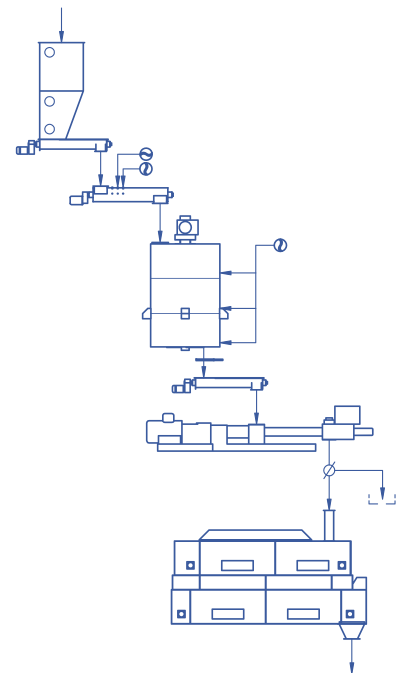


A photograph of industrial machinery for hydrothermal treatment. The scene shows a large, dark-colored cylindrical vessel with a motor on top, surrounded by a complex network of pipes, valves, and structural steel. A large blue circle is overlaid on the bottom left of the image, containing the text "HYDROTHERMAL TREATMENT".

**HYDROTHERMAL  
TREATMENT**



**HYDROTHERMAL  
TREATMENT FOR  
GENTLE MODIFICATION  
OF RAW MATERIALS AND  
FEED MIXTURES**

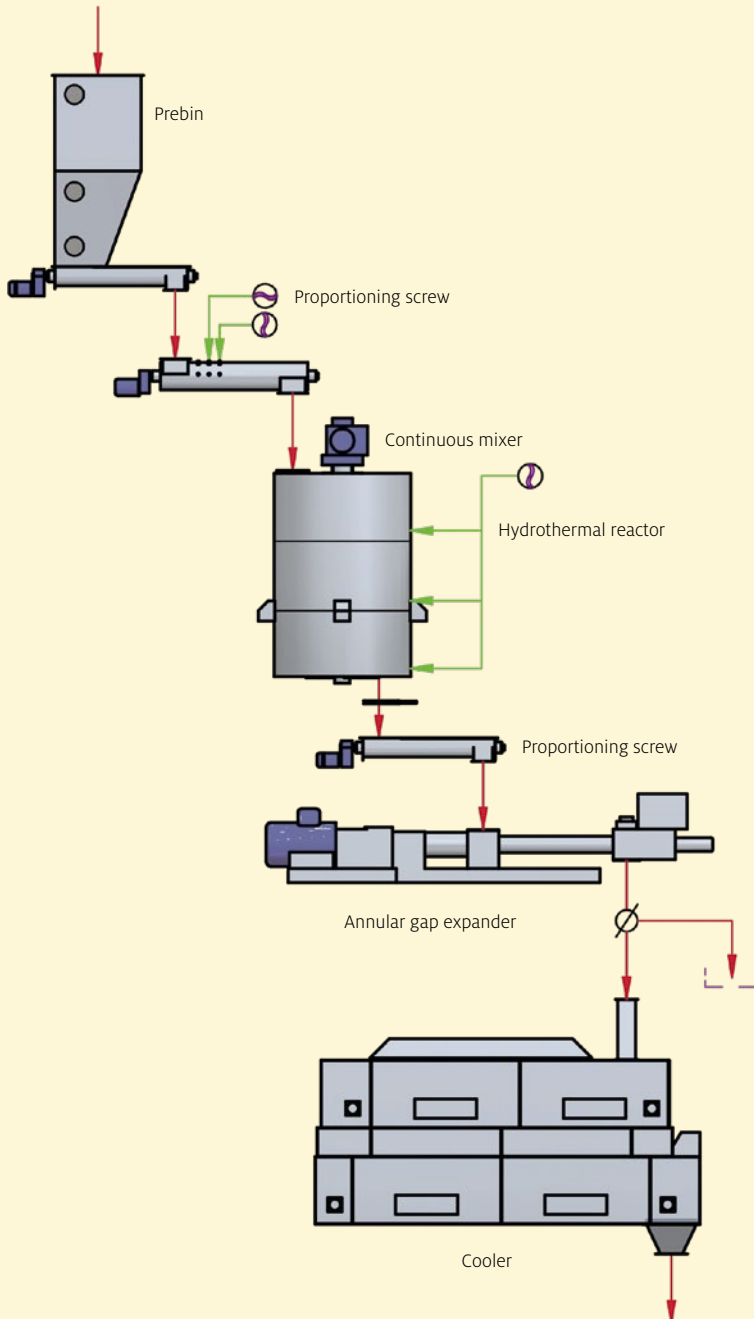
## HYDROTHERMAL TREATMENT

*Hydrothermal treatment for gentle modification of raw materials and feed mixtures*



For improving the product properties and for reducing harmful components inhibiting digestion

*Gentle and uniform product treatment due to separately adjustable temperature, moisture, retention time, mechanical treatment and pressure*



**POSSIBLE APPLICATIONS OF THE KAHL HYDROTHERMAL PROCESSES:**

**SOYBEANS**

- Reduction of inhibitors (urease, trypsin)
- Increased oil availability
- High protein solubility (PDI-NSI)

**LEGUMES**

- Reduction of inhibitors (phasins)
- Starch modification
- Improved nutritive value

**CEREALS**

- Starch modification
- Hygienic treatment
- Improved nutrient utilisation
- Use for special feed

**FEED MIXTURES**

- Hygienic treatment
- Extreme liquid additions

**RAPE**

- Inactivation of glucosinolates
- Sinapine

**COTTON SEED**

- Reduction of gossypol

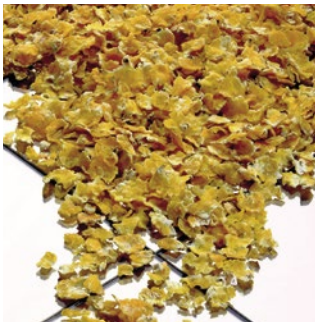
**ADVANTAGES**

- Gentle treatment
- Low energy input
- Controllable process steps
- Wide range of applications

### *The KAHL process technology ensures end products of high and uniform quality*

The high and uniform quality of the end product is achieved by the easily controllable and adjustable pressure and temperature range.

Kahl has many years of experience in the design of complete production lines in which different pre- and post-treatments can be combined with hydrothermal treatment depending on the requirements.



Hydrothermal treatment with reactor and annular gap expander



KAHL Crushing roller mill