



WE ARE MIXING IDEAS FOR THE FUTURE









# KNIELE GmbH – MIXING, DOSING, CONVEYING

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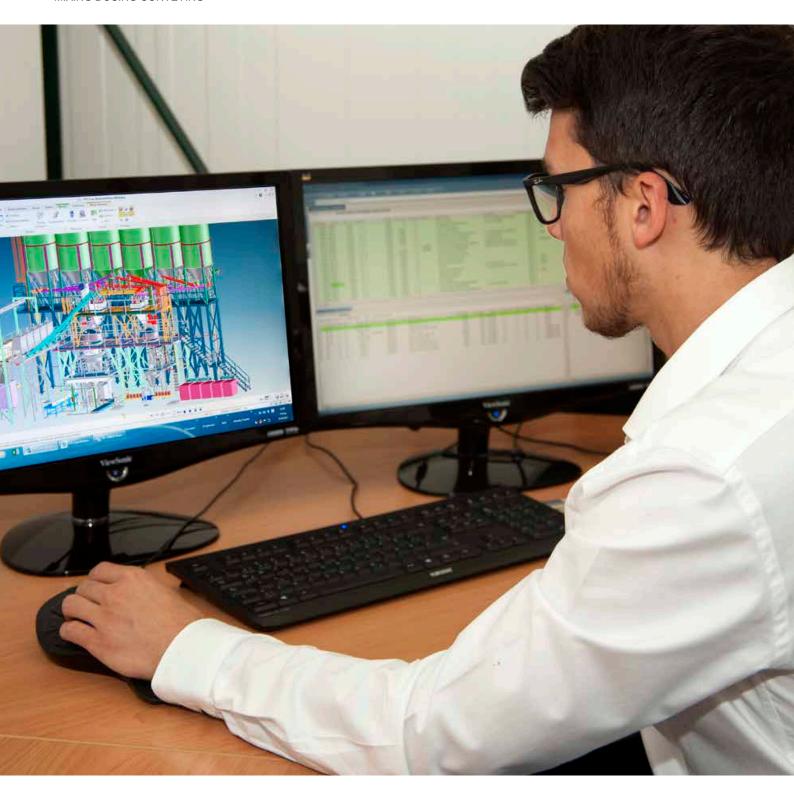
From left to right: Joris Kniele, Ingrid Kniele, Harald Kniele, Alexander Kniele, Daniela Kniele, Erwin Kniele, Felix Kniele

Dear readers, customers and partners,

With this brochure, we would like to present our services and our ideas with regard to plant construction and mixing technology. As a specialist company with more than 25 years of history we do not only have vast experience but also the innovative spirit for developing technologically pioneering products.

Our goal for each project is to elaborate tailored solutions which meet the requirements and which are convincing due to their increased productivity, maximum quality and attractive efficiency. With our personal commitment and profound expertise, we are ready for each industrial sector and support you as your strong partner from the design of your new plant to its commissioning.

The management board: Dipl.-Ing. (FH) Erwin Kniele Dipl.-Ing. Harald Kniele Dipl.-Ing. Alexander Kniele



Seit 1996 Partner von Kniele Baumaschinen GmbH Ihr perfekter Partner in Sachen Computer, Netzwerk, Datenschutz und Telefonanlagen.

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# TAILORED TO SUIT YOUR REQUIREMENTS

You are planning a completely new plant, or you want to modernise or expand your existing plant? We are the right partner for you!

## Complete range of services

Our well-qualified and committed team offers you an all-inclusive service putting your desires and internal requirements perfectly into practice. Impeccable engineering services which allow us to be one step ahead of the requirements of permanently changing markets are the solid platform for the permanent growth of KNIELE Mischtechnik. As the global leader for mixing technology, we develop future-oriented solutions with sustainable efficiency.

## Brief history of our company

Erwin und Lydia Kniele established the company on 1 January 1991 which, in the last 25 years, has become a family-run, medium-sized business with international clientele. As early as in 1993, a production site including office rooms was built. In 1994/95 and from 2000 until 2007, further workshops were added for more capacity.

Simultaneously to this expansion of premises, we currently updated our machinery which is always state-of-the-art. A special milestone of our company history is our cone mixer with completely new technology which was patented in 2000. Further details are presented on page 16 ff.

#### The right mixture for each industry

Every new plant which we design is adapted to the requirements specific for each industry. Our broad range of customers includes the concrete sector as well as the food and pharmaceutical industry, waste incineration plants or disposal companies for nuclear waste. Our plants and systems perfectly meet all the required parameters and standards.

# Ready-for-use mixing plants for

- » finished parts plants
- » concrete block plants
- » ultra high performance concrete UHPC
- » transport concrete plants
- » dry mortar plants
- » mortar plants

## Special-purpose mixing plants

- » special waste treatment
- » mineral cast concrete

- » foam concrete
- » soil treatment (recycling)
- » dry mixing processes (chemicals, food, etc.)
- » brick and ceramics industry
- » glass industry
- » mixed gravel treatment
- » polystyrene concrete production
- » production of plaster and clay
- » production of epoxy resin glues
- » animal feed production
- » production of flowing screed

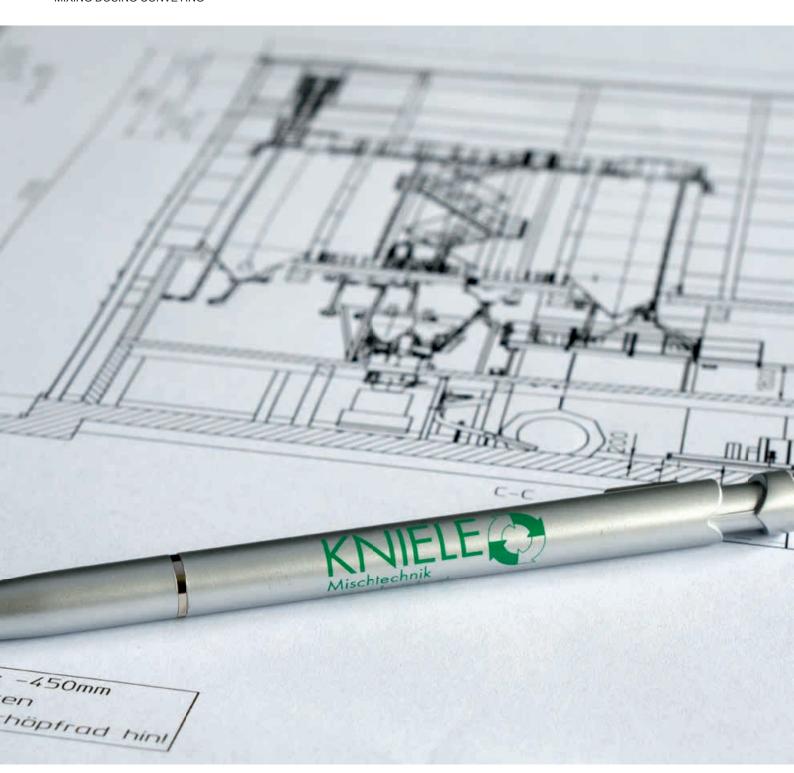
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Badgasse 3 88422 Bad Buchau Tel. 07582 9310-0 Fax 07582 9310-50 webmaster@maier-hoch.com **Dipl.-Betriebswirt (FH) Alexander Maier** Wirtschaftsprüfer - Steuerberater

## **Bernd Hoch**

Rechtsanwalt - Steuerberater







# FLEXIBLE PROJECT MANAGEMENT IN CUSTOMER-SPECIFIC PLANT CONSTRUCTION

KNIELE Mischtechnik link their workflow with the integrated order management solution ams.erp



Is it possible that a company with 27 employees can produce ready-for-use mixing plants around the globe with some of the plants being worth more than 2 million euros and having a lead time of up to 12 months? It is possible! Since 1991, KNIELE Mischtechnik, special-purpose machinery manufacturer from Bad Buchau in Upper Swabia, has been proving that, with impeccable engineering services, it is indeed possible. To make full use of their development, production and supply strengths, the company has linked its workflow with the project-oriented Enterprise Resource Planning (ERP) solution. We use the business software ams.erp which was designed by the consulting and software company ams. Solution AG to meet the requirements for individual production, commissioned production and variant production.

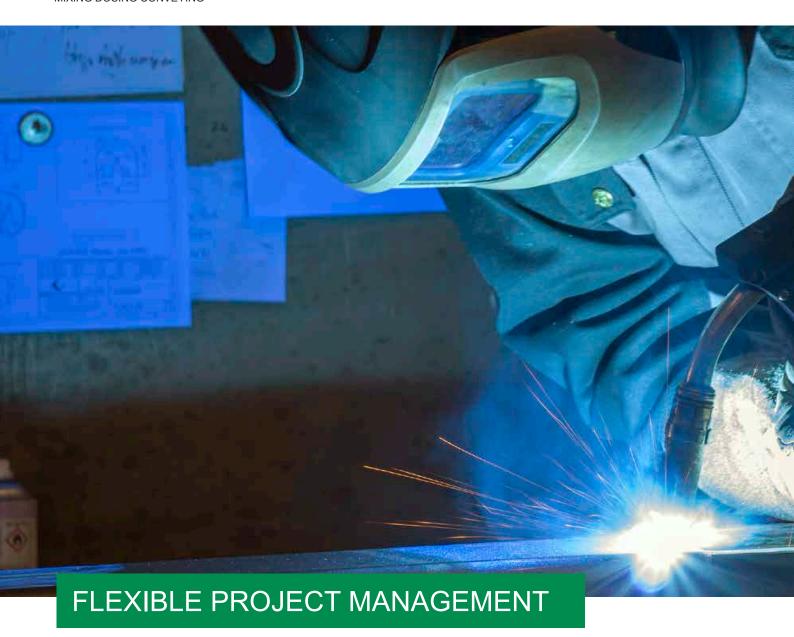
KNIELE uses the information management so that they can flexibly plan, proactively control and economically complete their complex customer orders.

"We are able to map the processing status of the current projects in real-time," summarises Alexander Kniele the core benefit of the ERP system. "The transparency we are achieving with ams.erp is especially helpful for projects where we are the general contractor and have to coordinate various partner companies in addition to our own work."

Whether KNIELE produces individual mixers or complex large-scale plants: the company approaches each project in relation to the order. When the project starts, we normally have no more details than the offer. Nonetheless, we have to start project planning, construction, procurement and production as soon as possible. Only then have we a chance to ensure market-oriented lead times. This means for the ERP system that the planning logic must be started without the full set of parts lists and work plans.

"Contract manufacturers such as KNIELE neither have the time nor the human resources to incorporate new projects with all planning details in an ERP system. Instead, they need a project-oriented solution which allows them to start working more or less immediately," says ams consultant Axel Schmidhäuser who supports the development work of the family-owned company from Upper Swabia.





### Flexible parts list management

Whenever possible, KNIELE product engineers use standard components. Nonetheless, customer-specific designs are our daily business. "Skip hoists, for example, are identical with regard to their kinematic principle," Alexander Kniele explains, "but if you have a closer look at the specifications of the current customer order, each closure rail is different: each rope length, each drive drum and many other parts. We design almost each part according to customer requirements."

For this task, our construction engineers make use of the flexibility of the ams.erp parts list management. They select the master parts lists for each project and copy them into the current order. Thus, the master data remain untouched while the bill of materials is changed step by step. However, this flexibility goes beyond construction because once we have the bill of materials, all other work areas can start their processes without having to wait until the complete product design is finished.

For example material procurement: Since the current purchase prices are saved in ERP, the procurement department can calculate the project demand once the items to be used for production are selected in the bill of materials and their length and quantity is specified. "In our early IT environment, such an approach was very difficult to achieve," Alexander Kniele recalls.

At the end of 2014, KNIELE Mischtechnik introduced ams. erp. Since then, they have been controlling their complete added value by a consistent order management system.





### More knowledge for accurate calculations

Now, the data islands of the different work areas belong to the past. Instead, we have an information flow across the projects along the complete value added chain. Thus, everyone responsible for the process as well as the management can reproduce the project status and the development of the order costs. "It is possible for me to analyse the development of the daily business right from my desktop," Alexander Kniele summarises the achievements so far.

However, this is by far not the end of the development opportunities. In addition to project-specific analyses, KNIELE Mischtechnik wants to use the integrated business software for analysing cross-order parameters. "We gain reliable knowledge about the live operation of our products and of follow-up costs to be expected,"

Alexander Kniele explains and emphasises the strategic value of this knowledge: "The more we know about the lifecycle of our products, the more specifically we can calculate our offers which also has additional benefits for our customers. This is a way to gain new market opportunities and provide a safe future for our company."

# PLANT CONSTRUCTION AND PRODUCTS

From consultancy and concept planning to construction and implementation – KNIELE Mischtechnik offers the appropriate plant for each requirement or adapts it accordingly.

# **Overview:**

- » tower plants
- » step plants
- » row-type silo plants
- » pocket plants
- » mobile mixing plants
- » special mixing plants, customer-specific

# TOWER PLANTS

#### **Vertical concrete stations**

Tower plants with a diameter ranging from 5.75 to 10.5 metres are perfectly suited for the storage of 100 to 1,000 cubic metres of auxiliary materials which are fed to the plant via 16° conveyors with smooth belts, 30° bag conveyors, cover belt conveyors, bucket conveyors or S-conveyors.

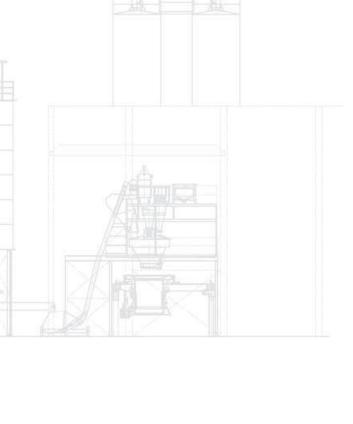
The material feed to the plant can be planned without the need of human resources. If the silos are equipped with insulated lining and integrated heating, aggregates can be easily processed even at extremely low temperatures. The installation of several mixers ensures extremely high plant performance.

KNIELE tower plants use anhydrite mixers thus allowing for the independent loading of ready-mixed concrete as well as for the independent production of ready-mixed concrete and mortar or flowing screed, etc.

# STEP PLANTS

#### The unobtrusive variant

You are planning a new mixing plant but the construction height is restricted by authority stipulations? No problem. We design your plant as a step plant – with the same functions and variation options.







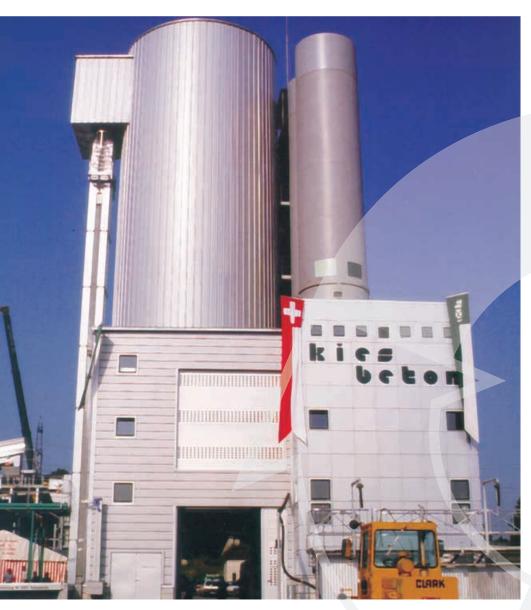




Concrete fruit bowl



Backlit facing of Swatch



Tower plant with a capacity of 520 m<sup>3</sup>



Concrete spiral stairs



Special plant for high quality garden products

# **ROW-TYPE AND POCKET SILO PLANTS**

## **Horizontal concrete stations**

Depending on the requirements, pocket row-type silo plants can be delivered either as a stationary or semi-mobile model. They are either loaded by a bucket loader or directly by a truck. The aggregates are weighed by a weighing belt or moving scales. Then they are charged to the mixer or an intermediate container via the skip loader or a belt conveyor.

## **Pocket silo plants**

If only up to three silos of your plant have to be charged with aggregates, and if the plant capacity is moderate, a pocket silo plant is a possible option for you. Contact us for further details. We will check all parameters and design the ideal solution for you.

### Row-type silo plants

For production plants such as block plants where many different aggregates are required, we recommend the tower silo design. The material is loaded by a double-belt conveyor, a conveyor belt or a special lift to enable sorted loading — e.g. for high-quality flint. Discharge is possible via a feed hopper above ground for rear dump wagons or below ground with cover grating.





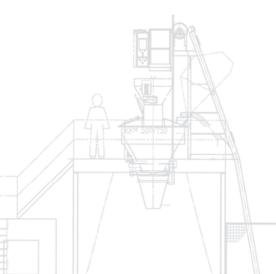
Row-type silo plant with below ground concrete silo



Row-type silo plant with 34 aggregate silos for architectural concrete



Mobile mixing plant for terrazzo



# MOBILE CONCRETE MIXING PLANTS

You want to have a horizontal mixing station which perfectly meets your requirements for capacity and performance and which is a mobile plant? Mobile mixing plants made by KNIELE are easy to transport and can easily be put into service.

- » Output of the plant: 30 to 100 m³/h
- » Storage: e. g. 3 x 60 t of cement
- » Storage of the aggregates in the row-type silo with 4-6 chambers, 10-30 m³ each

Thanks to the integrated steel foundations, the foundations can be laid very quickly.



Mobile mix 2,0 m³ with row-type silo



Mixing plant for suspensions with concrete pump and pigging station to clean the hoses (UHPC)

# **SPECIAL PLANTS**

The design of the cone mixer KKM with waterproof gate allows for the production of highly free-flowing concretes and suspensions which would not be possible with rotary gates (e. g. used for the production of ultra high performance concretes, grouts for waste, etc.).



Special mixing plant for UHPC



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# **CONE MIXER KKM**

# We reinvented mixing

The cone mixer for which KNIELE Mischtechnik filed a patent in 2000, is based on a revolutionary mixing principle. Two counter-current agitators in a cone-shaped mixing chamber produce a homogeneous mixture within the shortest time. Agitator number 1 is a conical worm screw with spirally arranged coils or blades. The second agitator has stirring arms with mixing shovels which spread the part of the surface of the mixing chamber that is in contact with the mixture.

The central screw conveyor moves the mixture vertically which causes rotation. The outer agitator works contrary to this rotation.

Thanks to the contrary and crosswise flowing of the mixture, an intensive and quick mixing effect is obtained.

# The benefits at a glance

- » optimal mixing effect
- » reliable break-up of cement agglomerates
- » bar-free addition of colours
- » no loss of quality when mixing small quantities
- » entire discharge within the shortest time
- » conical, space-saving design
- » low pollution level and easy and quick manual or automatic cleaning
- » absolutely low noise
- » start with fully loaded mixer is possible without any problems
- » versatile applications: mixing of concrete of any texture such as steel fibre concrete, glass fibre concrete, SCC and UHPC concrete, air-entrained concrete, polystyrene concrete, mortar, any dry bulk products, food, sludge, dusts, etc.





#### Further benefits of the cone mixer

With the independent speed control of the two agitators, liquid and earth-moist concrete can be produced by the cone mixer. The indefinitely variable control allows for precise adjustment for the respective mixing product and significantly reduces the mixing time of special concrete.

# **Economic factors**

- » short mixing and discharge cycles
- » short cleaning times
- » cement and pigment savings
- » reduction of waste
- » low maintenance effort
- » reduced wear and tear surfaces



Agitator, Cone Mixer KKM in stainless steel



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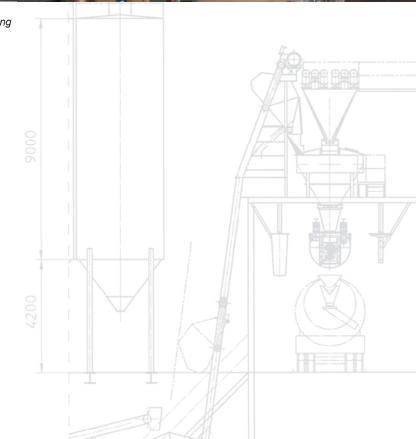
Assembly of the high pressure pumps for the automatic mixer cleaning

# **CONE MIXER KKM**

## For highest demands

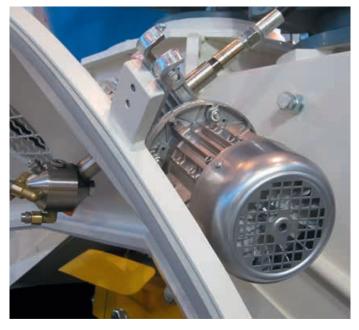
Due to its excellent properties, many educational establishments, material test centres and research institutes use this mixer as a laboratory mixer for the development of new special concrete.

In order to produce ultra high performance concrete (UHPC), the mixer can be equipped with a special agitator tool and a special drive with a speed of up to 400 rpm. As a result the mixing time can be reduced to as low as approx. 2 minutes.









Rotary head of the automatic mixer cleaning

# Antriebstechnik Obermüller e.K.

Inhaber: Christoph O. Obermüller

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Wir treiben Sie an, und das zuverlässig!

# INTENSIVE MIXER WITH TWO MECHANICALLY DRIVEN AGITATORS

# Excellently suited for special tasks

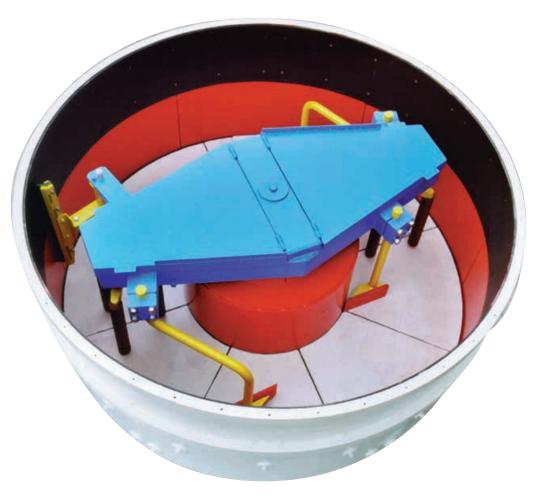
KNIELE's intensive annular tray mixer is excellently equipped for particularly difficult mixing tasks with two agitators which are mechanically driven by the main drive. The good mixing effect especially results from the action of the two stirrers which rotate contrary to the direction of the agitator which ensures a homogeneous mixture. A very intensive mixing effect – even in a shorter time – is achieved by the relatively narrow mixing canal. This also offers a great advantage for the mixing of small quantities.

#### **Conversion of conventional mixers**

If you equip your mixer with an additional stirring system, you benefit from the positive properties of the intensive mixing process – without high investment costs.

# Your benefits at a glance

- » high concrete quality
- » low operating costs
- » easy maintenance and cleaning
- » high operational safety
- » low noise level
- » easy and flexible installation
- » many individual adjustment options
- » high yield





# FLOWING SCREED MIXER

# KNIELE Anhydrite plants

Our anhydrite plants are designed in particular for the production of prefabricated flowing screed.

#### Components

- » feed hopper for sand with direct infeed into the truck mixer incl. belt weigher
- » anhydrite silo with silo equipment and screw conveyor
- » AFE mixer (anhydrite) in different sizes as weighing mixer incl. washing unit
- » additive weighing of water and anhydrite in the mixer
- » supporting structure incl. lining
- » control incl. delivery document and/or log printer

## **Optional**

- » second silo for cement
- » RC plant for washing water treatment incl. direct discharge of the washing water from the mixer
- » PP fibre dosing plant
- » additive dosing



Production of factory-made flowing screed



# SPECIAL-PURPOSE LABORATOY MIXER

## Special-purpose laboratory mixer KKM-RT 15/22,5

The KNIELE KKM-RT 15/22,5 combines a laboratory intensive mixer with a rheometer that provides the rheological properties of a mixture in either relative or absolute units. A mixer probe for moisture analysis and a dosing unit for addition of liquid and dry components expands the scope and enables automated parameter studies of mix development.

Samples of various concrete types of any quality and quantity can be produced with this mixer to carry out classic fresh concrete tests such as slump spread, slump flow measure, VdZ (German Cement Plant Association) funnel and LCPC box.

## Material discharge and mixer cleaning

Almost all of the mixture drops out of the mixer under the influence of gravity. The geometric shape of the cone mixer allows for quick and easy cleaning. To this end, the flap of the mixer is closed and the mixer is rinsed at high speed.

## **Mixing tool**

To increase mixing intensity, minor improvements were made to the conical mixer's mixing tool. The disagglomeration of fine materials and the separation of fine fibres are significantly improved and accelerated with the arrangement of short pins on the outer edges of the mixing paddles.

# Drives and function as a rheometer (relative measured values)

The use of a synchronous torque drive as direct drive allows for low speed and/or torque and oscillating measurements with quick changes of the sense of rotation.

# Function as a rheometer for the determination of measured values in absolute units

- » speed-controlled mode
- » torque-controlled mode
- » oscillating measurements with sinus-shaped change of the sense of rotation

#### Function as a tribometer

» checking the pumpability of concrete

## Mixer probe

» measuring the inherent moisture with the option of controlling and checking the average water/binder ratio

The special-purpose laboratory mixer KKM-RT 15/22,5 is equipped with a camera to observe the mixing procedure.











# LABORATORY MIXER

# Laboratory compulsory mixer for 30-375 litres of laboratory capacity

KNIELE laboratory compulsory mixers are designed as type KKM-L cone mixers and ensure an intensive and homogeneous mixture. Due to the conical shape it is possible to mix even smallest amounts of high quality. Due to its simple geometric shape, the mixer can be completely discharged within shortest time. The mixer can easily be filled from above.

With the cone mixer, all kinds of high-quality concretes such as self-compacting concretes or light-weight concretes can be produced within the shortest time and in a very high quality. In addition to concrete production, our cone mixer is particularly suitable for any kind of dry mixing such as the production of light fineries, dry mortars, cast mineral concrete, animal food, chemical dry mixtures, refractory or liquid glues or other products.

On request, the mixer is also available in stainless steel.

KNIELE laboratory mixers are CE-compliant and built in accordance to the EU machine directives. Practice-proven standard drives assure a long service life.

## **Technical data**

KKM-L 30 ...... 30 litres of concrete production KKM-L 15 ..... 100 litres of concrete production KKM-L 375 .... 250 litres of concrete production KKM-L 550 ... 375 litres of concrete production



Laboratory mixer 30 litres



Laboratory mixer 100 litres

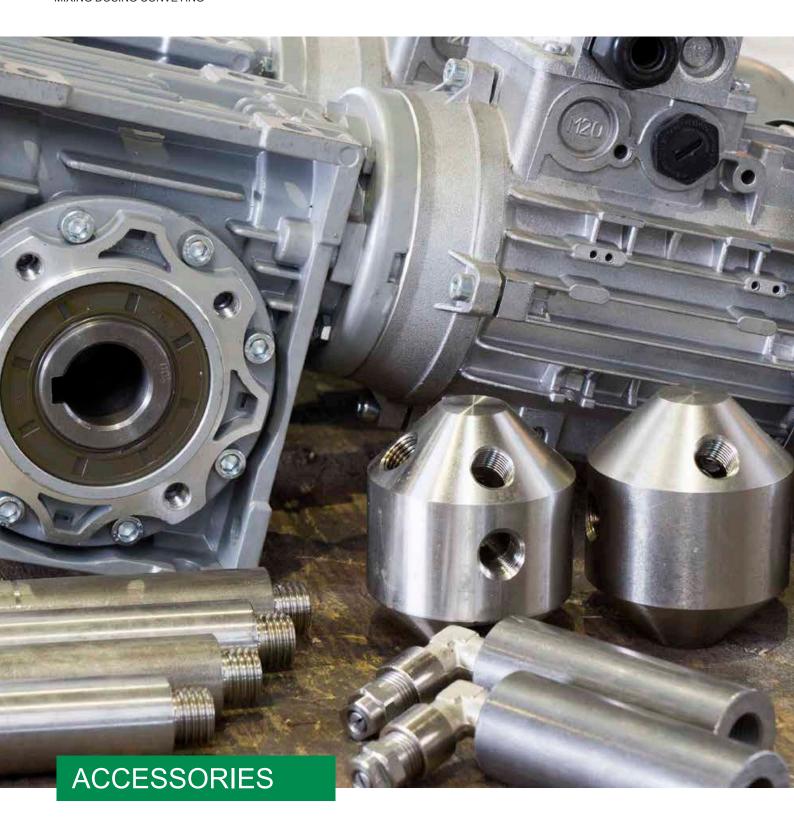




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# **ACCESSORIES**

KNIELE is not just your strong partner with regard to mixing technology but also for any other components which you need. We provide all products in proven quality and utmost compatibility from one single source.

#### **Overview of KNIELE accessories**

- » storage
- » conveying
- » dosing / fibre dosing
- » hydraulics and pneumatics
- » bucket conveyors / concrete distributors
- » buckets for UHPC/SCC
- » control units
- » mixer cameras
- » scales: cement, water, additives, paint, etc.
- » mixer cleaning
- » pellet plates
- » discharge and cleaning hoppers
- » safety gates for concrete collection
- » day silo / Big Bag / sack feeder
- » recycling
- » lifts
- » fibre dosing plants
- » pneumatic conveyors

etc.



Mixer camera





Production of a mixer cone





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- Biegen
- Balkone
- Schweißen
- Treppen

Internet: www.fuerst-laser.de



# **ACCESSORIES**

### Recycling

- » recycling of residual concrete and washing water
- » option of installing a filter press
- » clarification of washing water in AQUARE X
- » neutralisation by CO<sub>2</sub>

### **Bucket conveyors / concrete distributors**

- » bucket conveyors
- » flexible concrete conveyors
- » automatic line conveying
- » crane distributor buckets
- » 1,000 up to 4,500 litres, dosing via rotary feeder, with spiked roller and intake valve
- » skip-type hoist up to 3,000 litres, as single or betwixt line, curve or raising movement
- » segment-type hoist up to 4,500 litres, as single or betwixt line, curve or raising movement
- » tandem trolley
- » separated trays and closures for high pureness, e.g. for face and core concrete
- » vertical running stations with steady or changing hoists

#### **Dosing**

- » pneumatic dosing valves for coarse or fine dosing
- » dosing belts for volumetric dosing of light-weight aggregates
- » vibrating conveyor channels, as magnetic or vibrating chute with frequency converter
- » dosing belts and delivery belts including movable scales

- » vibration motors
- » draining systems to catch dripping water from the dosing valves; a loop system disposes of the dripping water into a gutter via a circular collective line

## **Control systems**

- » entire control and performance devices for concrete and ready-mixed concrete plants according to ZTVK
- » all kind of accessories such as displays, emergency switches, voltage regulation, modems, printer for delivery notes and logs, control container, external concrete ordering, remote maintenance, etc.
- » moisture measuring devices
- » water dosing computer with microwave probes, sand humidity measurement, consistency measurement



Concrete bucket for SCC, UHPC with hydraulic slide and screw-type agitator

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KNIELE GmbH Gemeindebeunden 6 D – 88422 Bad Buchau

Phone: + 49 7582 9303-0 Fax: + 49 7582 9303-30 E-mail: info@kniele.de Internet: www.kniele.de

