

INTRODUCTION



In 1910, my grandfather Klaas Reinders sr. started his smithy in the town of Almelo in the east of the Netherlands. How proud would he have been if he could have witnessed how his business has developed into a group of engineering and metal industries!

Being one of his grandsons, I have the privilege of running two of the Reinders Almelo Group companies: KARA and BES Bollmann.

KARA develops, designs and manufactures energy systems based on wood / solid biomass combustion. BES Bollmann specializes in wood drying technology,

electronic control and moisture measuring equipment. Both companies are leading in their respective businesses.

This brochure makes you acquainted with us, but of course we would prefer to meet you in person as this would really convince you of our technical superiority. We dare say that there is no challenge to which we have no answer. With our experience of over a century, trust us.

Klaas Reinders
CEO



PROFESSIONALS IN ENERGY



KARA-Combustion-system 1 MW - 1

Biomass logistics - 2

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A CENTURY OF HEAT BY KARA

Generating heat and / or electricity yourself - biomass energy is financially rewarding more and more. After all, oil and gas prices continue to rise and their availability diminishes inevitably. KARA Energy Systems, a 100 years young, is a worldwide provider of tailor made and turnkey installations for the generation of heat and / or electricity based on wood / solid biomass combustion. Combustion is more than just a furnace with a boiler. You have to think about e.g. wood resizing, storage, transport and flue gas cleaning. A KARA custom installation is a biomass-worthwhile investment.

Wood reducing

KARA has developed unique shredder systems for the wood processing industry and the companies which have to deal with large surpluses of packaging waste. These machines can be used to resize all kinds of materials like pallets, sandwich

panels or crates into easy-to-burn or recyclable granulate.

Biomass storage and transport

KARA is a producer and supplier of various systems for storage of biomass materials. Every system has its own advantages. The choice for a system depends on the biomass properties and of course the amount of space available for storage. Some possibilities are:

- Silo
- Container with a moving floor
- Bunker with a moving floor

Before wood or other biomass can be processed, transport is needed. It is impossible to ensure optimal heat supply without a reliable fuel supply. For each type of fuel, KARA supplies the optimal transport system.

Furnaces

KARA supplies a wide variety of combustion systems for all kinds of solid biomass streams, based on a number of well proven standard installations. The kind of system is related to the type of furnace, which in turn depends on the solid biomass fuel. We apply the following types of furnaces:

Dry under screw stoker

Fuel type
Dry fuel (shavings or sawdust)

Moisture content
From 8 up to 25% on wet basis

Wet under screw stoker

Fuel type
Humid fuel

Moisture content
From 25 up to 40% on wet basis



- 1 - Boiler 650 kW
- 2 - Sloping hydraulic moving grate
- 3 - Flat hydraulic moving grate
- 4 - Shredder with storage system

Fixed sloping grate

Fuel type
Large pieces of wood

Moisture content
From 20 up to 50% on wet basis

Flat hydraulic moving grate

Fuel type
Dry fuel

Moisture content
From 0 up to 35% on wet basis

Sloping hydraulic moving grate

Fuel type
Slowly burning fuels

Moisture content
From 10 up to 60% on wet basis

Biomass combustion

KARA Energy Systems ensures optimum combustion of your biomass. This is not only good for the environment, it also ensures the highest possible efficiency. KARA supplies a wide variety of combustion systems for all kinds of solid biomass:

- Warm water boiler
- Hot water boiler
- Steam boiler
- Thermal oil boiler

The applied boiler depends on your processes.

Flue gas cleaning

The combustion of fuel is controlled optimally, since a complete combustion not only implies a lower environmental load, but also an optimal energy efficiency. Nevertheless, nowadays the environmental demands are such that

flue gas cleaning has to be applied.

Depending on the local situation, and of course the type of fuel that is used, the flue gas cleaning has to be designed in such a way that the emission limits are not exceeded.

KARA Energy Systems is a global player, thereby taking the different environmental requirements by country into account.

Combined heat and power (CHP)

Rising electricity prices can make it worthwhile to use the heat from the combustion process not only for heating purposes, but also for the generation of electricity. Combined heat and power (CHP) is based on a well-proven technology: the steam from the KARA combustion installation drives a steam turbine.

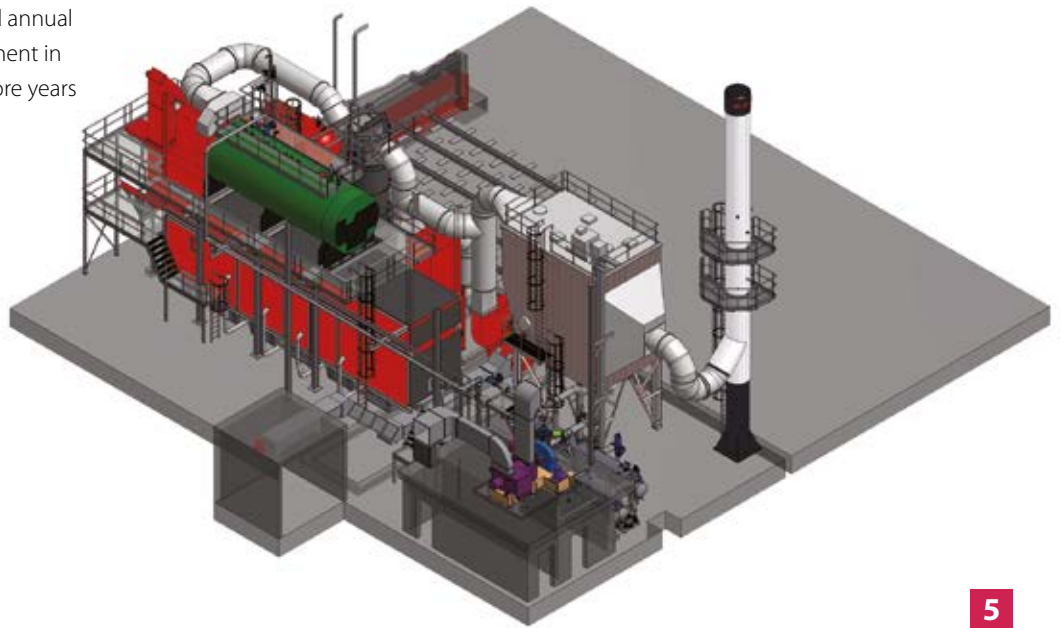
FROM
WOODSTORAGE
TO CHIMNEY

The remaining heat can be usefully deployed for heating.

Service

KARA offers all services to maintain an optimal availability of your installations, varying from emission measurements and annual inspections to full refurbishment in order to guarantee many more years of undisturbed operation.

For more information please visit www.kara.nl



- Biomass installation 9 MW with a CHP - 5
- Flue gas cleaning - 6
- Ash container - 7
- Electrostatic filter - 8



BES BOLLMANN
DRYING & CONTROL SYSTEMS

PROFESSIONALS IN DRYING



- 1 - Drying kiln HT 100
- 2 - Pallet drying/HT kilns
- 3 - Control systems
- 4 - Moisturemeter



YOUR WORLDWIDE COMPETENT PARTNER

BES Bollmann B.V. is the leading manufacturer in the field of artificial timer drying, steaming and wood moisture measurement. Our innovative product range includes the entire chain from wood moisture measuring to sophisticated drying systems including in house developed and manufactured control systems.

Since 1950 we are a reliable partner in the timber industry with tailor made solutions. Also for the growing demands in the packaging industry, such as drying and / or Heat Treatment in accordance with ISPM 15 we produce combined drying / HT kilns for pallets and packaging wood in each size.

BES Bollmann always aims to provide our worldwide customers with the optimal solution for process reliability, energy efficiency and cost optimization.

Turnkey projects can include biomass combustion systems from our sister company KARA Energy Systems for an environmentally friendly and energy efficient solution.

Development and production inhouse to guarantee the best possible solutions for your specific needs.

Our product range

- Timber drying kilns
- Drying kilns for pallets and packing wood including technical equipment for Heat Treatment in accordance with ISPM 15
- Steaming kilns
- Control systems for drying / heat treatment kilns
- Equipment and control systems for locally built (masonry) drying kilns
- Moisture meters

Furthermore, our installations are used for drying products in the food industry and applications where precise climate control is desired.

Areas of business

- Timber processing
- Sawmills
- Pallet industry
- Parquet industry
- Furniture industry
- Paper industry
- Foodstuffs
- Degassing of cables
- All applications requiring constant, measurable and safe drying

Timber drying kilns

Wood is a living, natural raw material and because there are so many different kinds it is suitable for a wealth of different uses. There is one essential pre-requisite that enables it to compete with other materials: it must be dried professionally.

In order to optimize this process and make it economically worthwhile, BES Bollmann started to take a good look at commercial wood drying as long ago as the early 1950s. Over a period of years BES Bollmann has earned itself a reputation on every continent as the leading supplier of conventional timber drying installations. Right from the earliest days we have trusted in our company's own control technology. Consequently all the experience gleaned in practice goes directly into our new product. Our overriding principle at BES Bollmann is to offer our customers a high quality, durable product along with the best

possible service, for that is the only way to stay at the top amongst international competition. That is the reason why only first-class components are used. Equipped in the best possible way for future tasks, BES Bollmann is pressing ahead with its own development department in order to meet ever increasing and changing demands with excellent ideas and solutions.

Owing to a cleverly designed modular system and to a wide variety of models, your Bollmann kiln can be easily adapted to handle any type of sawn timber.

We offer the following drying kilns:

- ISPM 15 treatment
- Drying kilns for sawn timber
- Drying / Heat Treatment kilns for pallets and packaging wood
- Progressive kilns
- Steaming kilns
- Combined steaming / drying kilns
- High-temperature drying kilns
- Condensation kilns
- Vacuum drying kilns

BES BOLLMANN HAS
CONCENTRATED ON CONTROL
TECHNOLOGY FOR MORE THAN 50 YEARS



- 1 - Heat treatment tunnel according ISPM 15
- 2 - Drying kiln HT 100
- 3 - Drying kiln with lifting door HT 200
- 4 - 3 Kilns for heat treatment according ISPM 15 and/or drying pallets.



Control systems

Even the best kiln drying installation is not worth the money if it does not have the right control technology. As a supplier of comprehensive systems for complete state of the art kiln drying installations BES Bollmann has concentrated on control technology since 1959 not only for new drying kilns. Also existing drying kilns can be updated with a BES Bollmann

control system, regardless of whether they are in brickwork or completely made of aluminium.

Innovative - precise - reliable

BES Bollmann has developed the following control systems:

- Tromatic C 205 GM
- Tromatic C 210 GM

- Tromatic C 310 GM
- Tromatic C 510 GM
- Tromatic C 810 PC Systems
- Tromatic C 910 Systems

For more information please see our individual leaflets for control systems or visit www.bes-bollmann.com



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- Switch panel tromatic 910 - 5
- Software Tromatic® for drying kilns - 6
- Control-cabinet - 7
- Climate kilns for degassing of power cables - 8
- Kilns for the food industry - 9
- Drying kiln HT 100 - 10
- Drying kilns HT 100 - 11

MOISTURE METERS

Success is measurable

Everybody who works with wood knows that the wood moisture content is an important criterion for the quality of the final product. Therefore, it is of great importance that the moisture content can be easily and precisely determined. With wood and building moisture meters of BES Bollmann BV you are always able to measure the moisture content quickly and easily. Three different series of instruments are offering a tailored solution for different applications:

Pocket Series Easy

If you require an easy-to-use device that provides results quickly, these devices are the right ones for you. They are calibrated for all types of wood and they can be extended to measure the moisture

content of building materials too, which makes them first choice for a good value starter model.

Professional Series HDI

With this device, you will easily manage 300 wood types and a moisture content range between 4 and 100%. The temperature correction and the use of various different sensor types complete the high performance of the H-DI devices. Furthermore, the H-DI 3.10 is FMPA approved.

Master Series Combo

The Combo devices are the most versatile among the wood moisture measurement devices. The Combo 200 allows you to create your own calibration curves, to save measured values and to evaluate

them on your PC. It is the ideal device for professional use.

Industrial Series

Our TM-UMEC is ideally suited for measuring the moisture content in a industrial inline environment for example the production of glued laminated timber (Glulam) according DIN 1052-1. The TM-UMEC is approved by the FMPA.

For more information visit www.bes-bollmann.com

- 1 - Easy-Maxi
- 2 - Combo 200
- 3 - H-DI-3.10



THE REINDERS ALMELO GROUP OF COMPANIES

International partners for professional wood processing



KARA Energy Systems

KARA Energy Systems B.V. is developer and supplier of wood / solid biomass fired boiler systems. Projects are delivered turn-key, from wood storage to chimney, including wood transport, size reduction and flue gas cleaning. Furthermore, KARA is supplier of CHP Systems, for the production of electricity from biomass.

BES Bollmann Drying & Control Systems

BES Bollmann B.V. manufactures drying kilns for wood and various other materials. BES Bollmann B.V. also develops and manufactures the control systems for these kilns. Furthermore, moisture meters are developed and produced for wood and other construction materials, like gypsum and brickwork.

Reinders Almelo Luchttechniek

Reinders Luchttechniek B.V. was founded as a producer of aspiration equipment for the wood-industries. The company has expanded and developed to engineer, producer and supplier of high-grade installations for material-, dust- and fumes aspiration and sound insulating housings.

Reinders Almelo Staalbouw

This company is producer and supplier of high-grade steel constructions, staircases, and platforms. All products are produced custommade according to the specific demands of the client.

Prima Air

Prima Air supplies and installs airconditioning systems that guarantee an optimum indoor climate. Prima Air delivers a specific solution. These solutions make sure that the climate of your living and working area will always be pleasant and nice.

Kara Green Energy

Kara Green Energy is a subsidiary company of the parent companies in the Netherlands. Kara Green Energy is involved in the development, maintaining and supplying of biomass fired boiler systems. Kara Green Energy also trades as Bollmann Drying Solutions as a subsidiary for BES Bollmann.

Bollmann Drying Solutions is involved in the development, maintaining and supplying of drying kilns, control systems and moisture meter solutions

Enerdes Energy Design

Enerdes B.V. is specialized in greenhouse heating, climate control projects, "Closed Greenhouse" airhandling units and related installations and systems abroad. Enerdes B.V. is especially focused on the greenhouse markets in North-America, but also has a lot of experience in other climatological environments.

Reinders Industrial

Reinders Industrial is the manufacturer of customized drying and cooling equipment.

E&E


This consulting company is located in Beijing, China, and is active in the field of renewable energy. Its core business is (finding partners for) the development of sustainable biomass projects in China and elsewhere in Asia. Together with the Reinders Almelo Group, E&E focuses on Chinese suppliers for the Western market.

THE ADDED VALUE OF GOOD NEIGHBOURSHIP

The Reinders Almelo Group of companies at a glance. All Group members are at walking distance from each other. Each company however has its own business, its own management, its own specialties

and its own financing. But when dealing with larger projects, they easily merge powers, knowing each other better than anyone else.

A successful approach, beneficial to the Group, its clients and its contractors.

A  Reinders Almelo company

