



**LOHRMANN**

**BIOENERGY**



# Modular Bio Fuel Systems

Presented by:

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## General Information

**Lohrmann International GmbH** is a Germany-based trading company specializing in the sale of good used power plants and processing equipment.

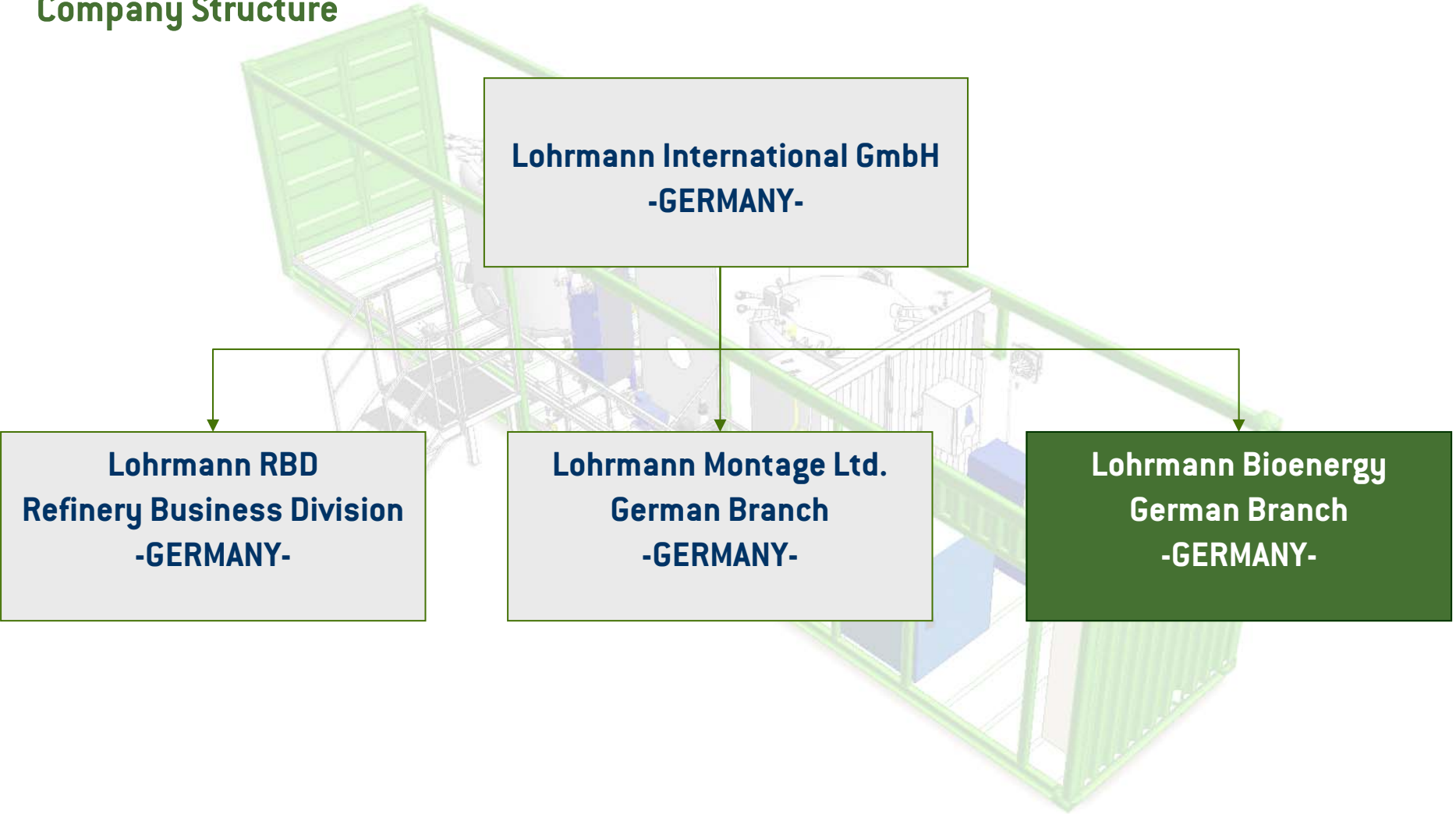
Apart from mere sales Lohrmann International also provides all related services from dismantling, labelling, identifying and packing to transportation and supervision of erection and commissioning worldwide.

Our engineering capacity and expertise allow for a systematic selection of plants matching the application criteria of the clients. The permanent contacts to OEMs worldwide ensure access to important material & design information, technological improvements and spare parts.

Lohrmann International buys and sells the equipment on its own account. It locates and secures equipment on behalf of registered client inquiries or just for inventory purposes. A worldwide network guarantees a fast communication and on site service.



## Company Structure





## Lohrmann BioEnergy

Lohrmann BioEnergy has evolved from the idea of operating/running conventional power plants with regenerative fuels.

In doing so, environmental awareness and efficiency were referred as equally important.

It has shown that this approach leads to optimal/ideal results.

For this reason, BioEnergy combines new and used plants with innovative technique.





## Lohrmann BioEnergy Fields of Activity

**Lohrmann BioEnergy is active in the the following fields:**

Modular Bio Diesel Production Systems

Vegetable Oil fired Diesel Generators

Bio Mass Power Plants



## Bio Mass Power Plants

Bio Mass (Wood Chips, Nut Shells, Palm Fiber, Bagasse) Power Plants belong to the three main business fields of Lohrmann Bio-Energy Division.

Our aim is to achieve the highest efficiency and least costs, by combining pre-owned units with new equipment, depending on availability and project's requirements.

- Project feasibility
- Technology assessments
- Planning applications
- Equipment delivery
- EPC Services

The capacity range of Bio Mass Power Plants is between 5 to 30 MW<sub>el</sub> and get individually configured, meeting the client's needs.

## Vegetable Oil fired Diesel Generator Sets

Larger Diesel Generators ( 1 MW<sub>el</sub>+ ) are excellent suitable for direct feed with vegetable oils.

Hence, most Generator Sets within our portfolio don't require conversions to be able using vegetable oils.

These plants are approved by manufacturers for the use of this fuel.

The capacity of the plants is reduced by approx. 5 % in comparison with plants operated with HFO. This is due to the fact that HFO has higher calorific value/fuel value than vegetable oil.

The capacity can be adapted by a increase of the feedstock, on request.



**Lohrmann International**

**provides a standardized technology for the efficient and safe production of BioDiesel.**



Raw Materials

Production

Products

Clients

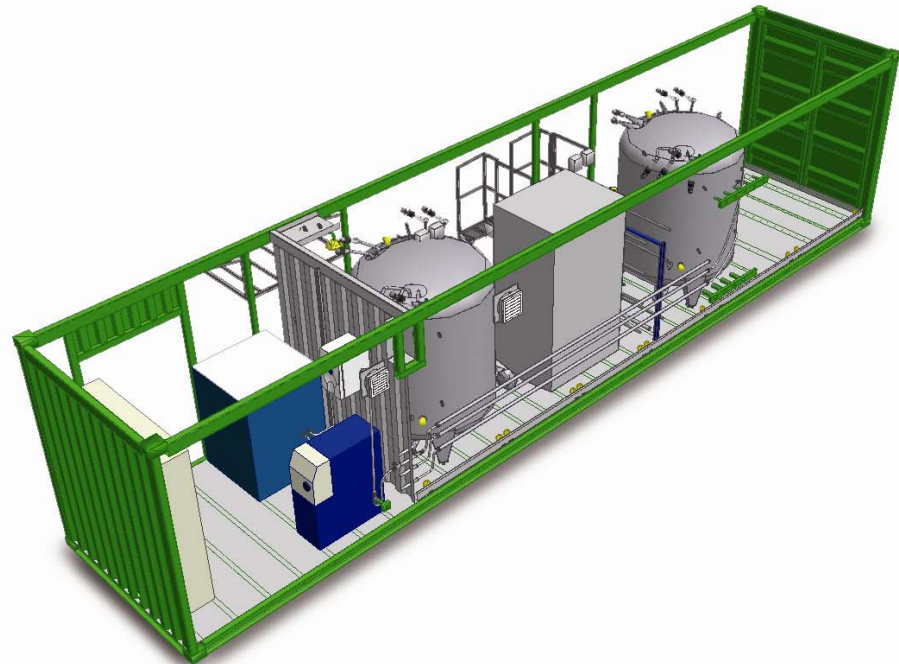


## Standardized Modular BioDiesel Plant

So far, it was only possible to cover the costs for transesterification of vegetable oils and natural fats to produce BioDiesel by production on a large industrial scale.

Thanks to the intelligent design of the BioDiesel Packages, it has now become possible to eliminate cost-intensive parts without affecting the quality of the produced fuel.

Therefore decentralised plants with lower capacities of BioDiesel can for now be operated very profitably.



**Three plant sizes with annual capacities of 500, 1800 and 3600 t. p. a. BioDiesel are available.**

**Capacity extensions are simple and easy by doubling or multiplying in parallel operation.**



## Advantages of Lohrmann BioDiesel Packages

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- A 3D cutaway diagram of a BioDiesel production package. The package is a green metal structure containing various components: a large cylindrical tank at the top, a central processing unit, and a control panel on the right. The diagram shows the internal layout and components of the package.
- + **Complete Automation**
  - + **Turnkey Technology**
  - + **Batch Process**
  - + **Separation by Gravity**
  - + **Water Flushing**
  - + **Certified Plant Safety**

## Complete Automation

The Oecosys Plant runs completely automatically (24 h / 7 d) without any operator intervention.

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- + Greater process stability
  - + Improved process control
  - + Remote maintenance/remote control
  - + Low material use
  - + High output/minor loss
  - + Lower risk of accidents



## Turnkey Technology

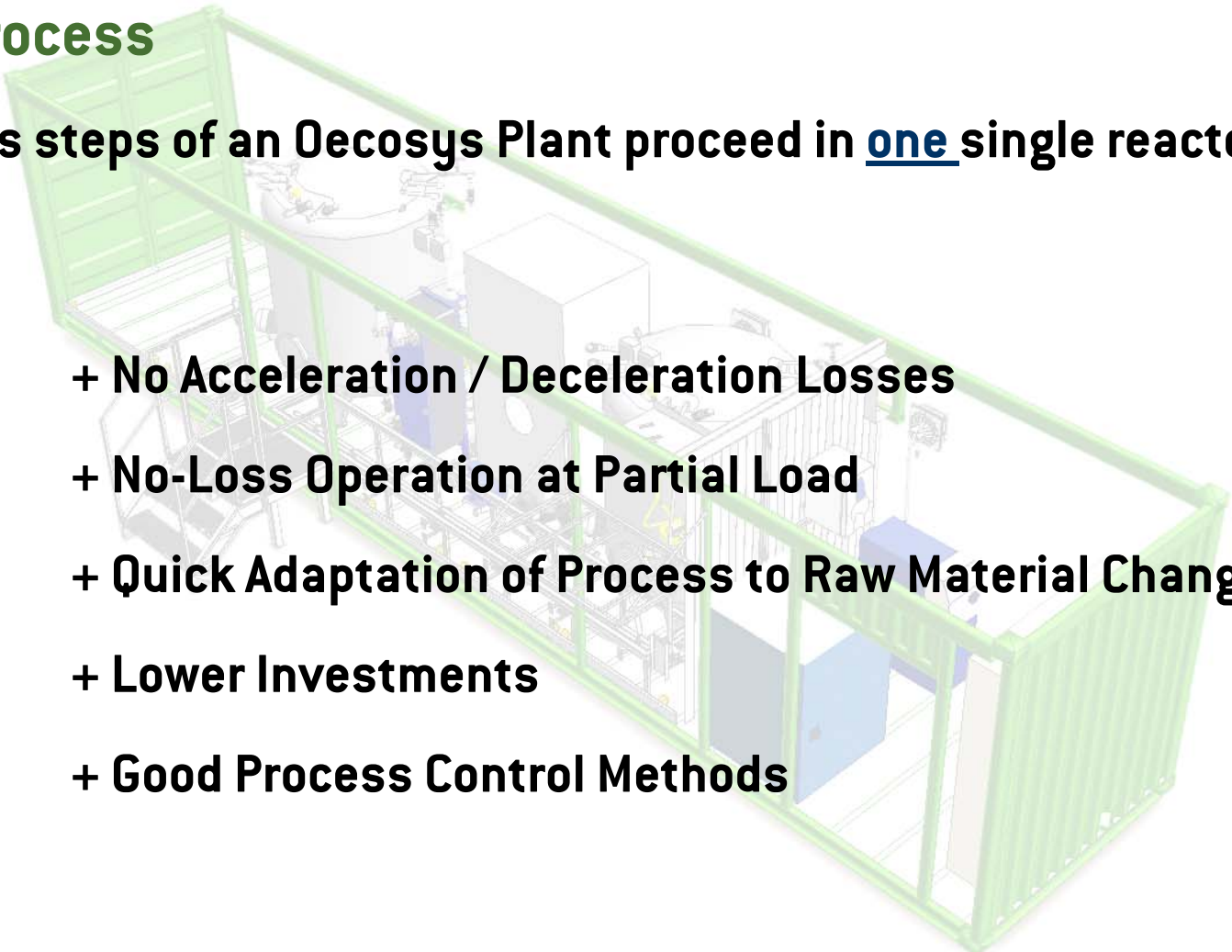
The Decosys Plant with its complete periphery needed is housed in a 40' container.

- + No Supplementary Costs
- + Short Start-Up Periods
- + Adapted Plant Design
- + Suitable Materials



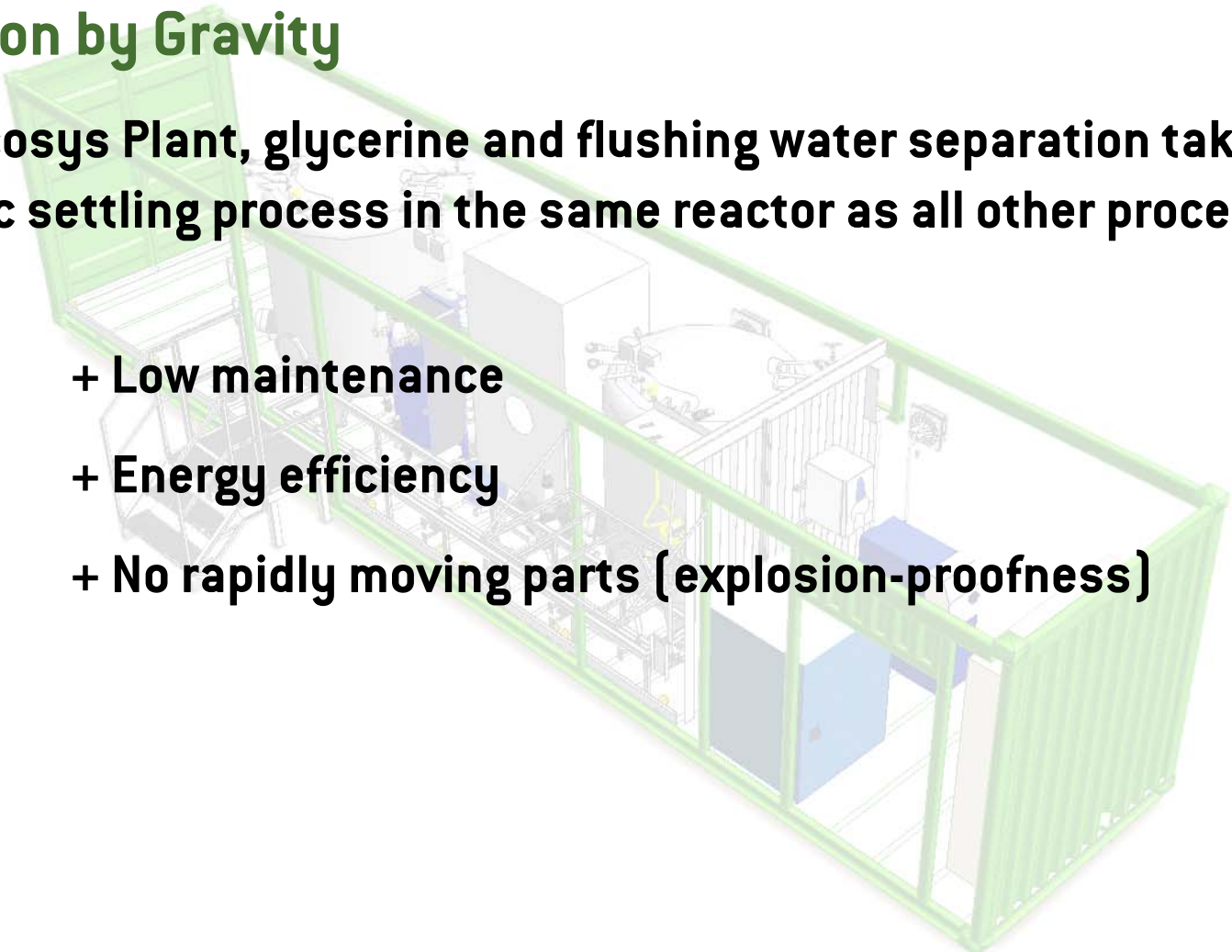
## Batch Process

All process steps of an Oecosys Plant proceed in one single reactor.

- + No Acceleration / Deceleration Losses
  - + No-Loss Operation at Partial Load
  - + Quick Adaptation of Process to Raw Material Changes
  - + Lower Investments
  - + Good Process Control Methods
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## Seperation by Gravity

**In the Oecosys Plant, glycerine and flushing water separation takes place by a static settling process in the same reactor as all other process steps.**

- + Low maintenance**
  - + Energy efficiency**
  - + No rapidly moving parts (explosion-proofness)**
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## Water Flushing

**Due to some technological and economical benefits, we prefer bio-diesel cleaning by water washing.**

- + Cheapest solution**
  - + Best process control**
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- A 3D cutaway diagram of a bio-diesel production facility. The facility is enclosed in a green metal frame. Inside, there are several large cylindrical tanks, a central processing unit, and various pipes and valves. The diagram shows the internal layout of the plant, including a staircase and a control panel area.



## **Certified Plant Safety**

**Oecosys Plants are approved by the German TÜV and meet the strict requirements of German Emission Law.**

**The CE Test Seal is a matter of self-evidence for us .**

- + Higher Operating Safety**
- + Minimised Risk of total Loss (Fire, Explosion)**
- + Lower Insurance Tariffs**
- + No Problems with Approvals**





For more information, reference plant inspections and commercial offers please call our regenerative energy department.

**Thank you for your attention !**



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