

# Machines and Plants for the Production of Alternative Fuels



# The production of alternative fuels contributes to the conservation of the resources of fossil fuels.

Modern waste management means to minimise or even better prevent the production of waste in the community. Furthermore, dangerous substances in the waste must be eliminated in order to exclude risks to humans, animals, and the environment.

To achieve this aim, several concepts for the recycling of waste materials such as feedstock and energy recovery of waste are being pursued by politics and industry. In recent years, the production of alternative fuels and their use have become an important topic in the sector of waste technology, not least due to the pricing of primary energy sources on the world market. Due to the requirements of the various combustion systems, in particular the production of sophisticated and high-quality alternative fuels is a challenge for waste management companies and machine suppliers.

Depending on the customers' requirements, alternative fuels in the form of pellets or fluff are produced. The central part of the processing plant is the flat die press. By means of the flat die press, the waste materials are more or less strongly compacted depending on the quality requirements. At the same time, in particular the light fractions with a high calorific value are homogenized. The slightly compacted or slightly pelleted material is also called fluff.

The pelleting elements such as pan grinder rollers (A) and die (B) exert a combined shearing and cutting impact on the product to be processed.



## Example of a plant design for alternative fuel conditioning



The waste materials pass through the process steps intake, processing, drying, sifting and conditioning.

1. Primary crushing
2. Screening into several fractions
3. Post-crushing,
4. Separation of ferrous and non-ferrous metals,
5. If necessary, drying for stabilising the waste and to increase the calorific value
6. Classification and separation of the light and heavy fraction
7. Post-treatment of the heavy fraction

8. Production of pellets/fluff from the light fraction
9. Dedusting and treatment of the exhaust air

- If fluff is produced, after treatment using the flat die press, the material is conveyed for example into a press container for loading.
- If pellets are produced, the pellets are cooled, screened and intermediately stored in silos prior to loading/discharge by truck.



**FLUFF**

**PELLETS**



## Plant example with flat die presses:

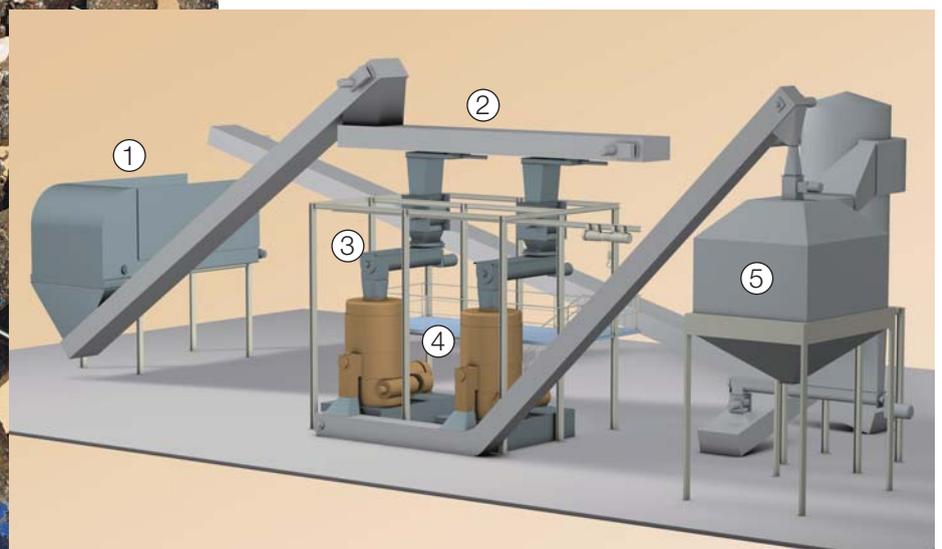
The pre-crushed material is fed into a scraper conveyor (2) for distribution to the flat die presses if several pelleting presses are required.

Outlet slides as well as the actual proportioning elements (3) consisting of proportioning wheels and screws are mounted below the scraper conveyor. The speed of the respective proportioning element is controlled by a frequency converter depending on the current consumption of the press motor. It is a load-dependent control system to ensure an optimum throughput.

The flat die presses (4) are placed in parallel, with the presses being operated in a so-called „overflow“.

The product which is not drawn-in by the proportioning elements is conveyed by the scraper conveyor and intermediately stored on a buffer belt (1) from which it is returned to the pelleting plant. Thus temporary production fluctuations in the upstream and downstream line can be compensated.

If stable pellets are produced, they are subsequently cooled in the cooler (5) prior to loading. If fluff is produced, a cooler is usually not required.



# Homogenous products from waste materials



Waste materials are available as heterogeneous bulk products, the handling of which often causes problems. In addition, the waste materials must be conditioned for further treatment or for the further recycling route.

The objective is the production of a homogeneous product from a non-homogeneous waste or raw material. The agglomeration by compression or pelletization provides a solution for this. The flat die press can thus be used as a universal machine for different waste materials.

In the last few years the recovery and the use of alternative fuels in cement kilns and power plants have established themselves.

The quality parameters of the product – and thus the required conditioning technology – are described and defined by the combustion technology used.

The cement production (clinker production) is a raw material and fuel-intensive process, which means that this sector offers a high recycling potential. In addition to generating the necessary energy for example for the rotary kiln process, the combustion residues can simultaneously be used as raw material components.

Similar alternative fuel qualities are required in power plants.

When waste materials (e.g. mixed plastics) are used for steel works, they are formed to pellets. In the steel works, these pellets are then used as a reducing agent. Besides, a good conveying and blowing capacity as well as sufficient mechanical and thermal stability are often required.

Processing plants with flat die presses produce the corresponding high-quality alternative fuels.

## The following waste materials can be processed with a flat die press:

- Biomass
- Blast furnace dust
- Bleaching earth
- Cable waste
- Carbon black
- Cardboard waste
- Carpet waste
- Cellulose dust
- Charcoal meal
- Coffee waste
- Compost
- Cotton waste
- DSD plastics
- FDG gypsum
- Fibrous web waste
- Filter cake
- Filter dust
- Flax
- Fly ash
- Garbage (RDF)
- Household waste
- Industrial waste
- Labels
- Metal salts
- Nappy waste
- Olive pulp
- Paint residues
- Paper sludge
- Paper waste
- Peat
- Petroleum coke
- Plastic waste
- Pulp
- Sawdust
- Sewage sludge
- Sisal waste
- Stone wool waste
- Sulphur pulp
- Textile waste
- Waste tyres
- Wood and many more.



**AMANDUS KAHL GmbH & Co. KG**

Dieselstrasse 5-9

D-21465 Reinbek / Hamburg

Phone: +49 (0)40 727 71 - 0

Fax: +49 (0)40 727 71 - 100

info@amandus-kahl-group.de

[www.akahl.de](http://www.akahl.de)