The company was founded in 1989 by Mr. Volker Haas and his two brothers Armin and Martin.

- Experience with the design and manufacturing of drum chippers and plants for sawmill-residual disposal products.
- In 1995 HAAS designed and manufactured the first complete plant for waste wood recycling.
- Today HAAS is still a family business, with five members of the family working actively in the company:
  - Volker Haas – CEO
  - Petra Kloft-Haas – Accounts Manager
  - Armin Haas – Production Manager
  - Martin Haas – Installations and Service
  - Harald Haas – Quality Manager
  - Sascha Kloft – Sales Manager

- Furthermore HAAS designs, manufactures and supplies complete chipping and fibre preparation lines for biomass power plants, the board industry and pulp/paper industry.
Employees and turnover

The following diagram shows the development of our turnover and the number of our employees.

Biomass – Fuel for the Future
Combustion Systems and the needed fuel types

- Endproduct

- Direct firing

<table>
<thead>
<tr>
<th>Particle Size</th>
<th>Moisture Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5-20 mm</td>
<td>&lt; 30 % by weight</td>
</tr>
</tbody>
</table>
### Underfeed Firing

**Combustion Systems and the needed fuel types**

<table>
<thead>
<tr>
<th>Particle Size</th>
<th>Moisture Content</th>
<th>Performance Range</th>
<th>Type of fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 50 mm</td>
<td>flexible</td>
<td>&lt; 6 MWth</td>
<td>possible homogeneous fuel properties</td>
</tr>
</tbody>
</table>

### Grate Firing

**Combustion Systems and the needed fuel types**

<table>
<thead>
<tr>
<th>Particle Size</th>
<th>Moisture Content</th>
<th>Performance Range</th>
<th>Type of fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 500 mm</td>
<td>flexible</td>
<td>&lt; 50 MWth</td>
<td>high fuel flexibility (type, particle size, moisture content)</td>
</tr>
</tbody>
</table>
### Combustion Systems and the needed fuel types

#### Stationary fluidised bed firing

<table>
<thead>
<tr>
<th>Particle Size</th>
<th>Moisture Content</th>
<th>Performance Range</th>
<th>Type of fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 80 mm</td>
<td>flexible</td>
<td>&lt; 20 MWth</td>
<td>high fuel flexibility (type, particle size, moisture content)</td>
</tr>
</tbody>
</table>

#### Circulating fluidised bed firing

<table>
<thead>
<tr>
<th>Particle Size</th>
<th>Moisture Content</th>
<th>Performance Range</th>
<th>Type of fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 40 mm</td>
<td>flexible</td>
<td>&lt; 30 MWth</td>
<td>high fuel flexibility (type, particle size, moisture content)</td>
</tr>
</tbody>
</table>
Possible material for biomass-fuel

Infeed material:
- Logs

Endproduct:
- Wood Chips

Possible material for biomass-fuel

Infeed material:
- Wood Residues

Endproduct:
- Wood Chips
Possible material for biomass-fuel

Infeed material

Wood Waste

Endproduct

Wood Chips

Infeed material

Green Waste

Endproduct

Shredded Green Waste
Different existing plants for biomass fuel preparation and handling

Log and wood residues chipping systems in the UK
Capacity: 5-10 t/h

Infeed: small logs and wood residues

Residues to Revenues Australia 2007
Different existing plants for biomass fuel preparation and handling

Log and wood residues chipping systems in the UK
Capacity: 5-10 t/h

Oversize and fines screening with HPS flat screen

Storage system with chain conveyors
Different existing plants for biomass fuel preparation and handling

Wood residue and offcuts handling system Malaysia
Endproduct: < 50 mm

Feeding conveyor
Different existing plants for biomass fuel preparation and handling

- Wood residue and offcuts handling system Malaysia
  - End product: < 50 mm

- Heavy hammermill
  - Also possible for green waste or all kinds of wood waste

- Oversize screening with disc screen
Different existing plants for biomass fuel preparation and handling

Wood residue and offcuts handling system Malaysia
   Endproduct: < 50 mm

Log distance chip transport air conveyor

Wood and green waste handling system in Germany
   Capacity: 50 t/h
Different existing plants for biomass fuel preparation and handling

Wood and green waste handling system in Germany
Capacity: 50 t/h

Pre-crushing with slow speed double shaft crusher
Different existing plants for biomass fuel preparation and handling

- Wood and green waste handling system in Germany
  Capacity: 50 t/h

- Secondary Shredding with horizontal hammermill

Non ferrous separation and direct connection to biomass boiler plant with 200 m air conveyor
Different existing plants for biomass fuel preparation and handling

Wood and green waste handling system in Germany
Capacity: 50 t/h

Chip storage for boiler plant with walking floor system

Additional feeding unit with oversize screening
Different existing plants for biomass fuel preparation and handling

Turnkey pelleting system in Poland
Different existing plants for biomass fuel preparation and handling

- **Turnkey pelleting system in Poland**
  - Capacity: 9 tons of pellets per hour
  - with plans to extend the system to 18 t/h

1. Intake system for the delivered material.
2. Wood chip and sawdust silos
3. Discharge augers that are distributing the material to the following HAAS screening and grinding line.
Different existing plants for biomass fuel preparation and handling

1. Turnkey pelleting system in Poland
   - Capacity: 9 tons of pellets per hour
   - with plans to extend the system to 18 t/h

2. Two HPS screeners where the fractions 0-12 mm, 12-50 mm and > 50 mm are screened.

3. Wet chip silo 0-12 mm

4. Belt driers: material is taken from approx. 55 % moisture content down to approx. 10 %.

5. Dry chip silo

6. Residues to Revenues Australia 2007
Different existing plants for biomass fuel preparation and handling

- Turnkey pelleting system in Poland
  - Capacity: 9 tons of pellets per hour
  - with plans to extend the system to 18 t/h

- Pellet pressing line including two small hammermills
- Finished pellet silo
- Automatic pellet packing line, which includes a bags packing and palletising
- Automatic truck loading station

HAAS Mobile Systems

- HAAS Double Shaft Primary Crusher – mobile version
  - Type HDWV-D
HAAS Mobile Systems

HAAS mobile Green Waste Shredder
Type HMH-T 650 x 1.600

Please contact us for individual plant layouts or references:

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