



WKB

in operation worldwide



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EXPERTISE IN SAND LIME BRICKS



innovation made by experience

WKB - Your partner for sand lime brick production

We work out technical solutions – together with our customers

WKB supplies machinery for the production of sand lime bricks

We are specialised in:

Processing of raw materials / mixing plants

Hydraulic presses

Hardening trolley logistics

Autoclaving

Transport / Packaging

Brick processing

Modernisation

Turn key plants

**Take advantage of proved technology and wide experience.
WKB - innovation made by experience**



WKB Systems GmbH is an innovative and worldwide operating manufacturer of high tech investment goods for the building materials industry. We develop and manufacture turn key plants as well as stand-alone machines and facilities for the production of sand lime bricks, autoclaved aerated concrete blocks and ceramic bricks.

Approved technology - worldwide

The WKB machinery (formerly developed and produced by W+K Maschinenfabrik GmbH) is in operation all over the world and has been proven successful in Europe, CIS countries, Middle East, the USA, Mexico, Africa, China and Canada, etc.

WKB stands for:

- Innovative solutions according to your requirements
- Outstanding quality
- Customised equipment
- High-performance, reliable and easy to maintain machinery
- Best value for money

WKB: qualified – innovativ – dynamic

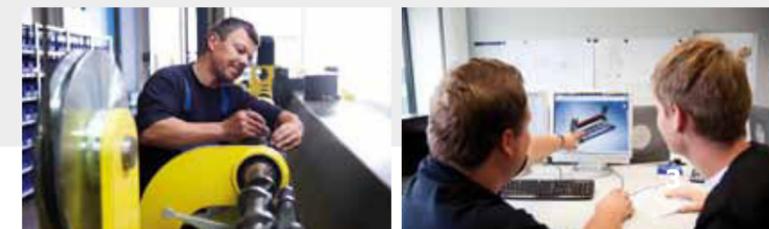
Our young and motivated team consists of highly qualified professionals in all business areas and gives you ongoing support as a reliable partner. Our customer always takes part in the development process of a project, so individual solutions are developed for every of his requirements.

Our engineering specialists possess the broad technical know-how, professional experience of many years and strong customer orientation. At the same time they have a direct access to the international experience in the production of sand lime bricks. In such a way we supply state-of-the-art practice-oriented solutions from one source:

- Definition of your requirements
- Planning of a technical solution
- Design and electrical engineering
- Production and assembling

And at your site:

- Supervised assembling, commissioning and handover of the equipment
- Operator training
- Spare parts supply and after sales service
- Maintenance
- Modernisation and production process optimisation



Your partner.
Your project.
Your success.



Innovative solutions for highest aspirations

According to the motto "from the idea to the machinery" WKB offers the whole spectrum of engineering for the production of sand lime bricks. We support and consult you during

- Project planning and design
- Production, assembly and programming
- Commissioning and operator training at your site

Feasibility studies, material tests and reliable service ensure you an ongoing production process.

Highest standards for the sand lime bricks production

WKB develops individual and extremely innovative concepts for turn key plants for the production of sand lime bricks.

Quality is the main rule that is followed by every associate of WKB. Having a constant contact with our customers we are aware of all their requirements to the modern sand lime brick production.

WKB range of services in the production of sand lime bricks comprises process planning and development of the machinery for:

- Processing of raw materials / mixing plants
- Hydraulic presses
- Hardening trolley logistics and autoclaving
- Transport & packaging
- Modernisation
- Process control and visualisation
- Brick processing

Sand lime brick – a building material of a special art.
A contribution to solid building.

Sand lime brick as a building material



Sand lime brick – an environmentally friendly building material

Sand lime brick consists of natural raw materials such as sand, quicklime and water.

Sand lime bricks can be used for exterior and interior walls. They can be also used with other building materials, for example wood, to build a variety of facing brickworks. Sand lime brick is a massive building material with good sound insulation, high robustness and resistance.

Thanks to its strength density and so its heaviness, sand lime brick is of a very good soundproofing. So there is a very slim, sound absorbing interior wall can be built. Sand lime brick has a very good heat storage capacity. As a result all fast temperature fluctuations could be balanced.

Fly ash brick – a contribution to the environment protection

There is a WKB technology for the production of fly ash bricks. Fly ash is a hard, dispersed combustion product received, for example in coal-burning power plant. As a silica containing additive the fly ash could be used instead of sand in the environmentally friendly brick production.

Sand lime bricks and fly ash bricks could be used for new buildings as well as for modernisation of single family or two family houses, for multistorey building and commercial constructions.

Characteristics:

- **Green density:** between 0.91 and 2.20 kg/dm³.
- **Robustness:** a sand lime brick is extremely robust thanks to its structure. There could be sand lime bricks of different strength categories produced with hydraulic presses WKP.
- **Sound insulation:** sound insulation at home or on the workplace is of great importance for well-being and health. What counts here is the weight of a wall and green density of the building material. Compared to other building materials sand lime bricks offer a better sound insulation with the same wall thickness.
- **Fire resistance:** high fire resistance of a sand lime brick is ensured thanks to the raw materials it is made of and the way of production. The structure of a sand lime brick could be destroyed if the temperature in the building element is higher than 600 °C. As a result not only interior and exterior walls should be made of sand lime bricks but also house separating walls, fire walls and walls of basement boiler rooms.
- **Healthy indoor climate:** a healthy indoor climate is ensured by well-balanced fresh air supply and humidity as well as indoor air temperature. Here the air humidity is of great importance as too humid rooms could be infested with mold. Thanks to its capillaries the sand lime brick is a humidity regulating building material. This means that walls of sand lime bricks protect you against humidity. They absorb excessive humidity and release it only after the indoor air humidity level is sunk.



Sure, you should build of sand lime bricks!

Best quality from the first stage of a production process.
Guaranteed.

Raw material processing / Mixing plants



Production process of sand lime bricks

Raw materials

Raw materials used in the production of sand lime bricks are silica sand, quicklime (as a binder) and water. Alternatively fly ash could be used instead of sand. The suitability of fly ash must be checked in special tests. Furthermore the production of cement-bound bricks is possible.

Every raw material is stored separately. According to the production recipe sand / fly ash and lime are weighted in weighing containers and forwarded to the mixer. Here the raw materials are mixed to a homogeneous mixture in short time. According to the sand moisture and the recipe some water can be added to the mixture. One mixing cycle lasts for ca. 3 minutes.

Furthermore the sand lime mixture is conveyed into the reactor. After the reaction time some water is added to the mixture in the remixing plant to have the required moisture for pressing. After that the mixture is forwarded to the color mixing plant (optional) or to the sand lime brick press.

Mixing plant

WKB mixing plants ensure the best product quality. They consist of:

- Sand, sieve and bunker unit
- Silo
- Conveying and dosing unit (scales)
- Premixing plant
- Reactor
- Remixing plant
- Control system
- Color mixing plant (optionally)

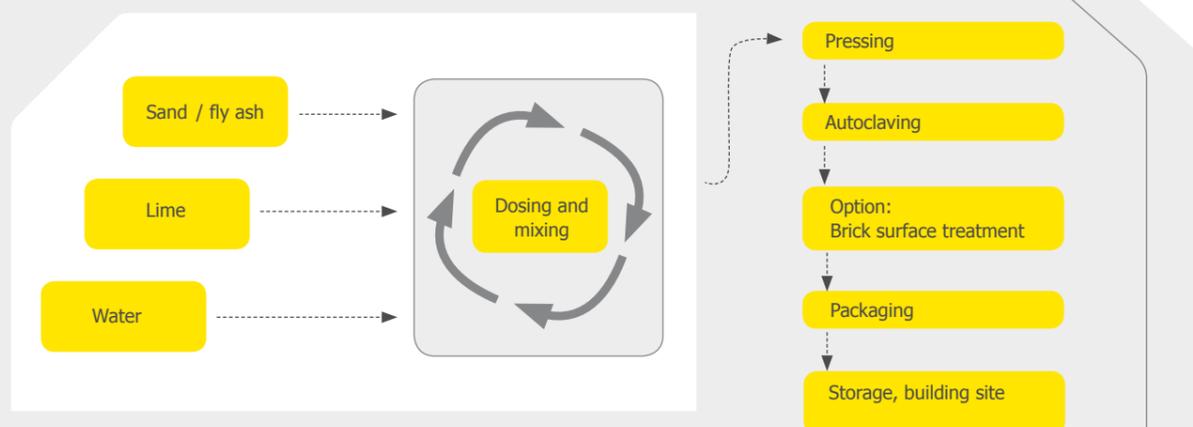
The following raw materials are processed there:

- Sand / fly ash
- Lime
- Water
- Color particles (in case of production of colored bricks)
- Cement (in case of production of cement-bound bricks)



Precision for the
best quality

Raw materials





**Innovation –
Individuality - Precision**



WKP – the heart of sand lime brick production

Presses are the heart of a sand lime brick plant. **WKP** presses ensure the production of sand lime bricks of high quality in an automated way.

All **WKP** presses are of a cast tie-rod design. This stable construction guarantees longevity and outstanding product quality. Its design and electronic control unit are state-of-the-art. The technique ensures individual modern production process that answers all the enquiries of the customer.

WKP 750 – capacity that impresses

The most known sand lime brick press of WKB is **WKP 750** - a hydraulic sand lime brick press that impresses with its production capacity. Up to 10,000 bricks can be pressed in one hour with a maximum press power of up to 750 tons. Another advantage of the press is its compact design. It requires very little installation space. So **WKP 750** can be integrated without any problems in existing factories to replace machines with lower productivity.

WKP 750 DD – double-sided pressing

The hydraulic upper and the lower plungers of **WKP 750 DD** with double-sided compaction press the sand lime mixture on both sides that guarantees very high and even strength in the whole brick.



	WKP 600	WKP 750	WKP 750S	WKP 750 DD
Construction:	Cast tie-rod design			
Mode of operation:	hydraulic			
Compaction:	one-sided	one-sided		double-sided
Pressing force: - Max. (at 315 bar) - Operating pressing force (up to 250 bar)	4,700 kN 3,750 kN	8,250 kN 6,550 kN		8,250 kN 6,550 kN
Max. stroke (mm)	450			
Max. brick height (mm):	250			
Cycle time / strokes: - brick size up to 115 mm - brick size up to 250 mm	8.2 s / 440 h ⁻¹ 10.6 s / 340 h ⁻¹	10.0 s / 360 h ⁻¹ 12.5 s / 288 h ⁻¹		10.0 s / 360 h ⁻¹ 12.5 s / 288 h ⁻¹
Output/stroke (L x W x H):				
- NF (240 x 71 x 115)	13	26	26	26
- 4 DF (248 x 115 x 238/249)	8	16	16	16
- 6 DF (248 x 175 x 238/249)	5	10	10	10
- 8 DF (248 x 240 x 238/249)	3	6	6	6
Theoretical productivity NF bricks:	5,720 NF/h	9,360 NF/h	9,360 NF/h	9,360 NF/h
Way of product removal:	Gripper on a charging carriage	Gripper on a charging carriage	Front gripper on a charging carriage	Front gripper on a separate frame

Safe and efficient transport with WKB machinery.
Optimise your production process!

Hardening trolley logistics / Autoclaving



Hardening trolley logistics

Empty hardening trolleys (1-2 trolleys) are forwarded to the press with a traverser.

Once the bricks have been pressed, they are automatically removed from the press with a gripper, placed on a hardening trolley and forwarded to autoclaves with a traverser that can transport up to 6 hardening trolleys. The traverser picks up loaded hardening trolleys from the press, forwards them to the autoclaving area and charges the autoclaves.

After autoclaving process hardening trolleys with bricks are picked up with another traverser from the autoclaves and forwarded to the packing area. Depending on the plant structure the traverser can be equipped with a tact pusher or with a so-called locomotive.

In order to clean the surface of hardening trolleys from caking there is a scraping device or a special brush used.

The entire bricks transportation during production process is of great importance. In this field WKB offers:

- Traversers
- Hardening trolleys
- Transport systems
- Tact pusher
- Tackle system
- Electric control system with product tracking
- Scraping devices / brushes for hardening trolleys

Autoclaving

Green bricks are forwarded with hardening trolleys to autoclaves to be hardened during 8 hours at the temperature of ca. 200° C and water vapour pressure of ca. 16 bars.

During this time the brick structure is changing. The mass made of lime, sand and water begins to interact and to form a robust structure of the sand lime brick. During hardening process the silicic acid on the grain surface of silica sand is loosened under the influence of hot water vapour atmosphere. The silicic acid together with a binder - lime hydrate - form crystalline phases – CSH phases, that grow on sand grains and strongly bind them together.

The autoclaving section consists of:

- Water preparation facility
- Steam generation unit
- Steam distribution unit (manually / automatically)
- Autoclaves with a dehydration unit
- Condensate recycling facility

Waste heat recovery

The autoclaving process is the production step that consumes the most energy. There are usually several autoclaves used on a time-delayed basis.

Waste heat recovery is used for condensate utilisation as well as for re-usage of the steam produced during an autoclaving processes.

While decompressing of the autoclave the steam is used via steam distribution unit for heating of another autoclave.

The condensate can be used in a mixing plant. With a heat exchanger it is possible to recover heat from the condensate that could be used for preheating of water or heating of the building.

Take advantage of WKB innovative technology and make your production process more economical.

**Highest standards for
sand lime brick industry**



Perfect plant logistics with WKB equipment.
Make your production process more efficient!

Transport / Packaging



■ ■ ■ ■ ■ innovation made by experience



Innovative for highest aspirations

Transport and conveying systems are essential not only for efficient material flow or stock keeping but primarily for automation of the production process.

That is why they become such important factors for cost and time saving and therefore for the rate of return of your company.

You need innovative components and facilities for handling, transport and packaging of sand lime bricks? WKB supports you there!

Portal systems, grouping systems, handling systems or grippers specially developed by WKB specialists are used to carry out precise handling operations.

innovativ – individual – customised to meet your requirements

Different conveying systems (tackle systems, pushing mechanisms, traversers) ensure reliable transportation within every area of your sand lime brick plant. There are also chain, roll and belt conveyers used there.

Packaging

The packaging of bricks (for example on the wooden pallet with a foil) during transportation and before their usage at the building site is very essential to save the high quality of the product.

Packing lines of WKB are of modular design and could be individually customised.

One module consists of pallet magazines that are used for pallet supply and essential for an automated packaging process of sand lime bricks. Moreover pallet transport and conveying systems such as chain or roll conveyers, roll conveyers with a pushing mechanism, tray or indexing conveyers are offered.

The pallets loaded with sand lime bricks are forwarded to the packing station. Usually a combination of vertical and horizontal strapping and packaging with stretch foil is used. The strapping ensures a safe transportation while packaging with stretch foil protects the bricks against weather and could be also used for advertising purposes. Furthermore a marking machine can mark the foil with additional information.

After packaging sand lime bricks are brought into stock by a fork-lift or a crane and are ready for dispatch.



We make your product more valuable! And customer wishes come true.
Increase your market value and rate of return!

Brick processing



Traditional building material in new appearance – colored and embossed sand lime bricks

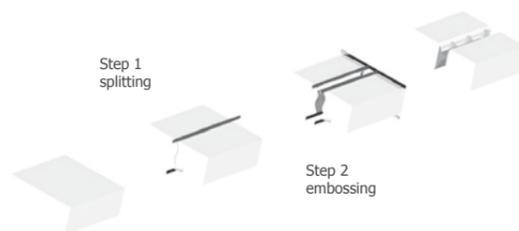
You want to produce colored sand lime bricks? Or to make embossed facing bricks from usual sand lime bricks? WKB offers individual machines especially for these purposes.

In order to produce colored bricks according to the usual technology there is a color mixing plant supplied as a bypass. The colored sand lime bricks are used as a rule for facing brickworks. In a further production step the bricks could be additionally embossed or broken.



Innovative in every detail - WKB-Combi-Embosser is a combined splitting and embossing unit that performs two processing steps in one machine run. In one punching process one brick is split and at the same time two brick halves are embossed to produce a stretcher and a header at the same time.

WKB-Combi-Embosser processes a sand lime brick to produce a facing brick with rustic appearance. Thanks to small place required the machine could be used as a "stand-alone" unit with manual operation or as a fully automatic production line.



We give your products the final cut!



In order to emboss sand lime bricks there was **WKB-Embosser** developed. This compact unit produces up to 2,400 embossed stretchers or 1,200 embossed headers/stretchers per hour. Varied and exact embossing patterns can be quickly and safely achieved by adjusting the operation speed. Further advantages of this machine are diverse application possibilities (as a stand alone or in-line solution) as well as simple operation.



WKB-Impregnator - proper moisture protection

After embossing the embossed sides of a sand lime brick must be protected against weather influence with impregnation. So the sand lime bricks go through **WKB-Impregnator** that ensures high production quantity. Both **WKB-Combi-Embosser** und **WKB-Embosser** can be equipped with **WKB-Impregnator**.

Great variety of products thanks to the broad range of brick saws by WKB

The broad range of brick saws made by WKB enables sawing of a large variety of stone shapes: facing bricks, corner facing bricks, half bricks, stretchers, headers and shaped bricks.

High standards of sawing technology are offered by **WKB-Line**, **WKB-Uni** or **WKB-Ring** with different settings and options. Format change is simply done.

Every saw offers high performance while sawing hard materials and captivates you with diverse application possibilities.

Give your sand lime bricks the final cut

Take advantages of WKB-brick saws. These are:

- High precision
- Simple change and long life cycle of saw blades
- Simple control system
- Manual operation possible
- High energy efficiency



Use the state-of-the-art technology in your plant.
Improve your competitive advantage – now and in the future.

Modernisation



Competitive for the future

Modernisation and optimisation

Do you have a plant and want to modernise it? Or want to optimise production process? WKB develops modular concepts for all common production technologies.

WKB offers approved low-priced solutions for modernisation. In such a way it is possible to improve not only the effectiveness and efficiency of a sand lime brick plant but also the product quality.

The integration of up-to-date production lines in an existing plant is possible at any time. Optimisation could be carried out on individual basis.

Service and spare parts supply

Also after the equipment delivery we provide you with on-going support as a reliable partner. Our team offers after sales service and consulting service worldwide. We support your personnel in all issues concerning production process with remote maintenance and of course at your site if needed.

WKB also ensures flexible and efficient spare parts supply all over the world. Fast and reliable processing of enquiries and orders as well as permanent storage of important spare and wear parts in our warehouses are our strengths.

Improve your competitive advantage – now and in the future

We optimise and modernise your production – thanks to the modular design of our production lines it is possible to pay attention to every single machinery component. We are specialised in:

- Mixing plants
- Hydraulic presses
- Hardening trolley logistics
- Packaging lines
- Brick processing
- Process automation
- And others

WKB lines ensure highest flexibility and quality. Thanks to the individual concepts developed according to the customer requirements there is a high customer benefit reached.

Optimisation advantages for your production:

- Increase in the production volume
- Staff saving
- Automatisation improvement
- Reduction in working cycle time
- Improvement of quality
- Cost reduction as a result of usage of an existing building

WKB supports you every time and develops with you the best solution for optimisation of your plant.

Improve your competitiveness - now and in the future

