

Special info

# Pigmentation of sand-lime blocks



**LASCO UMFORMTECHNIK  
WERKZEUGMASCHINENFABRIK**





There are manifold possibilities for the coloured design of sand-lime blocks which – in facing brickwork – can still be reinforced by keeping the natural surface of fracture.

Sand-lime blocks made in industrial production for about 100 years are getting more and more popular. In European countries they are produced in large quantities, and in numerous CIS countries and China sand-lime blocks and blocks made in similar production processes have become building materials with a promising future as well. For facing brickwork not only hollow and solid blocks with a smooth surface are used. Sand-lime blocks with their natural surface of fracture and especially coloured CS blocks also add a special effect to the architecture of buildings.

However, permanent and even colouring of the sand-lime block can only be reached if the whole sand-lime batch is coloured with synthetic pigments. Coloured painting cannot replace the durability of substantive dyeing and, moreover, would hide the characteristic structure of the sand-lime block.

The natural colour of sand-lime blocks depends essentially on the original colour of the sands used. The content of lime practically does not matter.

When colouring the raw sand-lime mixture with the pigment powder, it becomes clear that there is a saturation limit in the percent increase of the colour-

## Some like it colourful:

Facing brickwork made from coloured sand-lime blocks has a special effect in architecture. LASCO offers well-engineered technology for their fully automatic production.

ing intensity – like that known from the colouring of other building materials like concrete, plaster or mortar. In addition the sand grains are not completely covered by the pigments that are fixed in the binding agent. This means that the proper colour of the sand is responsible for the resulting shade to some extent.

The curing conditions have bigger impact on the shade of the blocks, though. Tests have shown that the colours might turn out to be paler with rising steam pressure. However, pigmentation has no influence on the tensile bending strength nor on the compressive strength.

Generally the pigments must meet the following requirements – especially when used for facing bricks:

- lime resistance
- heat resistance in the curing process of the blocks
- heat and weather resistance



The varied structure of a facade of a block of flats in Russia shows clearly what effects the use of sand-lime blocks in different shades can have in architecture.

## Adding of pigments in production

Depending on the production method both the continuous and the intermittent mixing of the sand-lime mixture with colour pigments can be used.



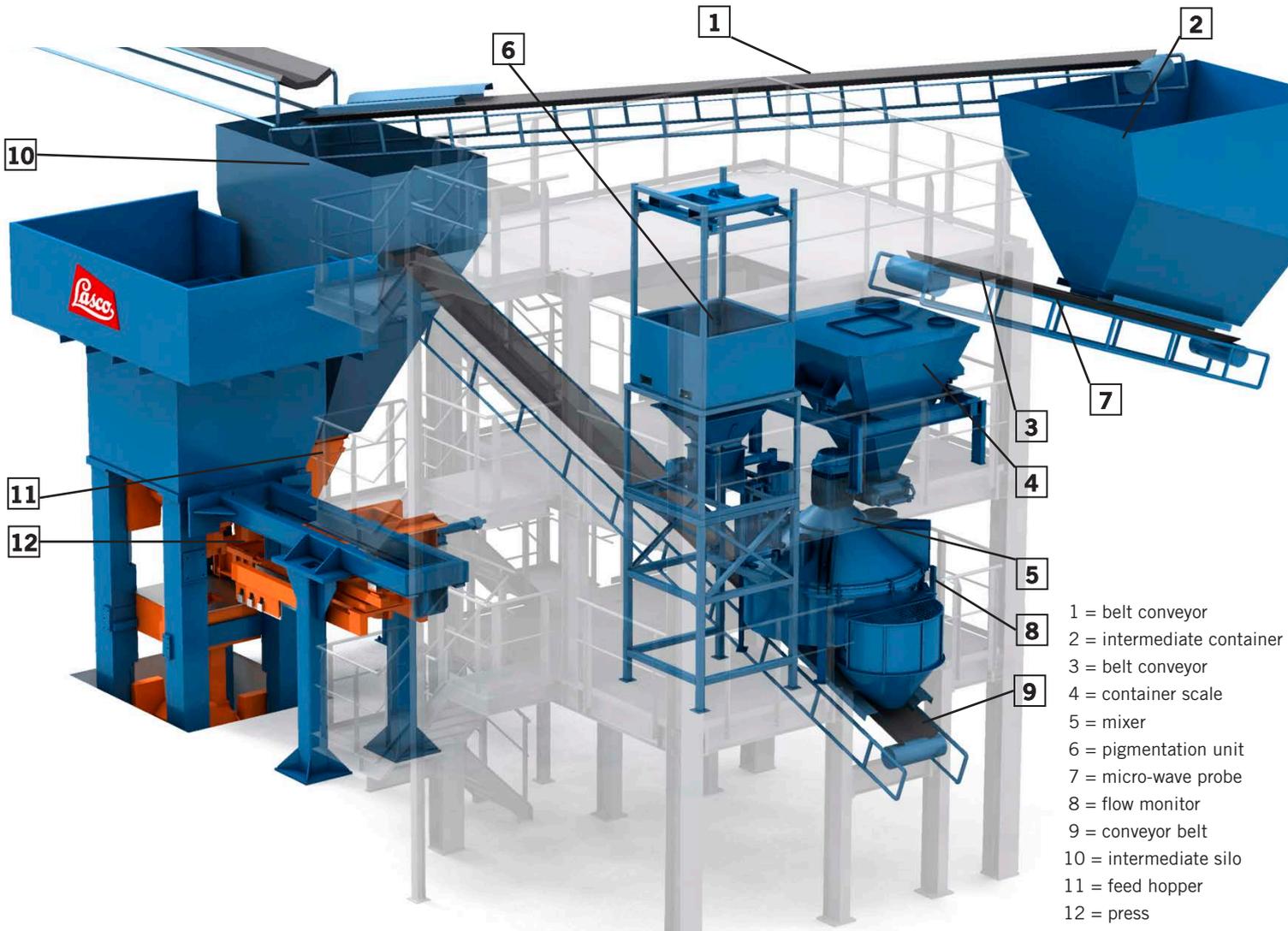
Iron-oxide pigments from LANXESS.

Generally it is recommendable not to add the pigments via a pigmentation unit before the sand-lime mixture has passed the reactor in order to keep it free from colour. In a suitable subsequent mixer the pigments are then intensively mixed in before the raw sand-lime mixture with controlled moisture is fed to the LASCO press.

In case of parallel production of white and coloured sand-lime blocks special importance is attached to the overspill recovery and separation. Here LASCO offers ready-made concepts as well that guarantee colour consistency in the production process for coloured blocks.

The pigmentation process can be controlled manually as well as semi and fully automatically.

## Fully automatic production of coloured sand-lime blocks



- 1 = belt conveyor
- 2 = intermediate container
- 3 = belt conveyor
- 4 = container scale
- 5 = mixer
- 6 = pigmentation unit
- 7 = micro-wave probe
- 8 = flow monitor
- 9 = conveyor belt
- 10 = intermediate silo
- 11 = feed hopper
- 12 = press

### Functioning of the LASCO pigmentation plant

The plant is designed for the production of coloured sand-lime mixtures which will be fed to sand-lime block presses and has a maximum capacity of 15 m<sup>3</sup>/hour. With an assumed density of 1.4 t/m<sup>3</sup> this means a throughput of 21 t/hour.

Coming from the reactor the material is conveyed to an intermediate container (2) via belt conveyor (1) and from there into the container scale via conveyor (3). There it is weighed and the exact batch weight is transferred to the control. Now the quick opening device below the container scale (4)

opens and the weighed material is fed to the mixer (5). At the same time the required quantity of colour pigments, which depends on the weight of the transferred batch, is conveyed to the pigmentation unit (6) via a screw conveyor. When the required weight of colour pigments is reached, the pipe cap opens and colour pigments are added into the mixer. For the purpose of moisture regulation a microwave probe (7) collects the moisture of the mass on the belt conveyor between the intermediate container and the container scale and communicates it to the control. This value is used for

adding the exact quantity of water to the mixer via a flow monitor (8) in order to reach the nominal value specified by the programme. After mixing the batch the mixer opens and the mass is transferred to a conveyor belt (9) via the mixer discharge. From there it is conveyed to the intermediate silo (10) and then via the feed hopper (11) into the press (12).

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