

Cellulose Fibre Technology



Fibretec 1500 Production System



MAKRON cellulose fibre production technology provides a full package for manufacture of cellulose fibre insulation, from machinery to training of the personnel. Fibretec 1500 production system is very compact, versatile and efficient.

The following amounts of raw materials are needed for producing 1000 kg of cellulose fibre insulation.

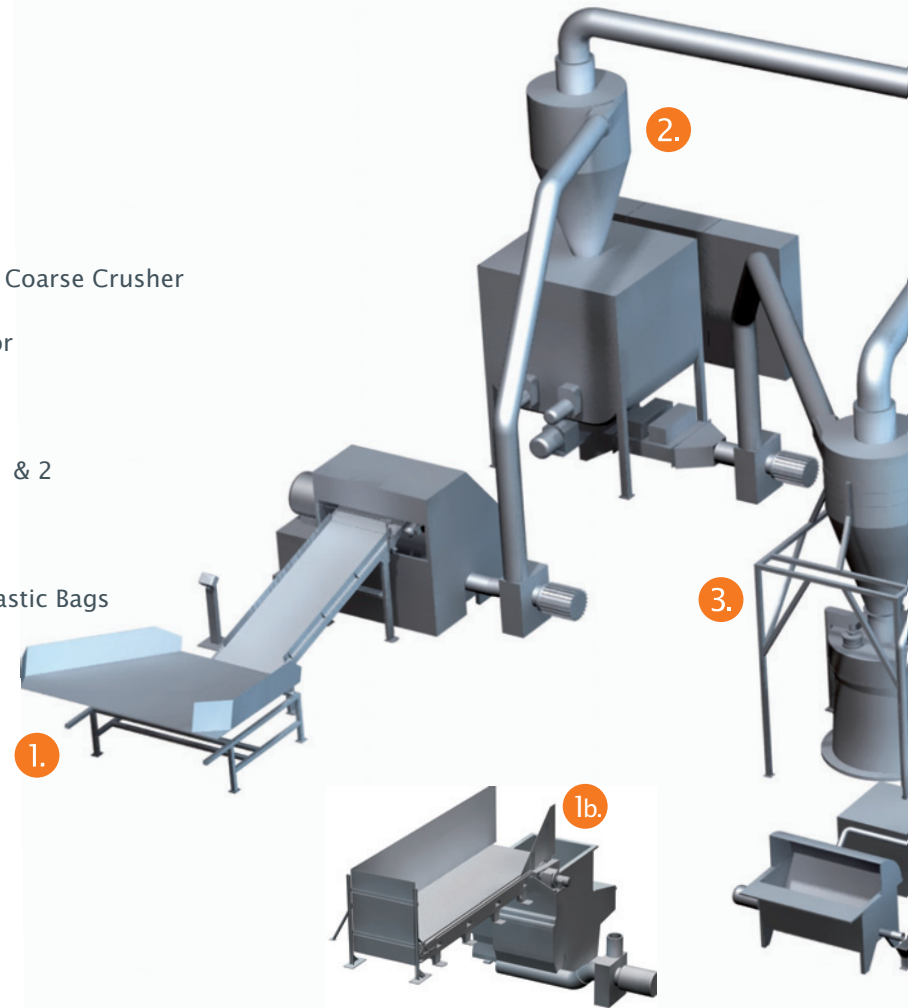
- 810 kg recycled paper (sorted, dry newsprint)
- 120 kg boric acid (H_3BO_3)
- 70 kg borax decahydrate or pentahydrate ($Na_2B_4O_7 \cdot 10H_2O$ or $Na_2B_4O_7 \cdot 5H_2O$)
- 67 paper of plastic bags for packing
- 1,67 working hour (2,5 persons)
- 0,67 h x ~400 kW x ~60% = ~160 kWh electric power

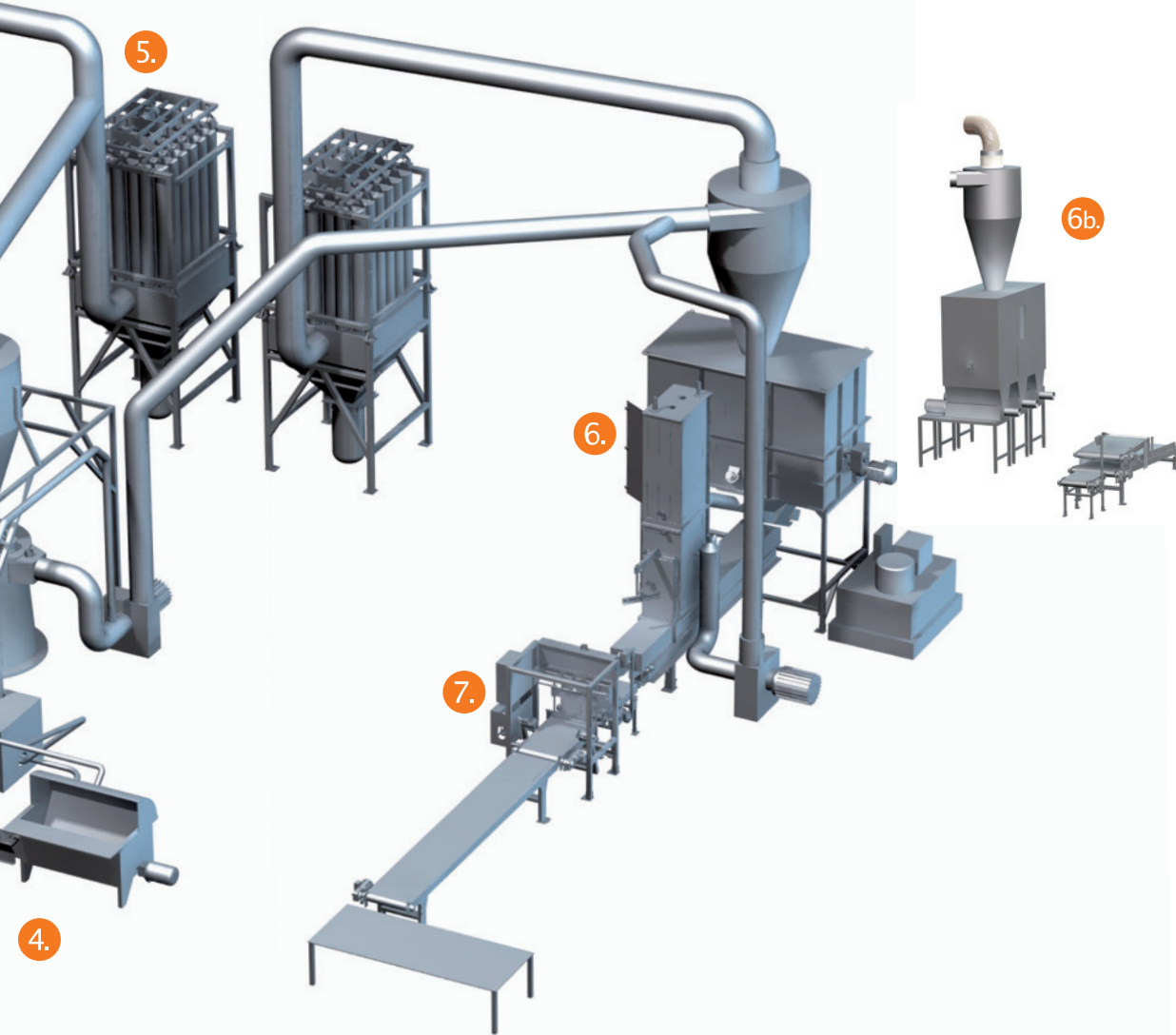
The production capacity of the cellulose fibre plant is appr. 1500 kg/hour (degree of capacity utilization 0,75).

1. Manual Paper Feeding System & Coarse Crusher
2. Reservoir with Cyclone Separator
3. Refiner
4. Feeding Devices for Chemicals 1 & 2
5. Dust Extraction Units 1 & 2
6. Hydraulic Packing System for Plastic Bags
7. Weighing Belt with Closing Unit

OPTIONAL

- 1b. Automated Paper Feeding System & Shredder
- 6b. Packing System for Paper Bags (replaces items 6 and 7)





Use of Cellulose Fibre

The usual installation methods of cellulose fibre are blowing and spraying, therefore the result is a seamless insulation that fills perfectly the entire space. The newly developed blowing and spraying methods ensure that the adhesion of the insulation to the structures will remain unchanged over years and no sagging will occur.

Cellulose fibre insulation can be installed manually or with specialised blowing or spraying machines. Due to the convenient installation method no cutting of the insulation material is needed.

Blowing method is used on horizontal and diagonal structures, e.g. on attics and floors. The dry insulation material is blown into the space in question. The fine graded material penetrates well even the small holes and fills exactly and seamlessly the entire space.

Spraying method is used on vertical structures, e.g. on walls. The insulation material is moistened with fine water dust while it is sprayed onto the open structure. A seamless and draught-free insulation layer is achieved even in narrow and complicated places. After drying the insulation is well adhered to the surrounding structures, which prevents sagging or separation from the structures.



5.

6.

6b.

7.

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Why cellulose fibre?

- Excellent thermal insulation value
- Evens out the moisture in the structures
- Breathing material
- Seamless and draught-free insulation
- Fire safe; it does not catch fire or progress and spread fire
- Resists rot, fungus growth and pests
- No sagging, strong adhesion to the surrounding structures
- Manufactured locally from recycled paper
- User friendly installation; safe, no cutting, no waste

Technical Data

Effective capacity:

1500 kg/h x 16 h/day
~ 24000 kg/day
~ 6 000 000 kg/year
(degree of capacity utilization 0,75)

Required factory space:

25 m x 20 m x 8-10 m (LxWxH) ~ 500 m²
+ ~350 m² for storing the raw material and final product

No special requirements for foundation.

No need for water supply!

Cellulose fibre as insulation material

Cellulose fibre is an ecological and economical thermal insulation material to be used on ceilings, attics as well as floor and wall structures. Cellulose fibre is an ideal insulation material for both new and renovated buildings. It is a wood fibre based, environmental friendly material that is manufactured from recycled clean newspaper. Non-toxic natural minerals are used to protect the insulation material against fire and rot.

- Thermal conductivity: $\lambda \sim 0,040$ W/mK.
(Actual λ -values determined and approved by local authorities)
- Fire endurance: Cellulose fibre does not maintain or spread fire. (Actual classification according to local requirements)
- Air conductivity $80...120 \times 10^{-6}$ m³/msPa, depending on the installed density.

Power supply: Voltage: 400/230 V, 50 Hz

Connected power ~350 – 400 kW
(depending on the scope of supply)

Compressed air: Pressure min 0,5 MPa – max 0,7 MPa,
consumption ~200 l/min

Other equipment: 1 fork lift

Packing equipment: Paper or plastic bags

