

# **Pelleting of Wood Residues**

**—  
Turning waste material into an energetic usable product**

**Dennis Werner**

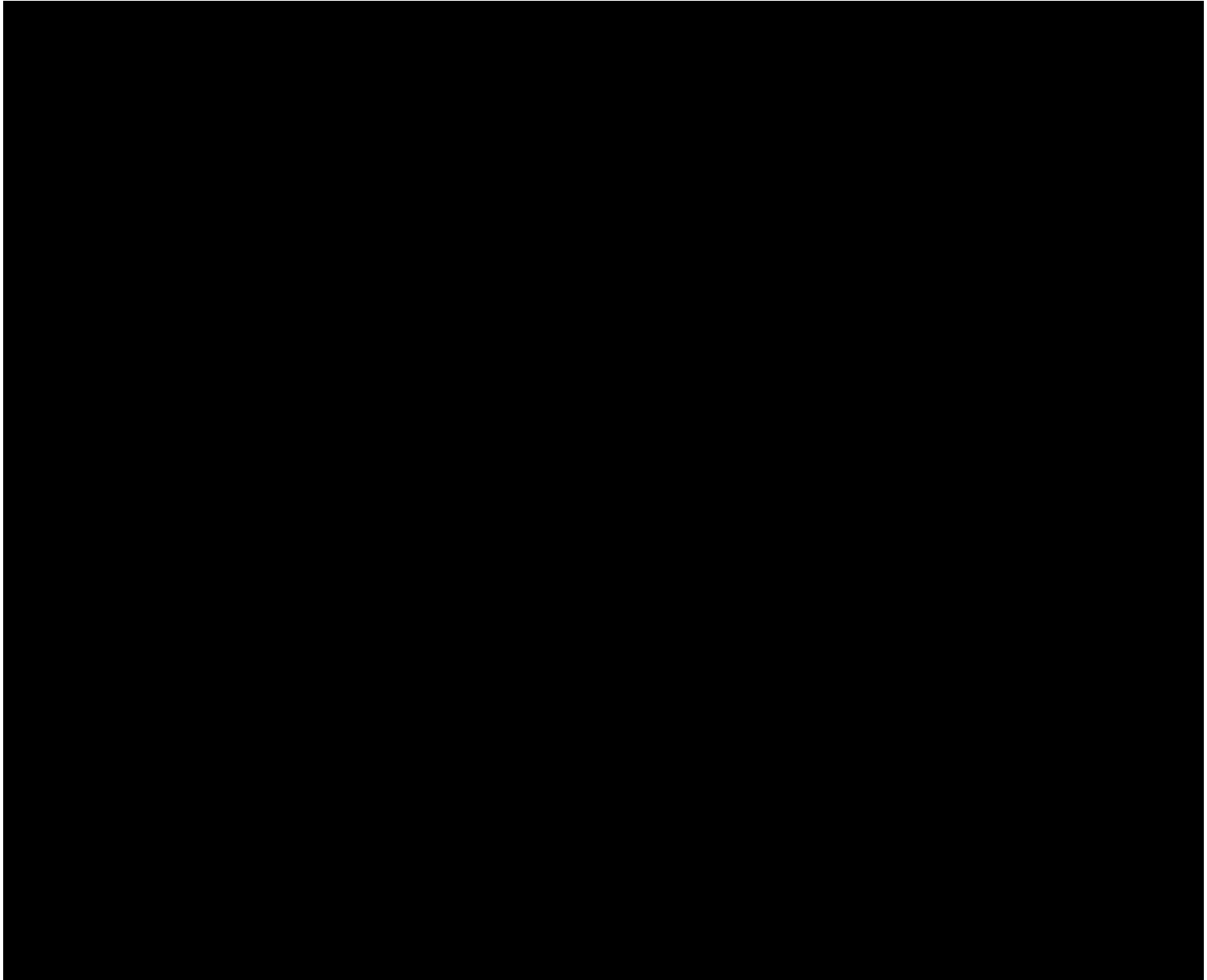
**Amandus Kahl GmbH & Co. KG**

**Hamburg - Germany**



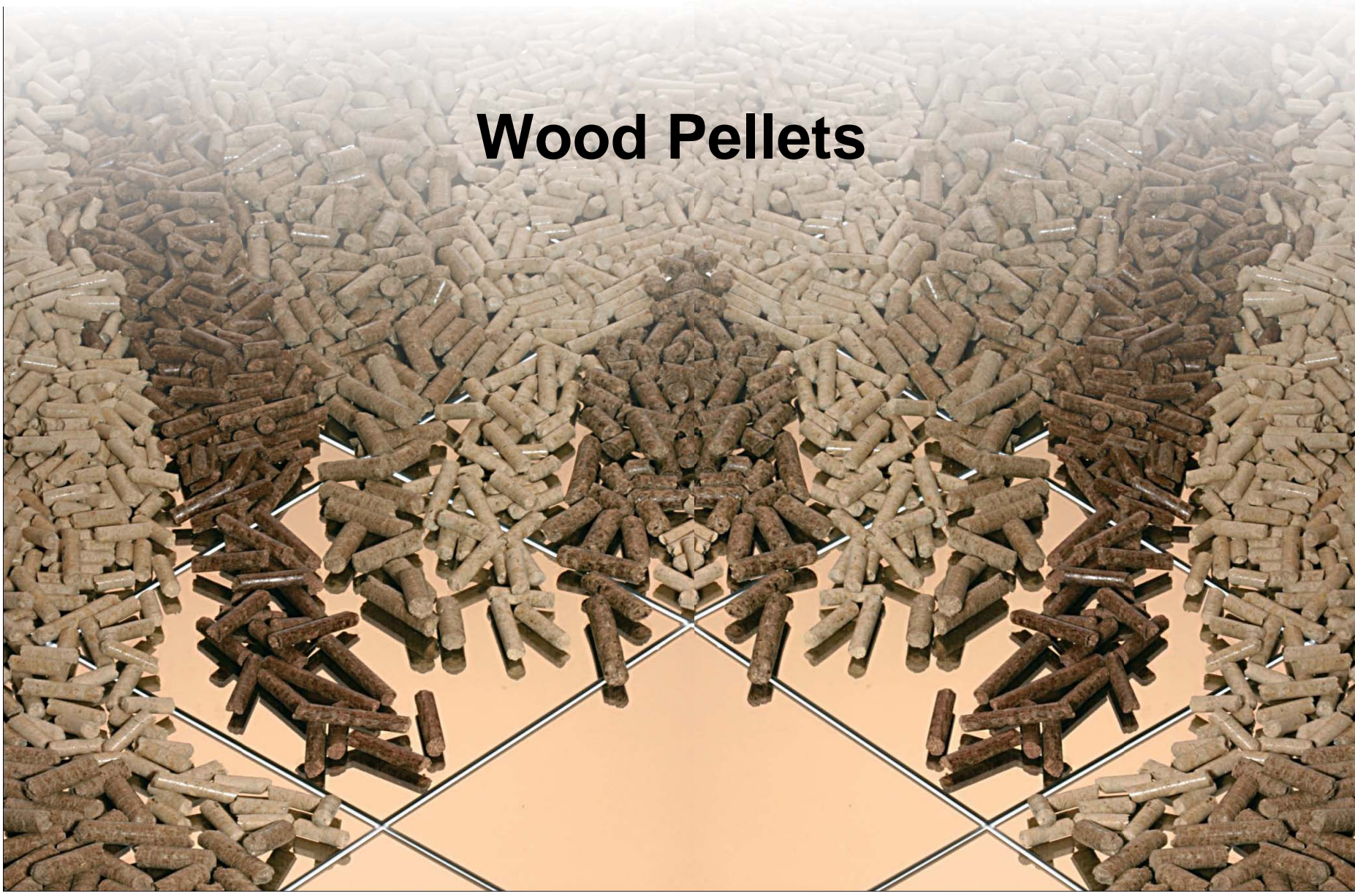
- **The KAHL GROUP**
- **Wood Pellets**
- **The Wood Pelleting Process**
- **Summary**







# Wood Pellets





# What are pellets?

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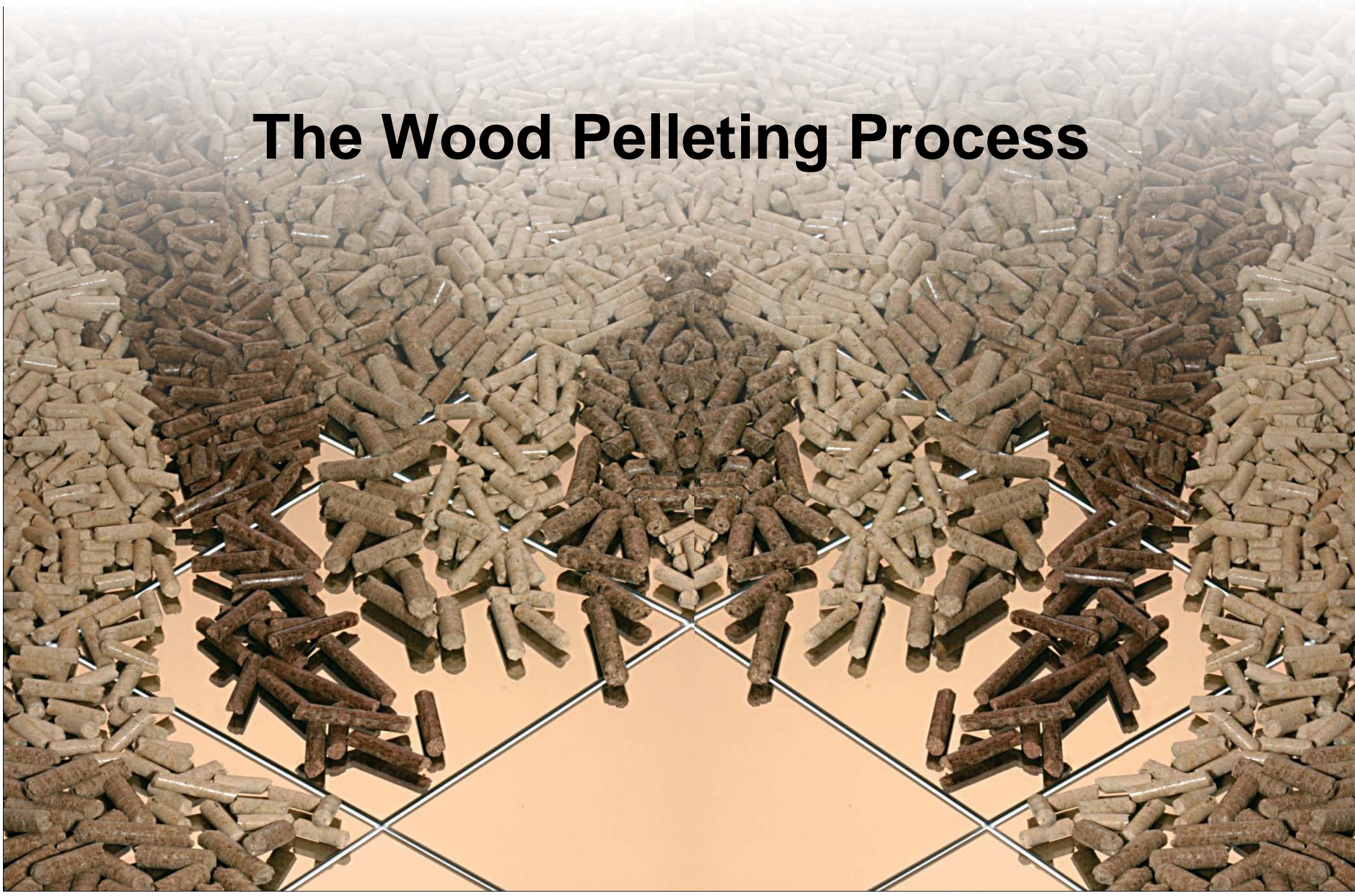
- Cylindrical, compacted bodies
- Diameter: 6 - 8 mm
- Length: 8 - 30 mm
- Bulk density: approx. 650 kg/m<sup>3</sup>
- Water content: < 10 %
- Ash content: < 0.5 %
- Consist of wood exclusively



- Standardized fuel
- Marketable
- Thermal value:  $18 \text{ MJ/kg} = 5 \text{ kWh/kg} = 3.25 \text{ kWh/l}$
- Space-saving during transport and storage
- Air transport possible
- Proportionable, regulable and automatic combustion
- Good flow properties and pneumatic transport
- Delivery in tank trucks
- CO<sub>2</sub> neutral production



# The Wood Pelleting Process





# Where does the raw material come from?

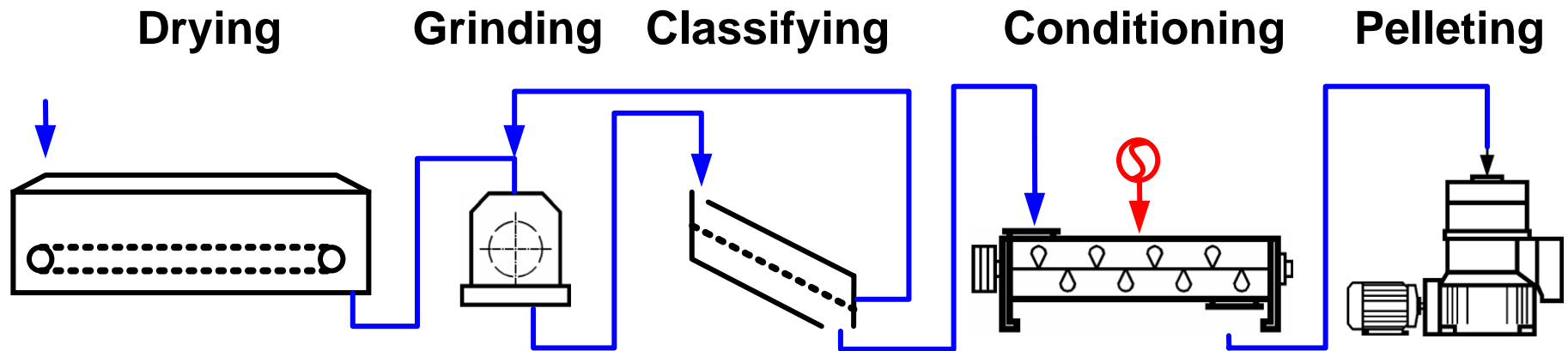
**Industries:** Sawmills, veneering factories,  
furniture factories

**By-products:**

- Wood chips
- Wood shavings and sawdust
- Splinters
- Meals
- Dusts
- Residues of wood production

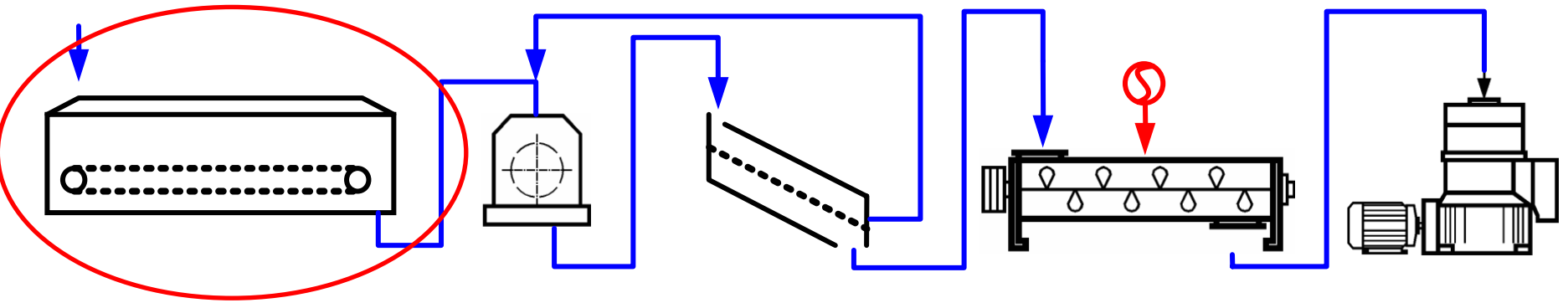


# The Wood Pelleting Process

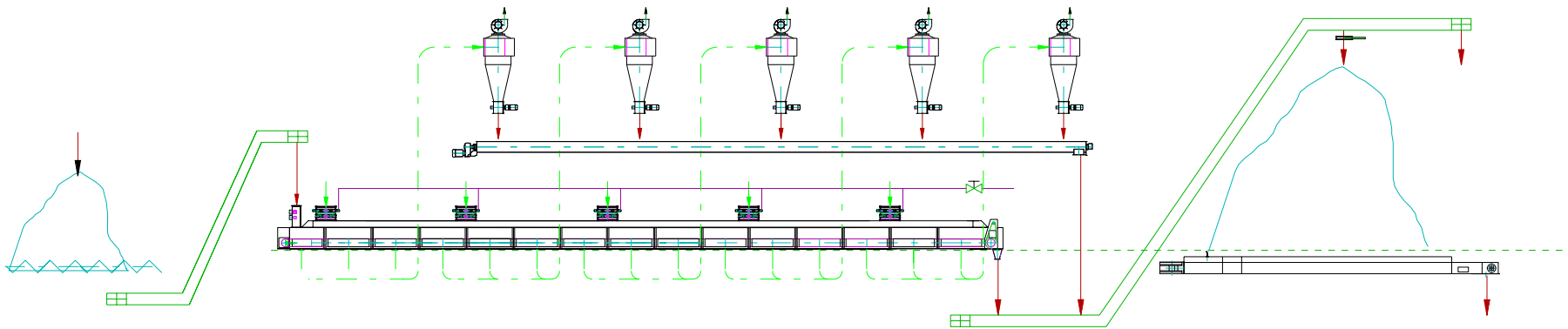




# Drying of Wood







1. Trocknungsanlage

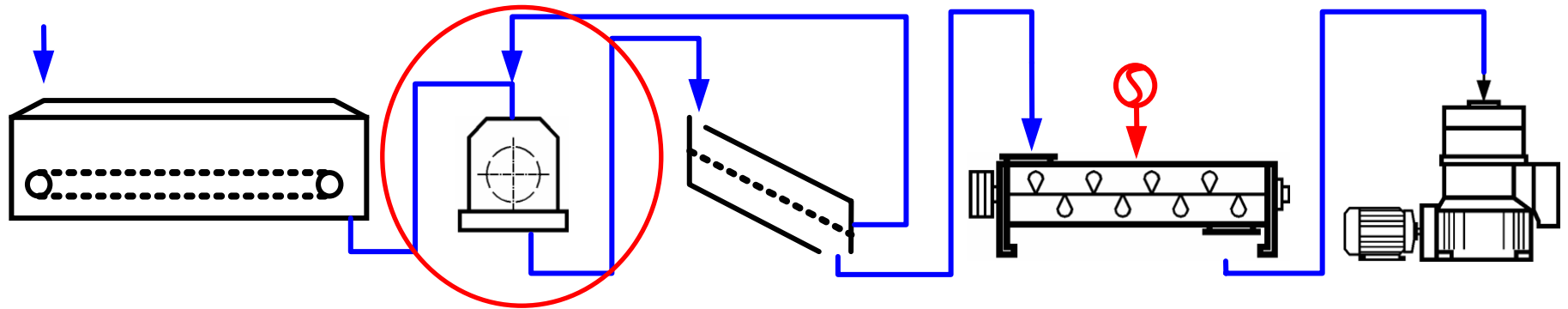


# KAHL Belt Drier



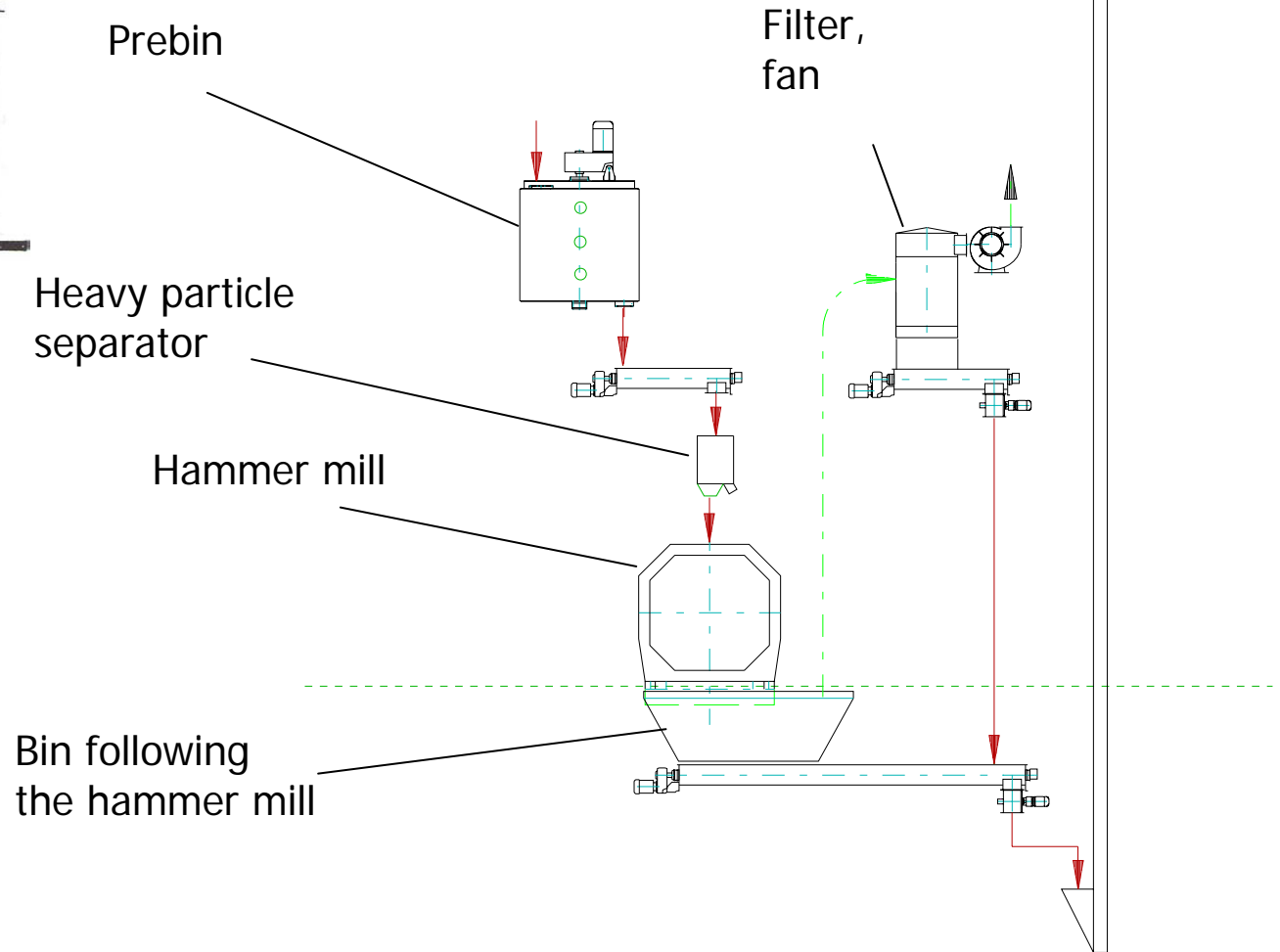
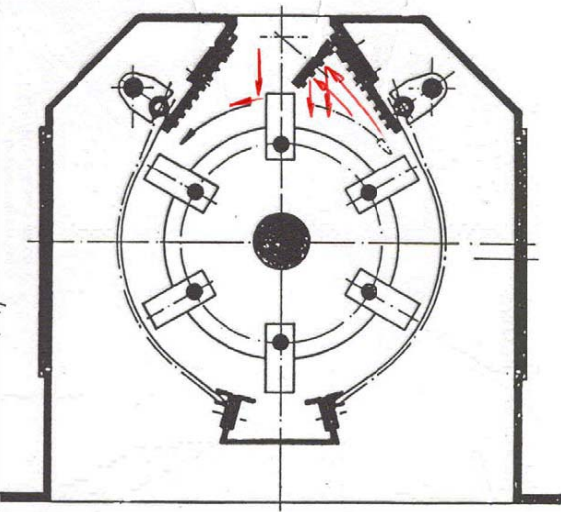


# Grinding of Wood





# KAHL Hammer Mill



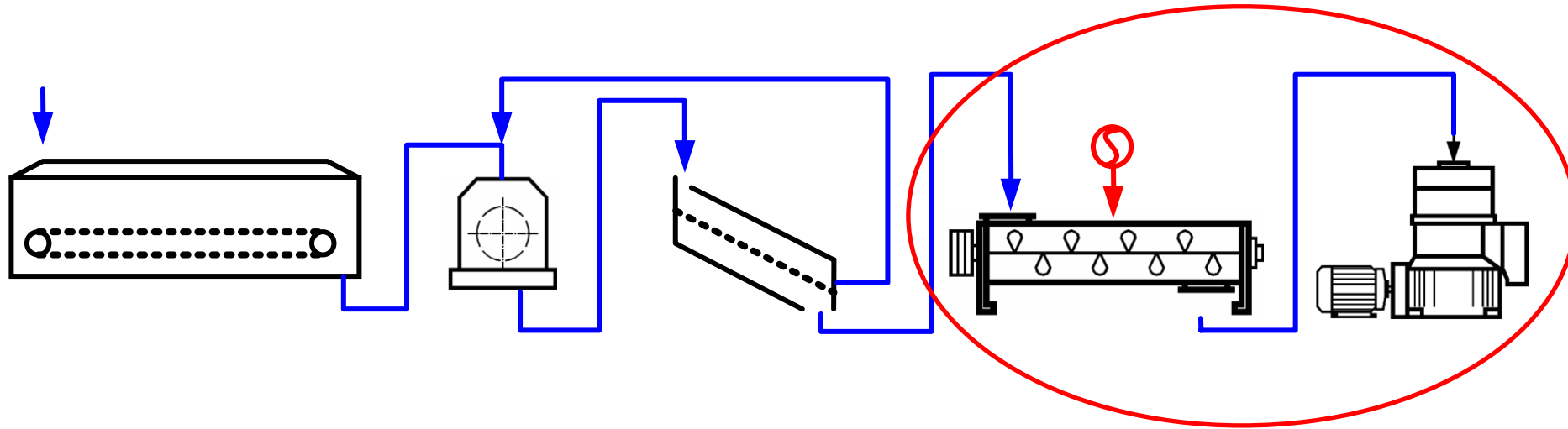


# KAHL Hammer Mill



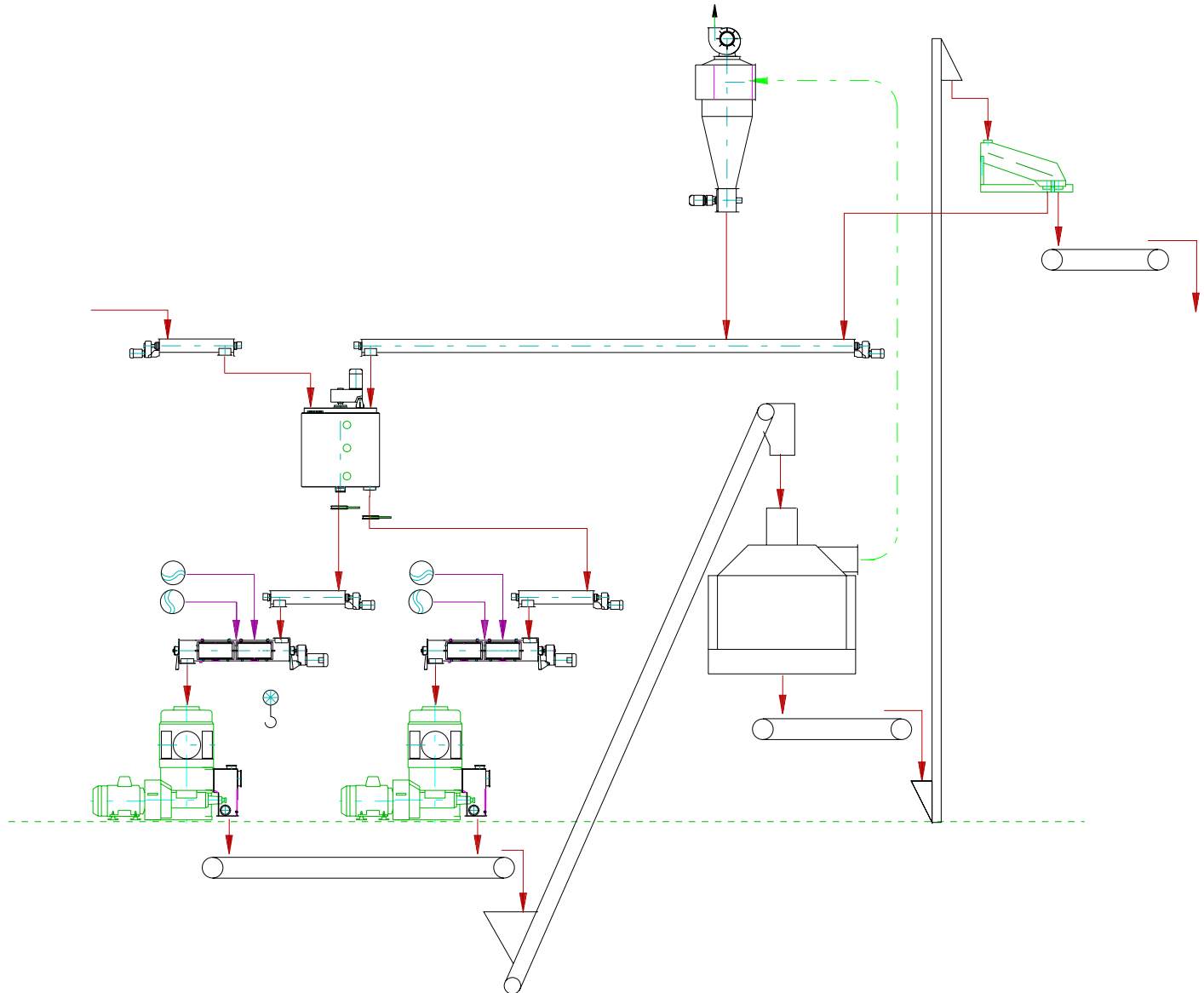


# Conditioning and Pelleting of Wood



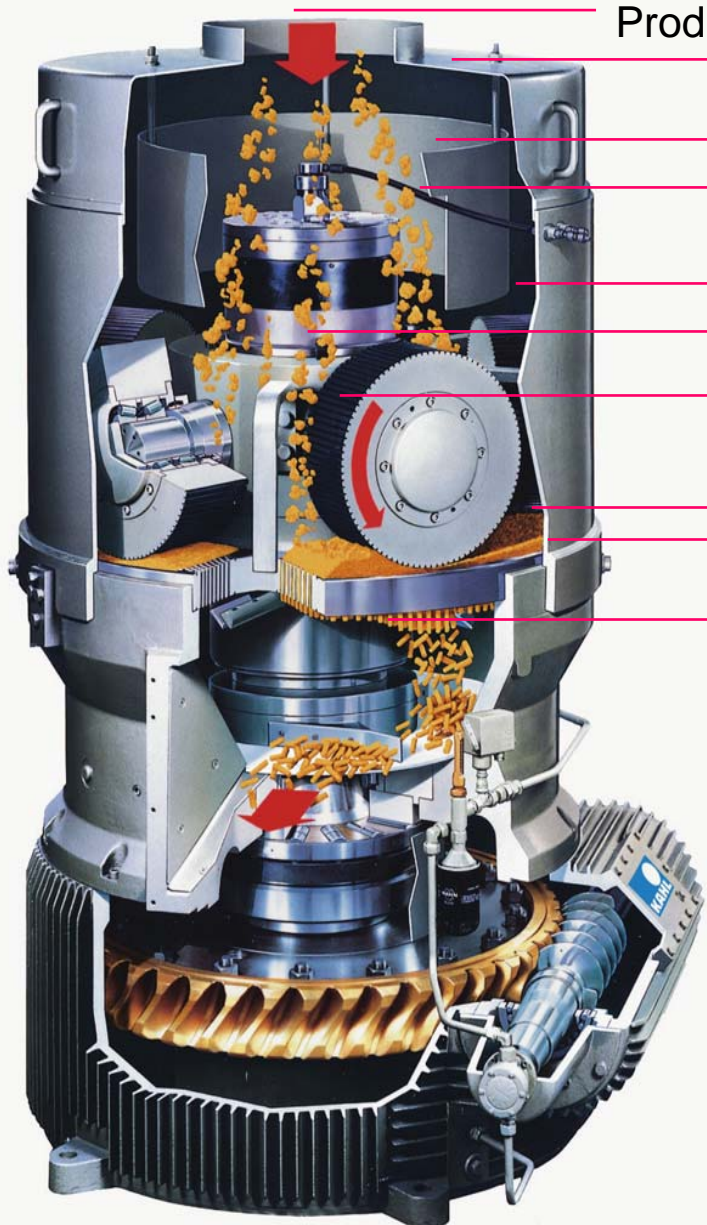


# The Pelleting Process





# KAHL Pelleting Press



Product inlet

Product distribution

Hydraulic nut

Flexible ring

Pan grinder roller

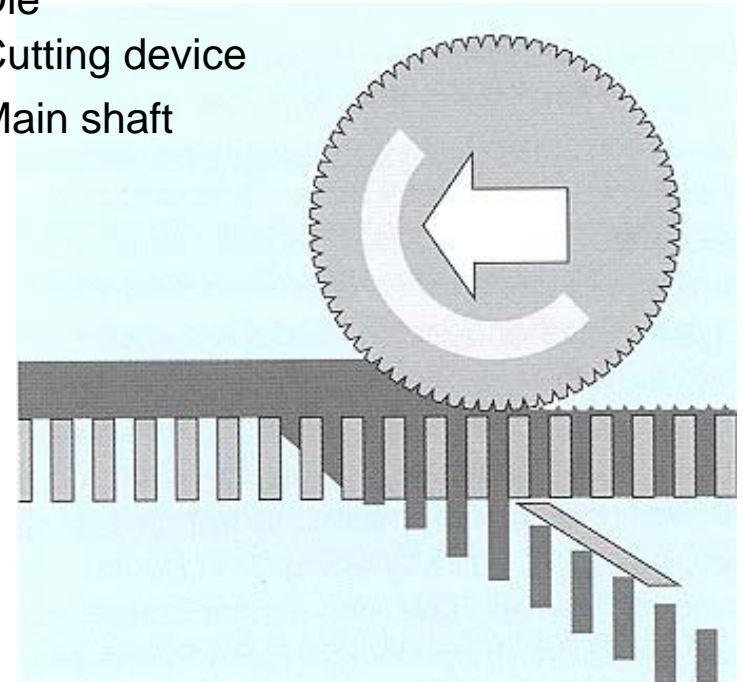
Pan grinder head

Scraper

Die

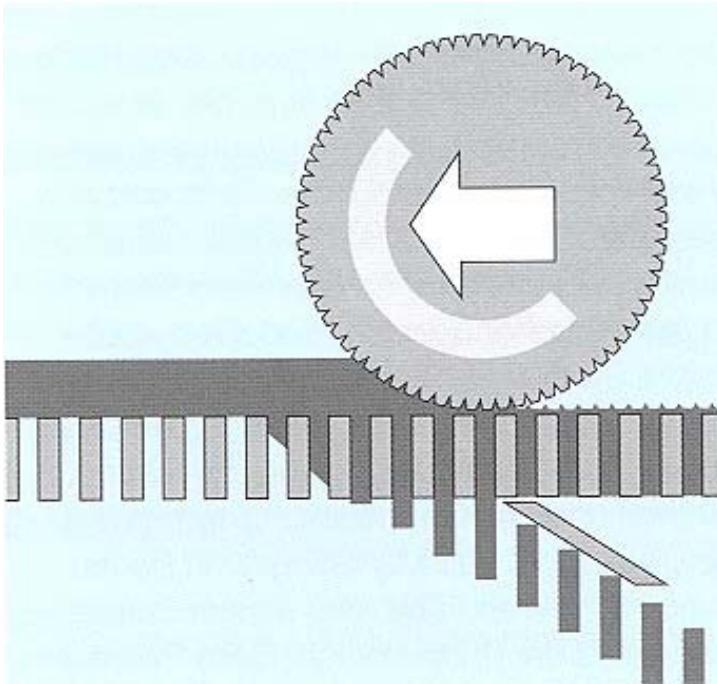
Cutting device

Main shaft





## process in a flat die pelleting press



### The physical parameters

- *axial pressure*
- *drive power*
- *frictional coefficients*
  - roller surface - product*
  - product - product*
  - product – die surface*
  - product – effective bore*

decide on draw-in behaviour,  
throughput and pellet quality



# KAHL Pelleting Press





# KAHL Pelleting Press



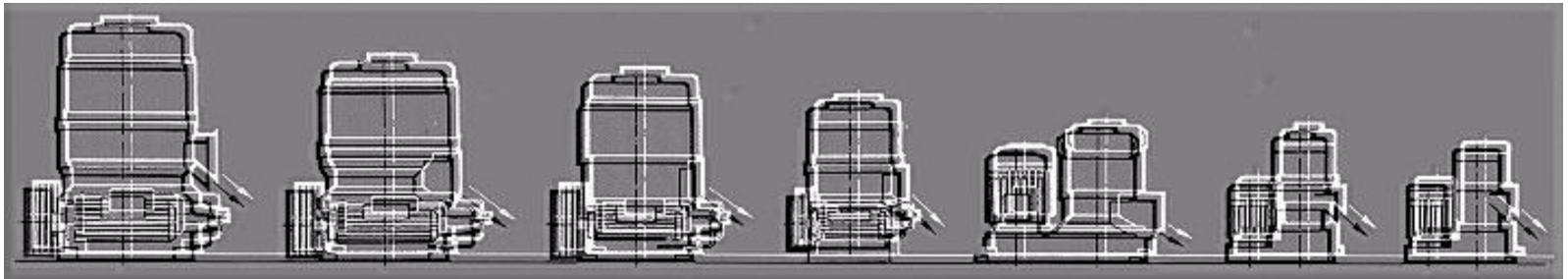


# KAHL Pelleting Press





Die diameter:		390	-	1,250 mm
Motor power:		22	-	400 kW
Throughput:	abt.	200	-	5,000 kg/h
(depending on the product)				
Pellet diameter:		6	-	10 mm





A large number of small, cylindrical wood pellets are scattered across a surface. The pellets are arranged in a way that they appear to be filling the space between the lines of a diamond-shaped grid. The pellets are light brown and have a slightly irregular texture. The grid lines are thin and dark, creating a pattern of diamond shapes across the entire image. The pellets are more densely packed in some areas and more sparse in others, particularly towards the bottom where they seem to be falling or settling into the grid.

# Summary



- Since 1982, Kahl have sold a lot of presses for pelleting of wood which work very successfully.
- Benefit from our experience!

Thank you for your attention.



GROUP



**You will find us at LIGNA 2007:**

**Hall: 13**

**Booth: E02**



**GROUP**