IBAU HAMBURG

A MEMBER OF THE HAVER® GROUP

Information

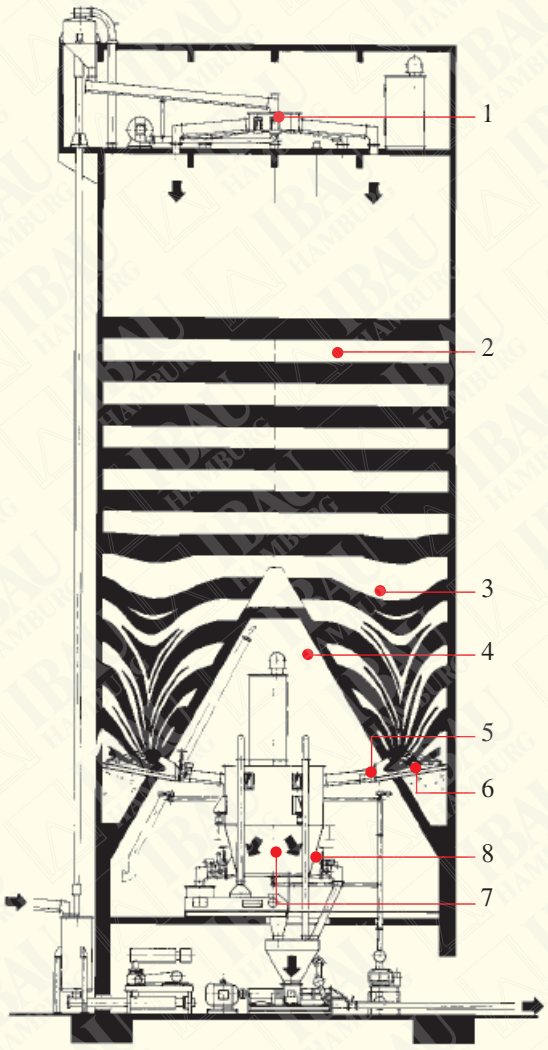
IBAU HAMBURG Central Cone

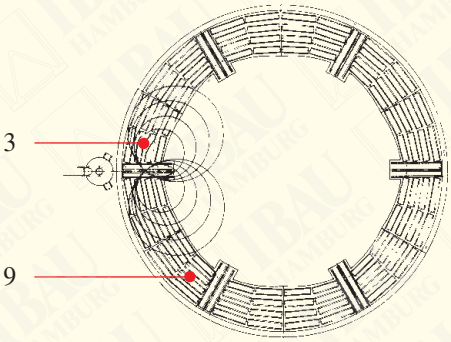
THE ORIGINAL

The IBAU HAMBURG Central Cone – THE ORIGINAL

Raw meal blending silo, made by IBAU:
- High blending efficiency
- Low power consumption
- High availability

1 Parallel distributor
2 Material layers
3 Funnel
4 Central cone
5 Flow control gate
6 Annular aeration bottom
7 Metering Bin
8 Flow control gate
9 Aeration sections with open-type fluidslides





The IBAU central cone system

The blending silo is simultaneously used for a continuous blending process as well as for raw mix storage. The feeding of the silo takes place via a novel type of parallel distributor ensuring a controlled build-up of the different material layers.

Homogenizing the raw meal is achieved by causing the layers of different $CaCO_3$ content (1) to flow together by funnelling (2) action and thus merging with one another. The gravity flow in the funnels produces the blending effect.

The bottom of the silo is divided into aeration sections (4). Each section has a flow control gate (5) and an air valve (6) assigned to it. Three blowers (8) are available for aerating the silo bottom. The sections are aerated three at a time for varying periods. As a result, three funnels are formed simultaneously developing relatively slowly from the silo bottom to the upper surface of the stored material. The funnel formation process is so controlled, that the fresh raw meal which has just been fed into the silo cannot rush straight through to the silo outlet. This being prevented by first closing the three gates of the aerated sections and thus causing three new funnels to develop in three other sections. This ensures controlled flow behaviour of the blending funnels. The power consumption amounts to 0.1 – 0.3 KWh/h t (metric) of raw mix.

Storage silo, made by IBAU:
- High recovery up to more than 99%
- Self cleaning of coating material at the silo wall
- No blockages of outlets

Description of the storage silo

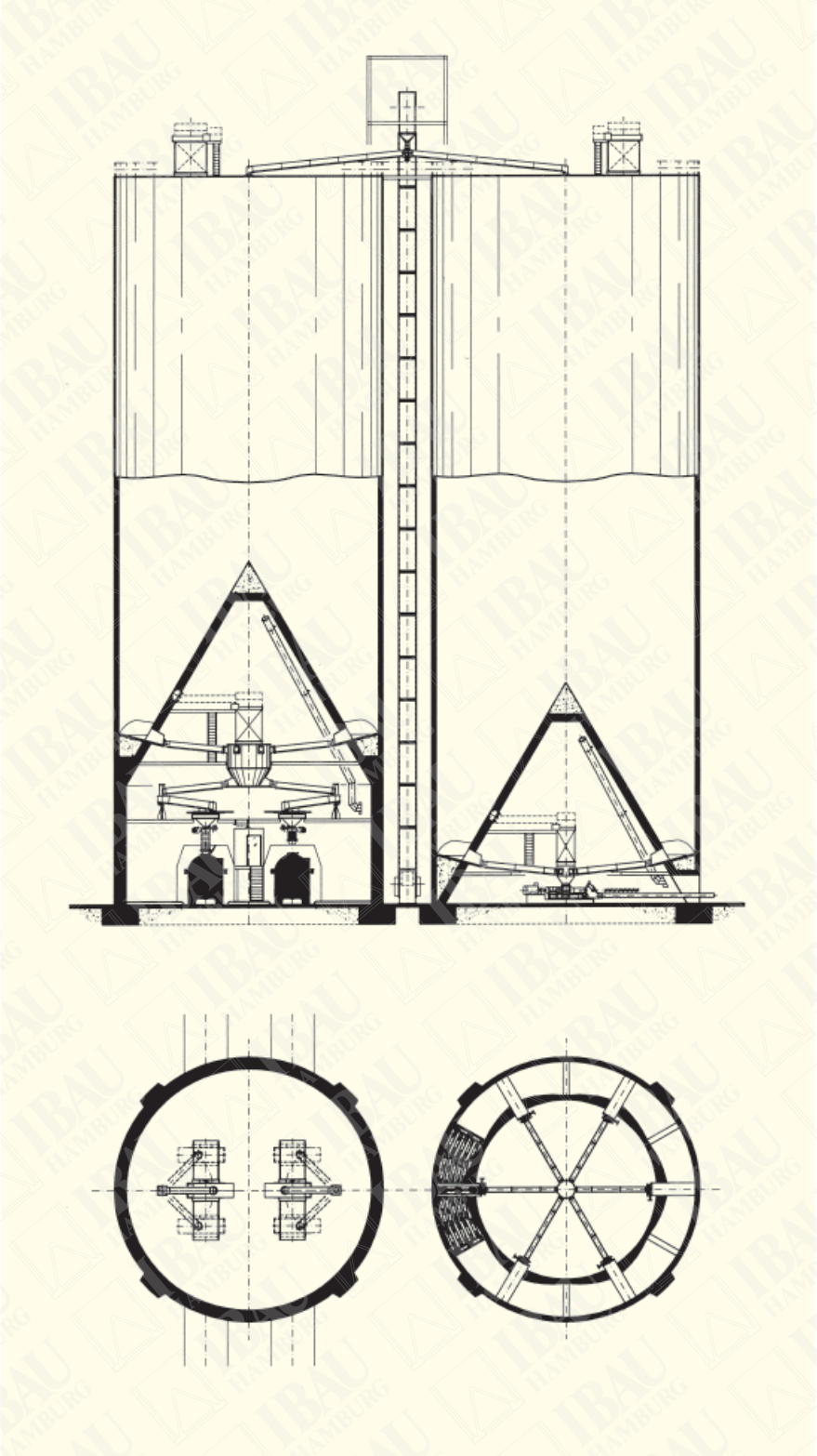
With the progressively increasing size of the production units in the cement industry there has been a corresponding increase in size of the silo units for storing the cement. Silos with diameter of 20 m and more and with individual storage capacities ranging up to 30,000 t must be capable of efficient and trouble-free emptying.

The IBAU central cone silo is today's answer to this task. Several discharge gates placed at the circumference of the silo opened one after the other make the cement flow downwards near the outer shell. This system has been proved to be extraordinarily successfull in more than 5000 units being in operation. More than 99% recovery is reported by the users.

Only a small ring of the silo bottom is covered with fluidizing units and divided into several sections. One section only after the other is activated by means of a low capacity blower.

In other words a small amount of compressed air requiring only little power makes the cement move above one defined section. The cement moves downwards at the silo wall avoiding the formation of incrustations and dead zones on the silo wall.

When discharging through two or more gates parallel, any desired discharge capacity can be achieved.



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Advantages of the IBAU central cone silo:
- Optimised material aeration and discharge technology
- High operating reliability
- Total control and maintenance of all parts even inside

View into the central cone

silo with aeration sections

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Dyckerhoff Zement's raw meal silo at Lengerich:
- Most modern state of the art raw meal blending silo
- Separate levels for storing and blending
- Low specific power consumption

View of the Lengerich works with

the raw meal silo at the right

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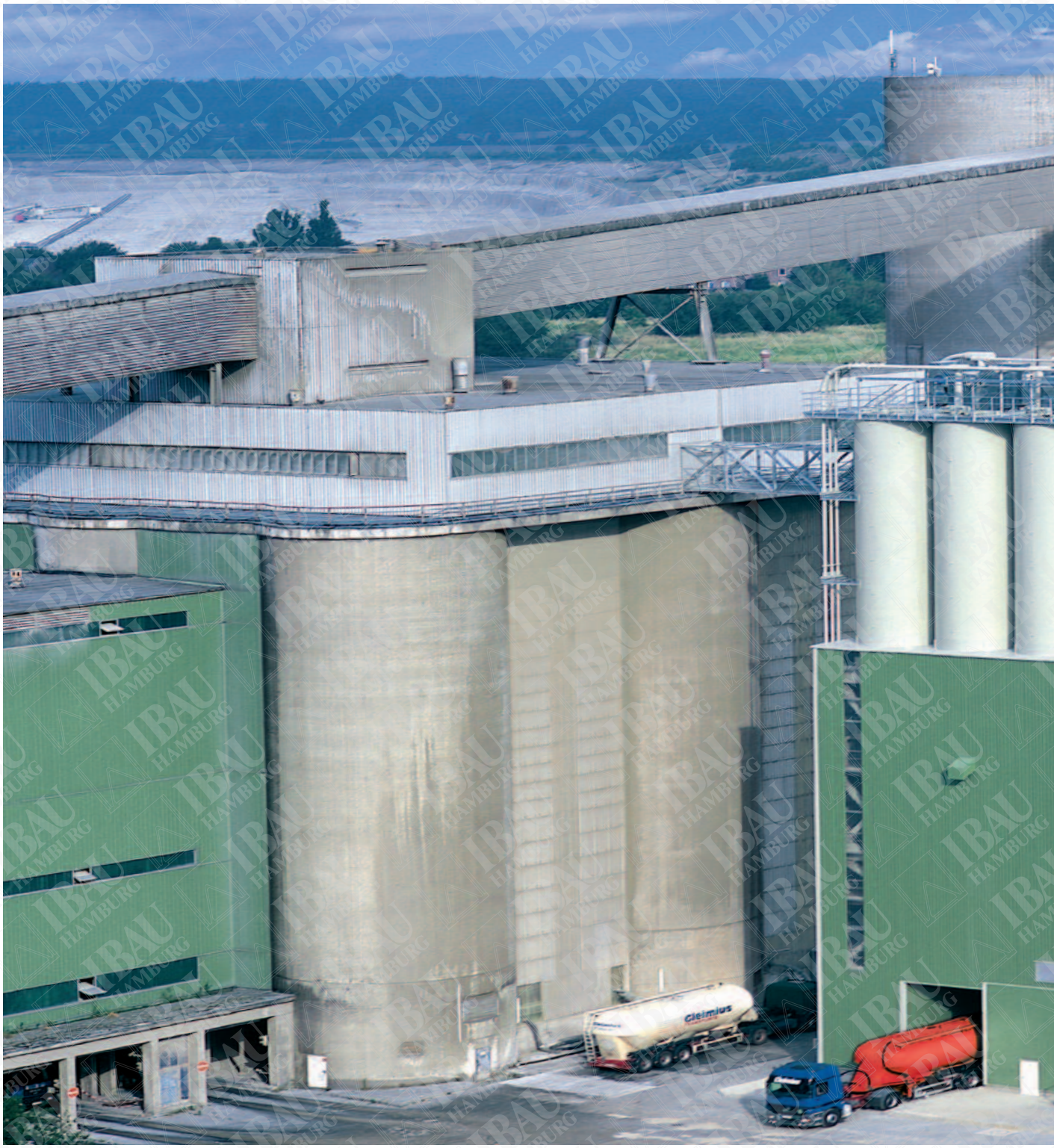
Holcim, Lägerdorf dispatch terminal, in operation since 1977:
- Fully automatic bulk terminal
- Integrated mixing plant in steel construction
- High degree of flexibility



The cement terminal with 3 cone

silos and the new mixing plant

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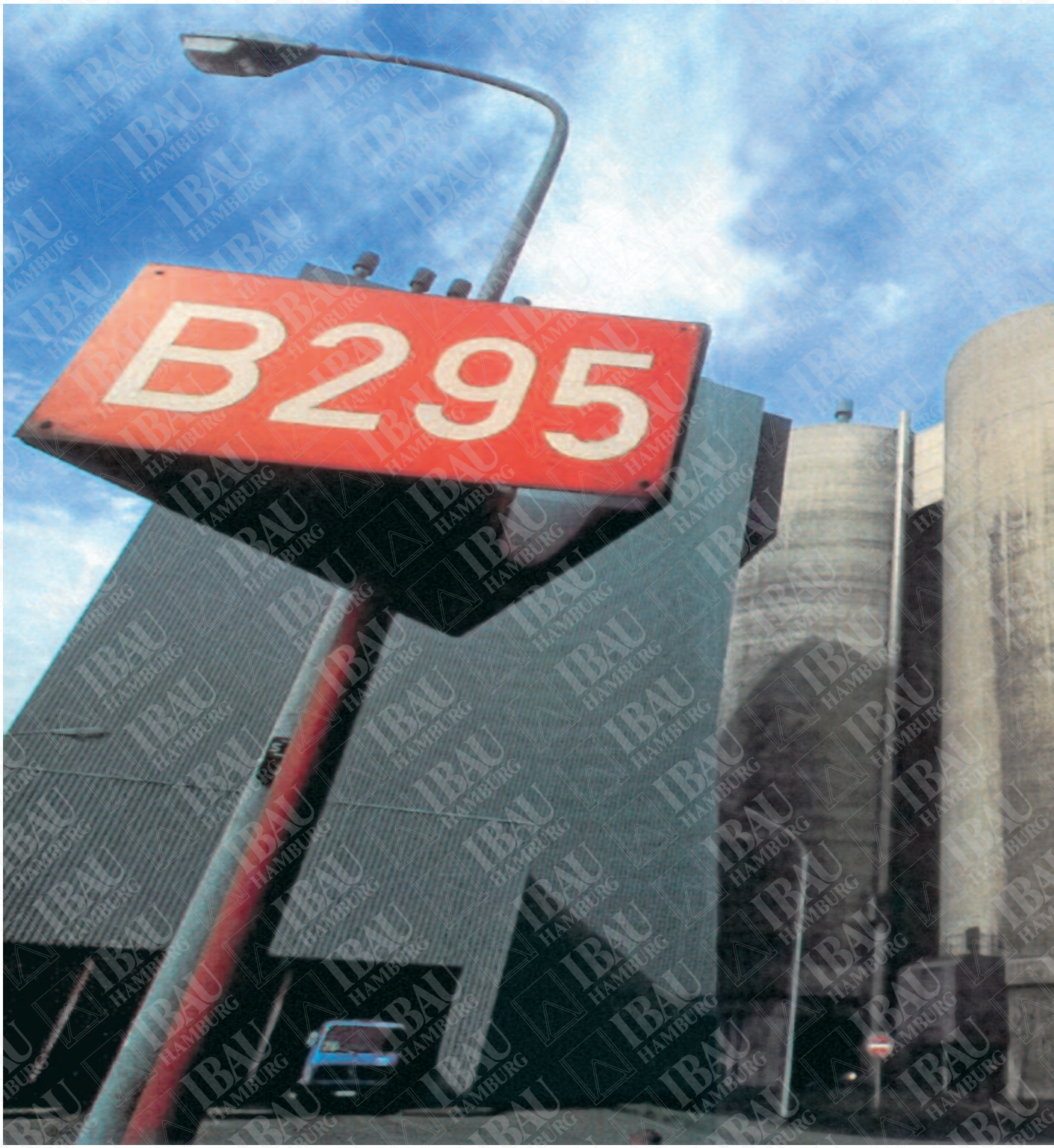
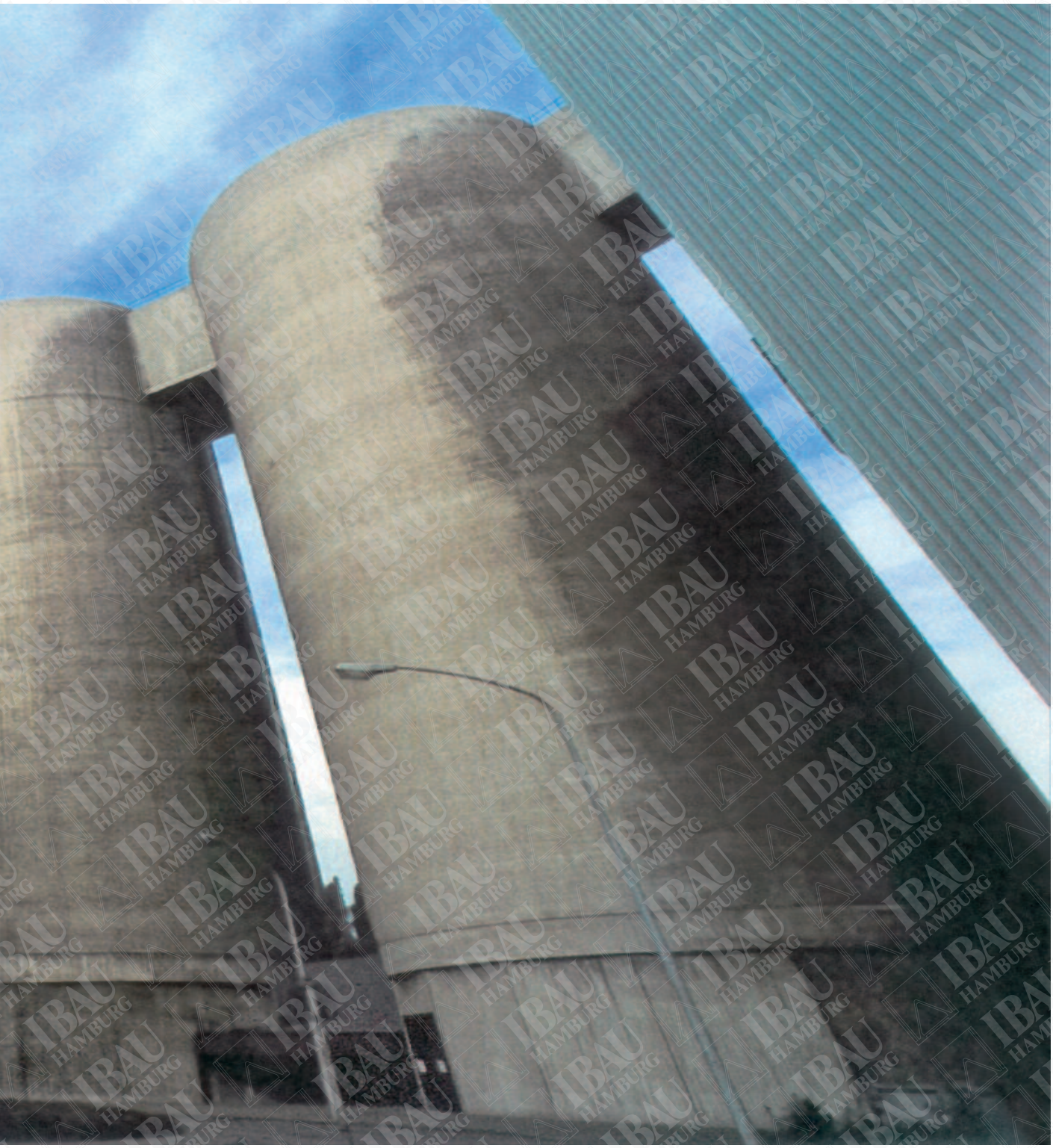
The first cement ring silo:
- Bulk dispatch at the RKW-WÜLFRATH terminal on the territory of the THYSSEN AG steel plant in Duisburg-Schwelgern.



The ring silo having a total capacity of



13.000 tons. In operation since August 1979.

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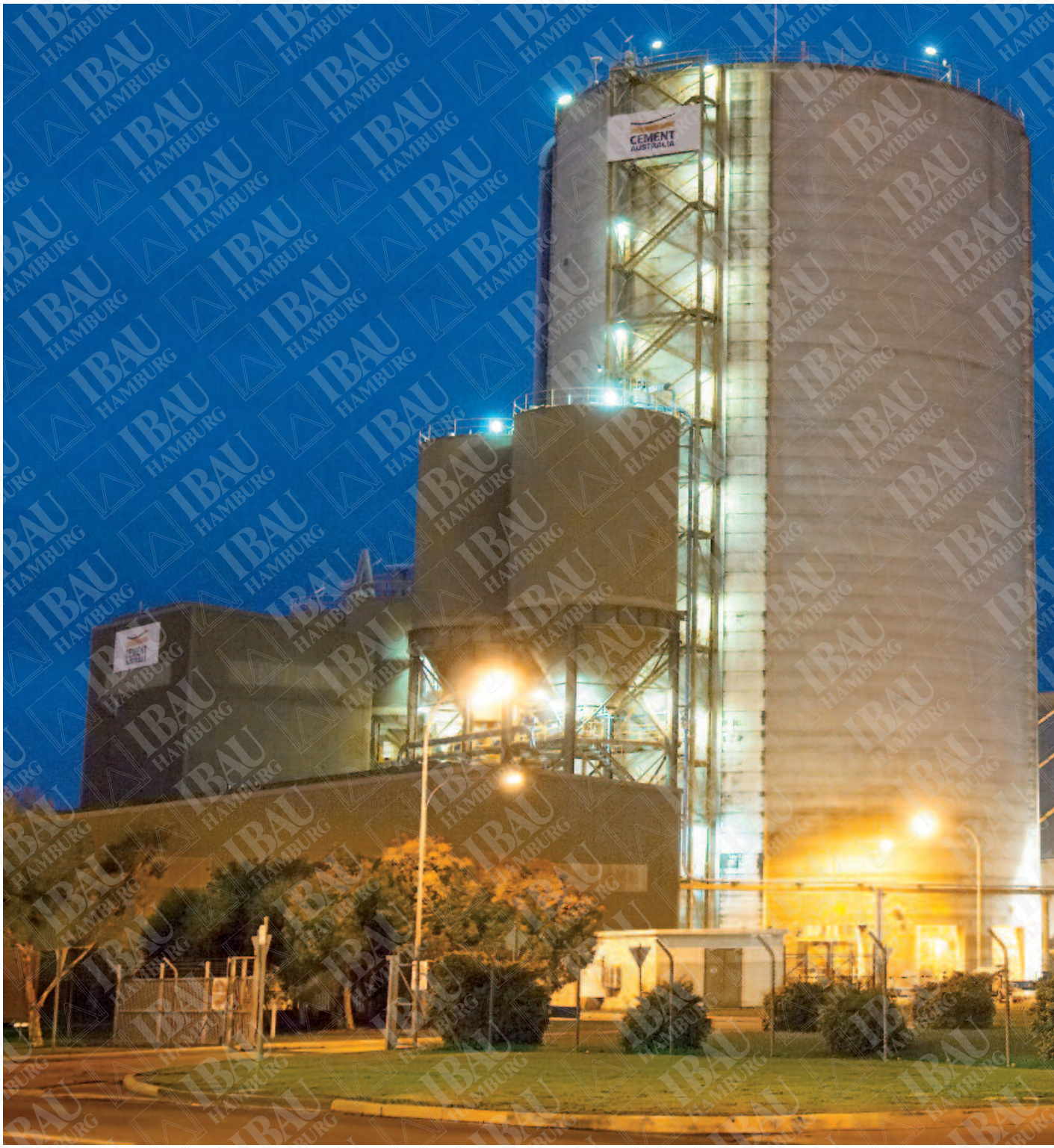
One of the largest cone silos in the world at Queensland Cement, Australia:
- Cement storage silo and bulk loading into trucks and rail wagons
- Silo diameter of 29,3 m, silo capacity 36.000 tons
- Highly efficient and reliable discharge process



Queensland Cements large volume

cone silo in operation since 1993

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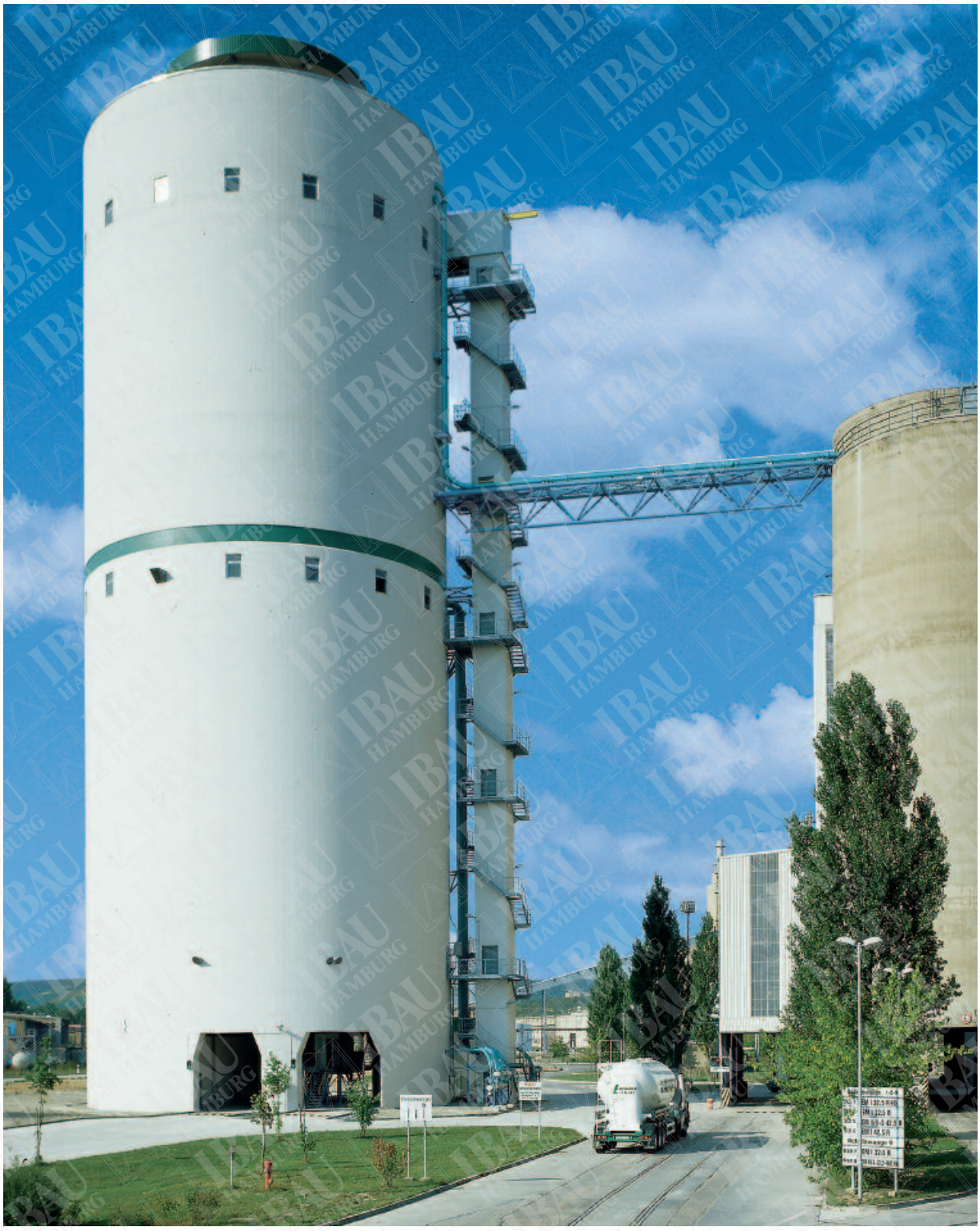
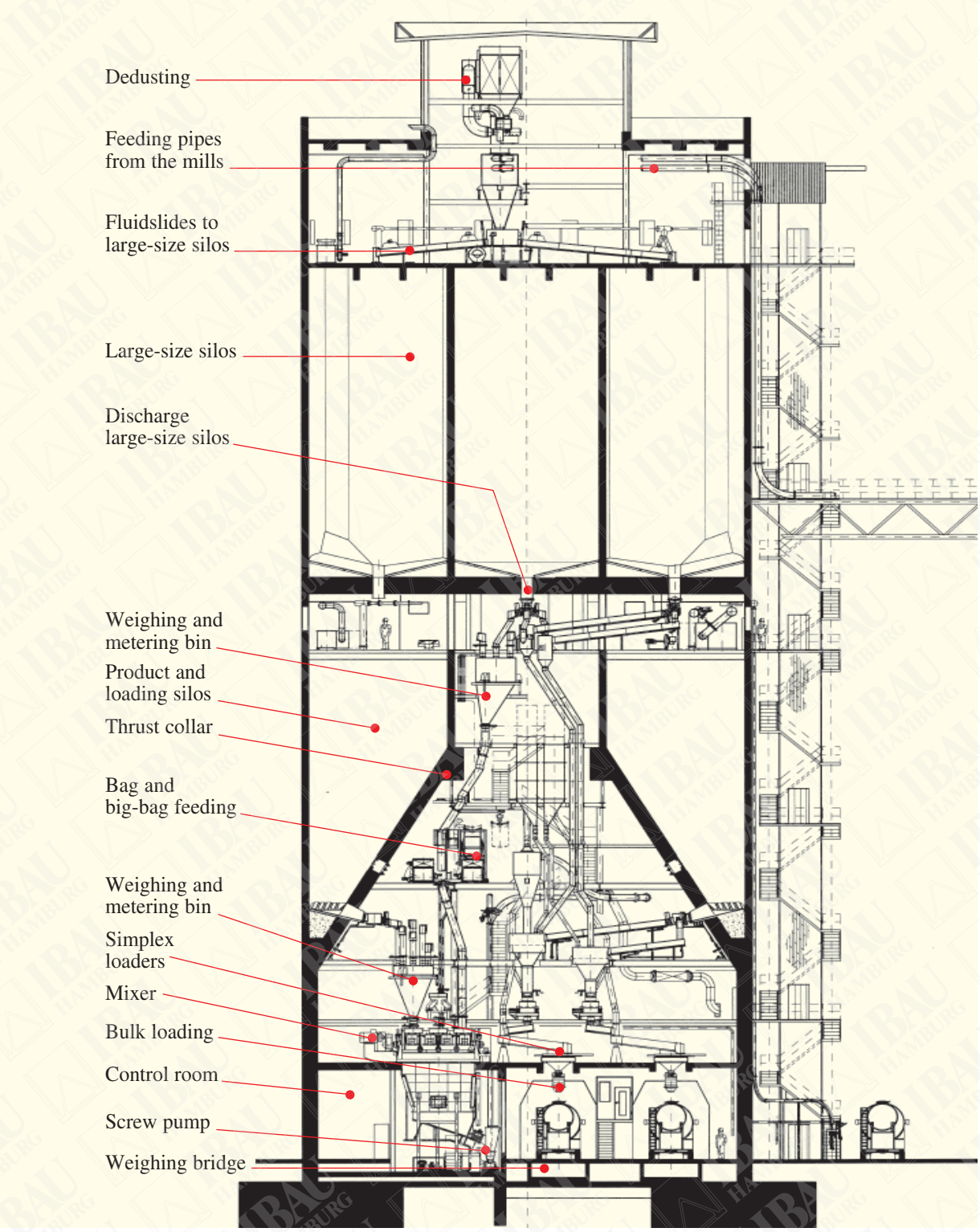
Advanced mixing plants for special cement:
- Biggest multicompartment silo with 22 chambers, a total height of 71 m and 26 m in diameter.
- Silo technology, material transport, mixing, bulk loading as well as plant automation - all from a single source.



Mixing tower of Lafarge Cement, Karsdorf works



Cross-section of the mixing plant

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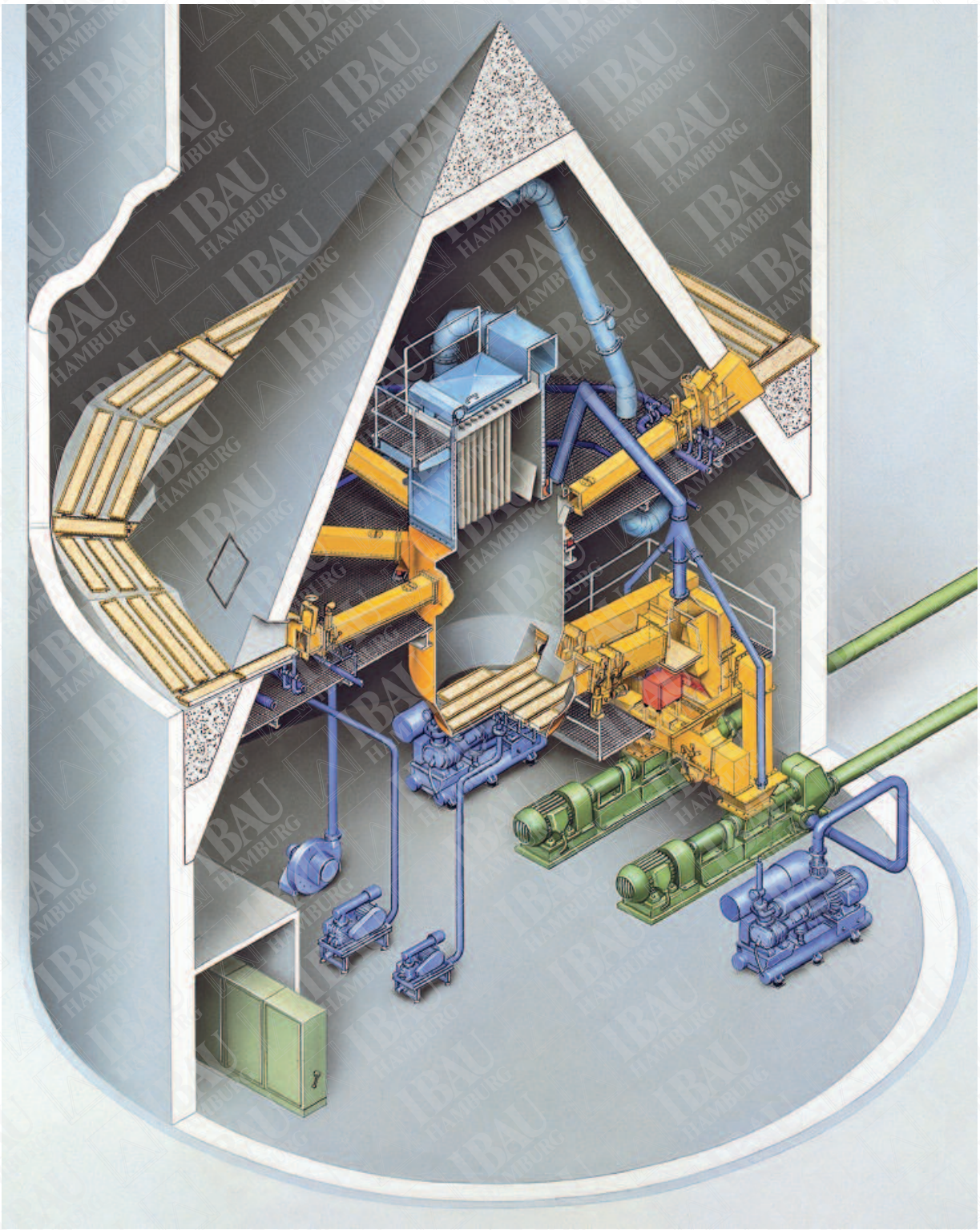
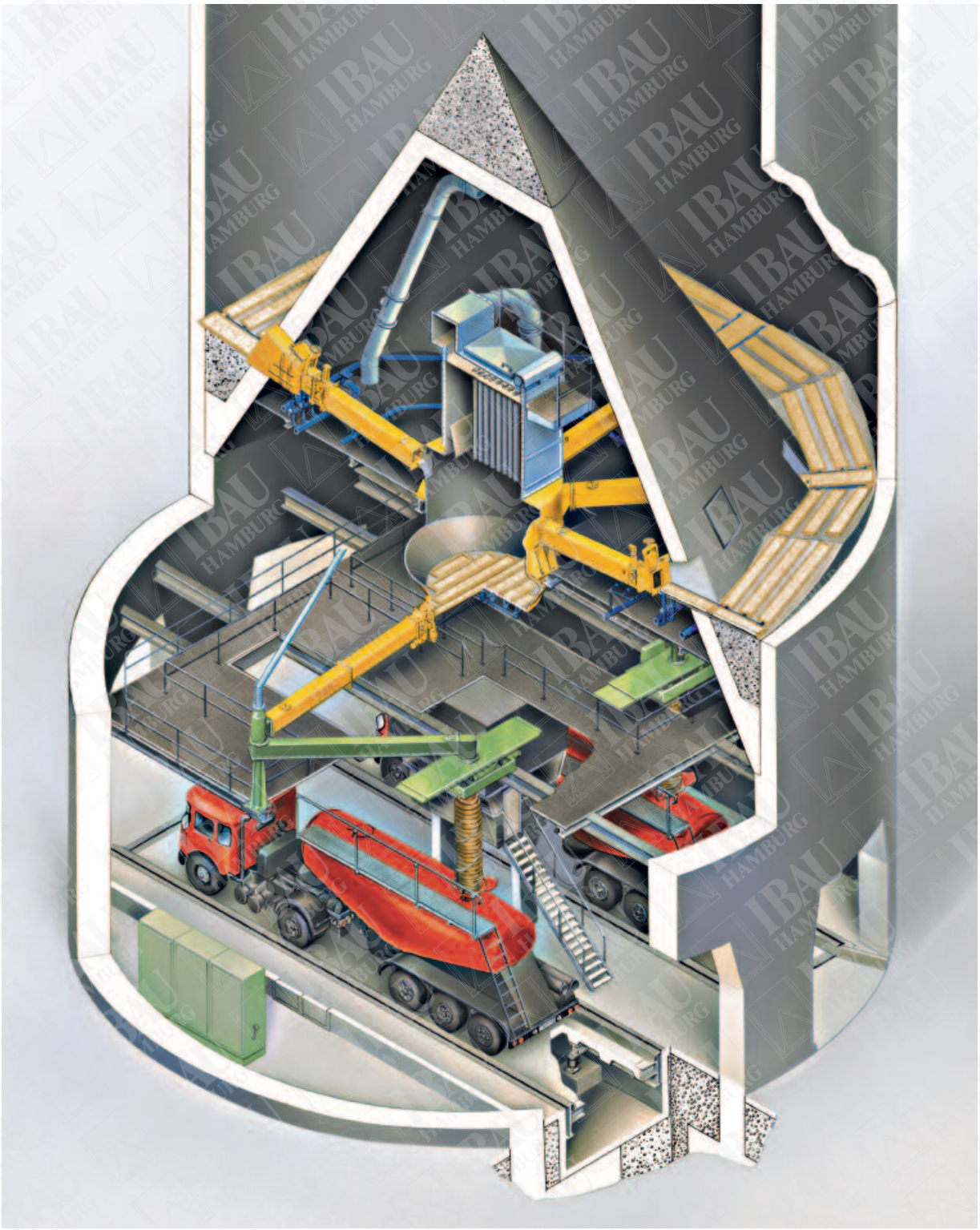
The drawing shows a raw meal blending silo
with an integrated kiln feeding system
with weigh bin, flow meter,
IBAU pumps – one as stand-by.



This system with a blending efficiency of more than 10:1 is in operation for many years.

The drawing shows a typical central cone silo
with 2 SIMPLEX loaders for truck loading.
All the equipment is located under the cone.
There are no openings in the wall for the mobile loaders.



Hundreds of this silo type are in operation for many years.

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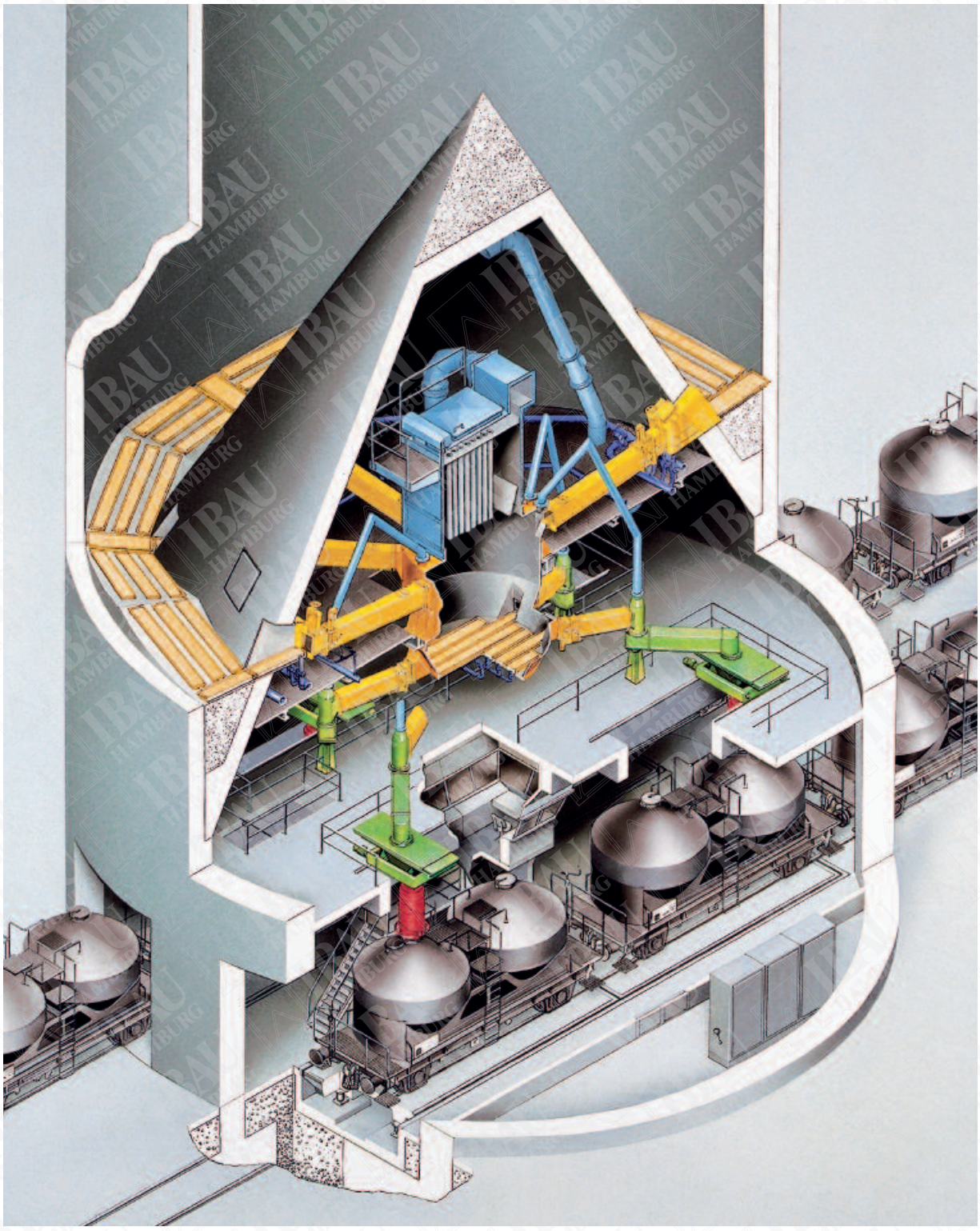
The drawing shows a central cone silo
with SIMPLEX loaders for rail car loading.
2 moveable SIMPLEX loaders are installed in each rail line.
There is no opening in the silo wall.



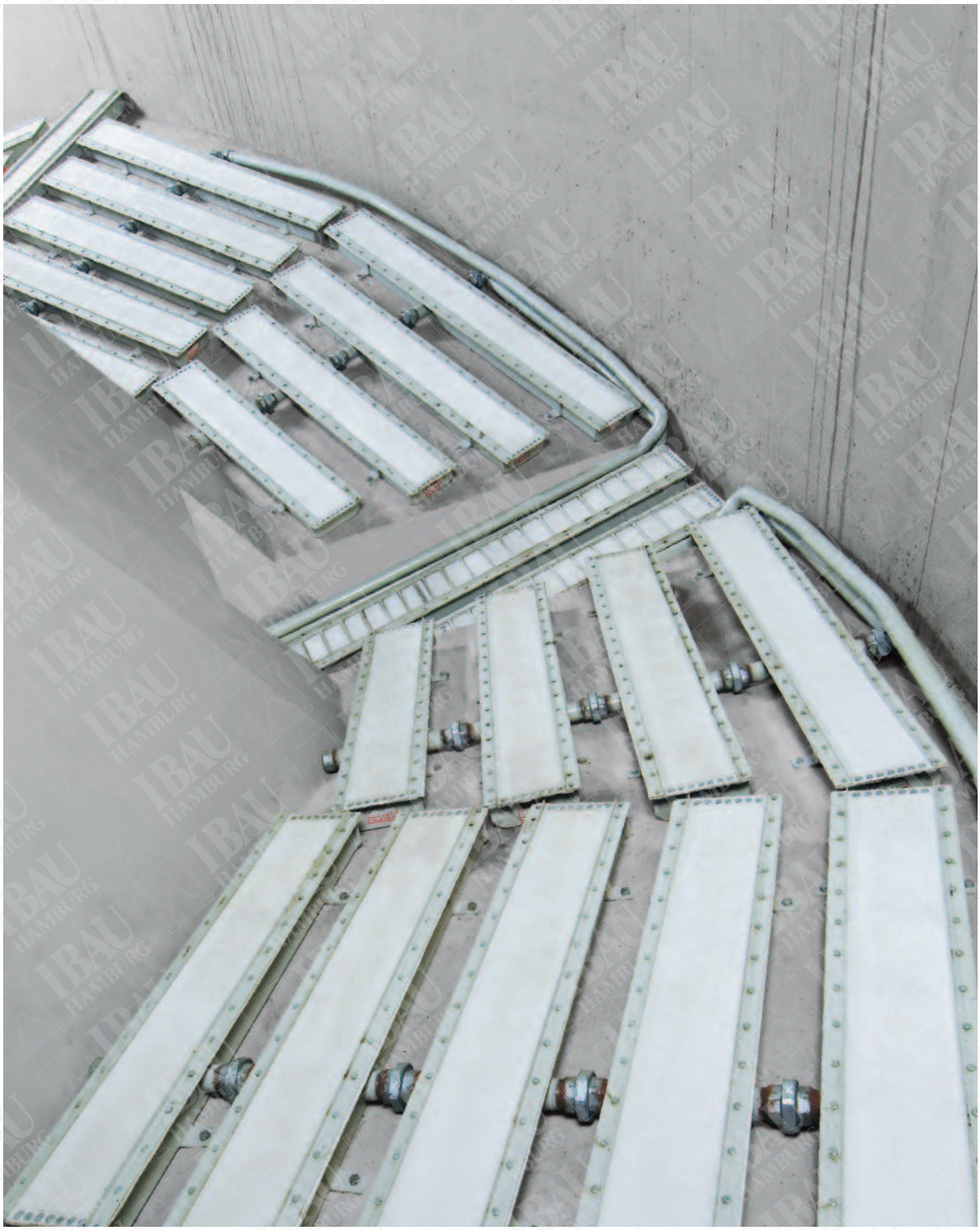
Modern design of a rail terminal.

The first cement ring silo is in operation since 1979.
The drawing shows an integrated cement terminal for 2 types of cement,
saving investment costs compared with traditional plants.
All the handling equipment is installed under the cone.

Since 1979 ring silos for cement in operation in many countries.

The IBAU HAMBURG Central Cone – THE ORIGINAL

A silo bottom covered with fluidising units,
divided into several sections.
One section after the other is activated
by means of a low capacity blower.



Aeration section and silo outlet

The recovery of the silo is more than 99 %

The IBAU HAMBURG Central Cone – THE ORIGINAL

Discharging and blending by alternating
funnel flows due to stop and go discharge,
controlled by flow control gates
and connected fluidising sections.

Aeration sections and silo outlet

Funnel creation during the discharge process

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All handling equipment, including silo discharge, truck and train loading as well as complete packing plants, are installed underneath the cone.
Silos with a diameter of up to 30m and with storage capacities of ranging up to 40.000 tons ensure an economical material handling due to silo technology for a complete discharge.

Cone silo discharge sections with flow control gate

Bulk loading with mobile loader

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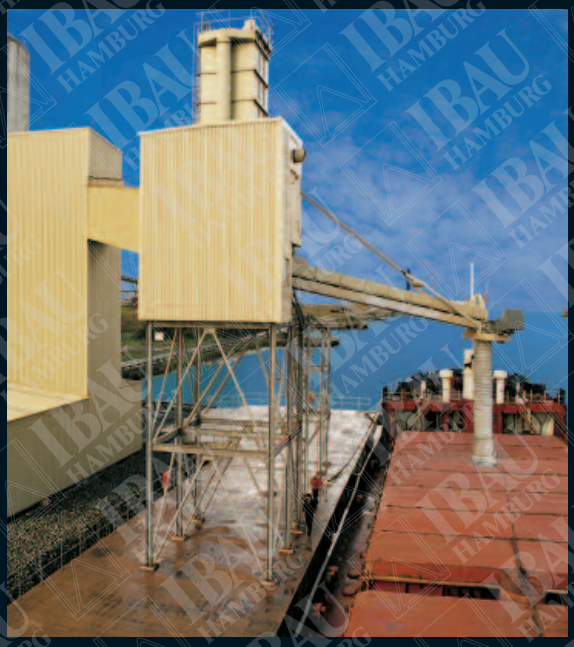
In case precasting is not possible, the segments
can also be manufactured directly at site.
The use of precast concrete elements results
in reduced construction costs and time.

Cone after placing the segments

Cone silos during construction, in situ version

IBAU HAMBURG

Marine Terminals, Shiploaders and -unloaders,
Cement Carriers, Equipment for Power Plants,
Special Applications



Shiploading station for CIVIL AND MARINE SLAG CEMENT, Port Talbot, UK

Mobile Shipunloader along a river in Germany

High-Capacity mixing plant for HOLCIM, Antwerp, Belgium

Mixing plant for RÜDERSDORFER ZEMENT, Eisenhüttenstadt, Germany

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