the conveyor can handle materials such as coarse wood chips, straw, paper, larger pieces of wood etc. Still with the same quiet and energy efficient performance.

ATEX-directive

Both types of conveyors can be delivered so they meet the ATEX Directive. GRAIN Wood exclusively use quality components from recognised European subcontractors.

Both models are built from a modular system where all components can be freely assembled. That way we can provide conveyor facilities that are always modyified to the customers needs and has a short delivery time.

Wood System offers numerous installation options



350 facilities

350 installations around the world and satisfied clients who continuously are looking for new solutions has proved that our conveyor systems meet our customers demands for an extremely steady transportation system.

Designed for permanent operation

No customers accept breakdown and production shutdown. Our conveyor systems are designed to run 24 hours a day, 7 days a week year after year. A burden they manage to perfection

Instant profit

GRAIN Wood Systems ensure so high operational and environmental savings that the instant profit finance the investment extremely quickly.

ATEX secured with flame retardant explosion membrane



Grain handling

Facility construction

GRAIN Wood (former GRAIN Maskin-service) has for more than 30 years - primarily from Denmark - developed, designed and sold complete machinery for Grain and Feed trade

Primarily we use standard quality equipment, supplemented with own developed and manufactured machinery when constructing facilities for grain drying, cleaning, feeding pellet production as well as inlet and delivery systems.

Customized

GRAIN Wood has made it our specialty to develop and produce machinery that goes beyond the known and traditional standard models.

Repair and maintenance work on machinery is also a GRAIN Wood specialty.

We have a remarkable strong and talented team of skilled mechanical fitters who in their "rolling" workshops, always finds the best solution to meet customers requests and needs. "excellent service for all" is our motto.

Malt - Fish - Mink

GRAIN Wood has delivered and installed machinery to other related manufacturing companies than Grain and Feed Industry

Malt factories, fish processing and feed industry for fur farming also uses our facilities and daily benefits of our many years of experience.

CPM

GRAIN Wood have recently established exclusive distribution rights for Denmark from the world-known and reputable Dutch CPM pellet mills. CPM machines are used in feed industry for pelletizing straw and all other forms of waste products from agriculture and industry including slurry fibre from biogas production.



Power screening for malt production

Chain conveyors

Our unique chain conveyors which can transport all possible products in degrees from horizontal to vertical is used not only in the Grain and Feed trade but also in the wood and furniture industry as well as heating plants to firing of all types of CO2-neutral biofuels.

Counselling

If you want specific counselling regarding our working methods and set of values that ensures a healthy relationship now and in the future, please feel free to contact us.

Representation

A selection of well known operators in the wood and furniture industry market and sell our famous and popular Wood System conveyors in Denmark and throughout the world.

Sproutboxes on malt factory



Delivery for trucks

World's largest

As the world's largest manufacturer of pellet mills, CPM has led the way in developing specialised pellet mills and dies to make pelleting both practical and economical while enhancing product value and manageability.

CPM customers include detergents, polyethylene, carbon, insecticides, RDF, sawdust, asbestos, pharmaceuticals, urea, polyesters, coal dust, latex, coffee, organic fertiliser, polyesters, potash, charcoal, zinc oxide, herbicides, to name just a few.

Pellet Mill for oil seed, woodginding, waste densification (RDF), animal feed industry, alfafa and straw processing and manure pelleting



mpmk.dk

Innovative engineering and design have been combined with the latest manufacturing technology to provide the highest quality pellet mills in the world with the best production levels ever achieved, along with excellent pellet quality. More and more industries are discovering the advantages of pelleting. The application possibilities of pellet mills in today's process industries are virtually endless. In addition to animal feeds, other materials being pelleted by

GRAIN Wood A/S

Korsbakkevej 11
DK - 7950 Erslev · Mors

Tlf. : +45 97 74 00 44
Fax: +45 97 74 16 12

www.grainwood.dk
grain@grainwood.dk

