

KNOW-HOW

■ GEBERIT

Twyford

CUSTOMER MAGAZINE
DECEMBER 2019

TOOLMAKING

THE SUPREME DISCIPLINE

IN PRACTICE

CLEAN DRINKING WATER AT PARK ALLGÄU

ON THE COVER

In autumn 2018, Center Parcs opened its latest holiday complex, Park Allgäu (DE), in the heart of nature. The modern holiday homes are equipped with Geberit sanitary flush units.

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Mark Larden
Managing Director

DEAR CUSTOMERS,
WATCHMAKING IS A CRAFT THAT IS KNOWN FOR ITS PRECISION.

Similar levels of precision can be found in the in-house tool making department at Geberit. With outstanding technical skills and a keen eye, toolmakers create moulds for injection moulding and blow moulding machines. Accuracy is just as important in the Geberit workshops – and at every work step to boot, starting from the design data all the way through to honing and then assembling the individual components to form the finished tool.

Tool making is one of the most important success factors at Geberit. It is not only where all the know-how from product development comes together, but also a source of expertise in production itself as a developer and manufacturer of new moulds. The flawless moulds ensure the undisputed product quality that Geberit is known for.

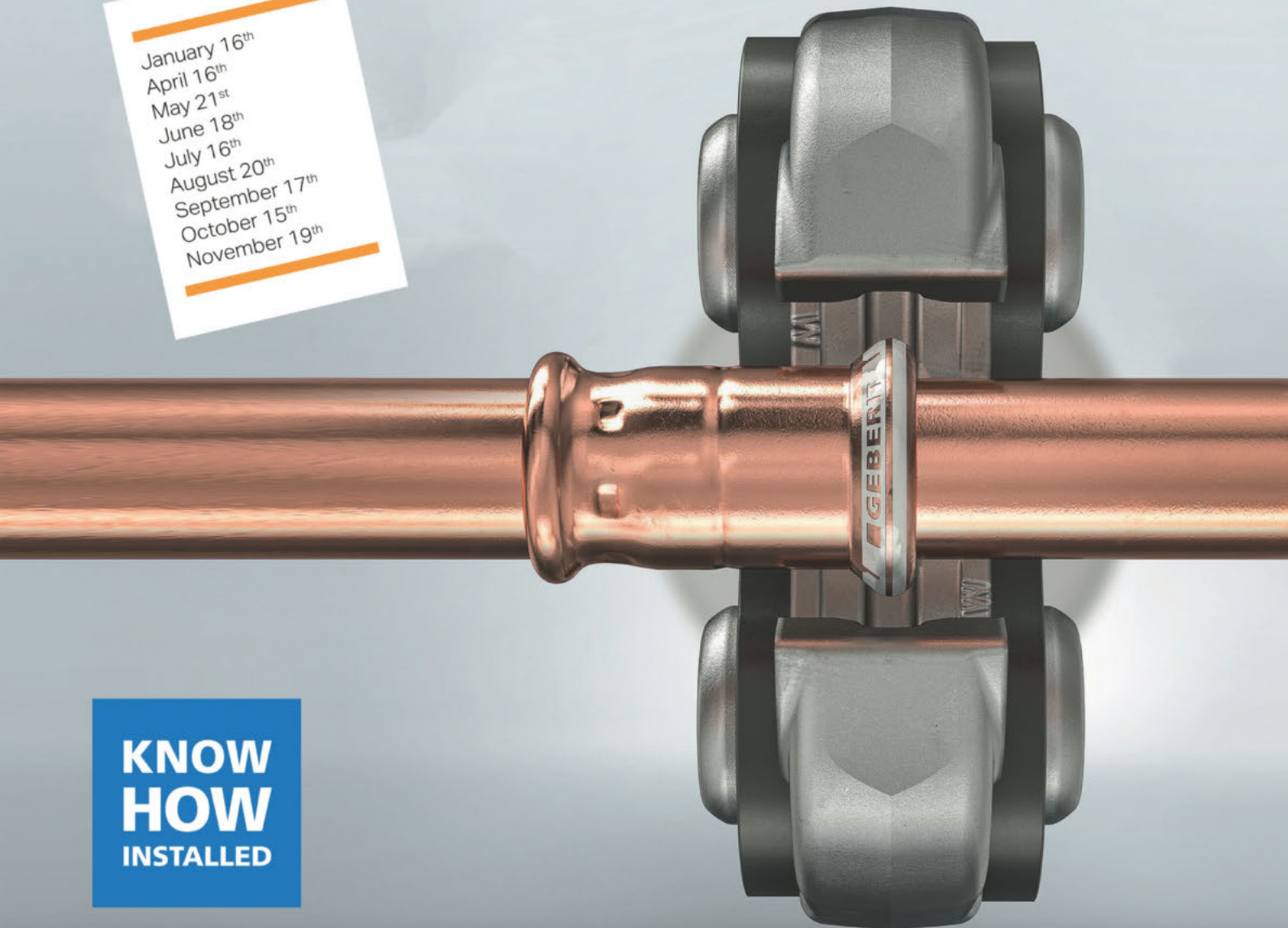
This issue not only contains more information on the in-house tool making department, but also other exciting stories about Geberit and our product ranges.

I wish you an entertaining and informative read.

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GEBERIT MANAGING DIRECTOR RAISES OVER £5,000 FOR GUIDE DOGS

Geberit's Managing Director has raised a total of £5,190 for Guide Dogs for the Blind Association after completing the Great North Run.

Mark completed the race in 2 hours 25 minutes despite suffering a shoulder injury in the build-up to the event. The fundraising quest will allow Geberit to sponsor and name a Guide Dog puppy, who will go on to support one of over two million people living with sight loss in the UK.

Mark Larden, Managing Director of Geberit Sales Ltd, said: "At Geberit, we are dedicated to supporting a host of charities each year, and Guide Dogs for the Blind Association is just one of the worthy causes we are supporting throughout 2019."

To donate, please visit:
www.bit.ly/blind-association



GEBERIT'S SNOWDONIA TRIPLE CHALLENGE RAISES £3,800 FOR CHARITY PARTNER CRASH

Geberit's Board of Directors have completed the Snowdonia Triple Challenge, raising £3,800 for its official charity partner, CRASH.

The grueling one-day challenge saw the team complete a 17 km cycle, 7 km hike and 4 km kayak on Saturday 6 July, as part of its 2019 fundraising efforts. Beginning with a cycle around the base of Snowdon, the group then climbed to the summit of the mountain, before finishing with a kayak across Llyn Padarn.

Having already exceeded its original target of £3,000, all donations raised will go directly to CRASH, an organisation which helps homeless charities and hospices deliver life changing building projects.



Mark Larden, Managing Director of Geberit Sales Ltd, said: "As a company, we are dedicated to supporting a variety of causes throughout the year and are honoured to be a patron company of CRASH Charity for 2019. We are incredibly proud of the team for completing the Snowdonia Triple Challenge, helping to not only reach, but exceed our target amount for the charity. It was tiring, but we are rewarded by the knowledge that the funds raised will help support a very worthwhile cause."

To donate to Geberit's Snowdonia Triple Challenge, visit: www.bit.ly/crash-charity



TOOLMAKING AT GEBERIT

THE SUPREME **DISCIPLINE**



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A look inside the assembly area, where the tools are given their finishing touches.

In order for Geberit to produce first-class plastic components and products, the corresponding injection moulds and blow moulds have to be of the very highest quality and precision. This is the job of the in-house toolmaking department.

TOOLMAKING = MOULD BUILDING

Pipe fittings, actuator plates and concealed cisterns – all of these products are made in injection moulding and blow moulding machines. The moulds found in these machines are produced by the toolmaking department (also known as mould building). In the injection moulding process, liquid plastic is injected into a mould at a pressure of up to 2,000 bar, where it then hardens before the finished component can be taken out of the mould. Due to the high quality standards and the heavy loads they are subjected to, the moulds have to meet particularly strict requirements. For example, the machining and heat treatment of the wear-resistant special-grade steel mean that the tool is relatively robust. Perfect assembly of the individual components and a final inspection of the functions ensure that the liquid plastic then flows into the prefabricated mould as required and that there are no unexpected quality defects on the final product.

The machines in the production halls in Rapperswil-Jona (CH) are running at full steam. Tens of thousands of plastic parts are injection-moulded here every day. The story is the same at the plant in Pfullendorf (DE). Without highly automated production facilities with injection moulding and blow moulding machines, these volumes would not be possible – and certainly not in the precision and surface quality that Geberit strives for. What not many people know is that behind this outstanding quality are toolmakers that work at the very highest level.

HIGHLY CONCENTRATED AND WITH PINPOINT ACCURACY

The in-house toolmaking departments in Jona and Pfullendorf specialise in the production of moulds that are required in the injection moulding and blow moulding processes. At the two sites, a total of some 70 toolmakers, draughtsmen and other specialists go about their tasks in workshops equipped with state-of-the-art machines. It is immediately clear that quality and precision are of huge importance →

here. A member of staff painstakingly inspects a component that has been milled from a block of steel by a computer-controlled machine before they can then combine this with the remaining components to make a complete mould. It's clear to see that working by hand is still in demand here despite the high levels of automation. "A toolmaker works at a level of precision down to mere one thousandth of a millimetre. Such accuracy can only be achieved by well-trained staff," explains Michael Zinser, Head of Toolmaking. Even the smallest deviation can mean that a mould is rendered useless. Days of work would then have gone to waste in such cases, not to mention the associated financial losses. As Michael Zinser explains: "A finished tool can cost several hundred thousand francs."

FROM THE BLUEPRINT TO THE FINAL MOULD

The toolmaking department springs into action when moulds are worn out or damaged, or when Geberit launches a new product. In the event of new products, the production of a new mould starts when the product data is passed on by the development department. Using this already very precise data – consisting of 2-D drawings and 3-D data – the draughtsman builds the virtual mould on the computer using CAD software. This results in a detailed tool design. Even

"Our moulds are highly complex, precise one-off items."

Michael Zinser
Head of Toolmaking Geberit



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Coordination between manufacturing and assembly is important. The next steps are worked out together.

"Constructing an injection moulding tool is like in Formula 1 – one mistake and we won't reach the chequered flag."

Michael Zinser
Head of Toolmaking Geberit

at this early stage, there is only a low fault tolerance as the design has to meet the requirements of the injection moulding or blow moulding machines exactly. Special attention is already paid here to the separation of the two halves of the mould. Ventilation and temperature control of the mould are also already taken into account during this early phase.

Based on the design data, the machine programmers then write a CAM program for manufacturing the individual components. This program contains all relevant data from the design phase that the CNC machine needs, meaning it can then manufacture the corresponding component step by step – ideally in a completely automatic process. Here, the steel plates from which the moulds are made are clamped in the machine and then processed using a range of methods, including milling, eroding, turning and grinding. Milling and erosion are used particularly often, with the former ensuring rotation-symmetric preparation of easily accessible geometries and the latter used for sharp edges and openings. The components also undergo different heat treatment processes.

Once the individual components have been prefabricated, they are then finished, measured, examined and then assembled into a complete mould. "The assembly process is a particularly delicate job that requires a lot of experience and a steady hand," explains Michael Zinser. "In order for the mould to remain in use for a long time, all the components must be perfectly coordinated with one another."

FAST REACTION TIMES

The toolmaking department not only produces new moulds – they are also responsible for the maintenance and repair of existing ones. Despite the robust materials used, it can happen that a mould can no longer be used as a result of wear or damage. Another benefit of having an in-house toolmaking department comes to the fore here. "External toolmakers are not able to react to unforeseen circumstances with the same level of flexibility as us," explains Michael Zinser. "Once the production department notifies us of a repair, we can start immediately. This flexibility is a major advantage as downtimes at our production facilities should be kept to an absolute minimum." Depending on the level of damage, the moulds are often back in operation the very next day.



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A member of staff carefully puts together the two tool parts.



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Using an eyepiece, a member of staff checks whether the surface of the mould core is up to scratch.



Three questions for Michael Zinser,
Head of Toolmaking in Pfullendorf (DE) and Rapperswil-Jona (CH)

PRECISION IS THE TOP PRIORITY

What are the distinguishing features of toolmaking at Geberit?

We have very well trained, motivated and conscientious staff. They often have to work to tight deadlines, yet always have to deliver perfect results. Precision is the top priority. We are also very flexible. If a tool should give up the ghost during production, we switch things around and take care of the repairs immediately. In this way, we play our part in the punctual delivery of products to our customers.

Why is precision so important in toolmaking?

We often only come in when a project is in the implementation phase. By this point, a lot of time and money has already been invested in the necessary tests and optimisations. Everybody involved wants the new products to be launched on the market as quickly as possible. However, each quality defect on our tools has direct consequences for the market launch and the product quality.

How long can a tool be used on average?

A tool design that has been tested to the limit combined with the selection of the best steel for the job lays the foundation for a high-quality tool that causes only minimal follow-up costs across its entire service life and ensures high levels of availability. If the tools are not damaged too heavily, they can remain in operation for decades. Every euro that is invested in the quality of the tool is then paid back with interest across its service life through the lower repair costs. We call this intelligent saving.

→
The holiday homes at Center Parcs
Park Allgäu blend in harmoniously
with the surroundings.

GEBERIT SANITARY FLUSH UNIT

CAREFREE HOLIDAY FUN

In the holiday homes at Center Parcs in Leutkirch (DE), 1,000 Geberit sanitary flush units guarantee outstanding drinking water quality.

Holiday village operator Center Parcs has built its latest park in the heart of the Allgäu region. Located in natural surroundings, the park offers its guests a relaxing stay in modern holiday homes. In addition to attractions in the surrounding region – including Neuschwanstein Castle – there are also a wide range of shops and restaurants, plus a subtropical bathing complex, a spa and country club, and a varied entertainment programme appealing to young and old alike. The park is thus an attractive proposition for both families and those looking for a more active holiday. Anyone holidaying at Park Allgäu has everything the heart could desire – including perfect drinking water quality.



THE IMPORTANCE OF DRINKING WATER QUALITY

Hotel facilities are subject to particularly strict requirements when it comes to drinking water quality. Park Allgäu – which was opened in autumn 2018 – is no exception. With 350,000 overnight guests expected each year and an additional 300,000 people visiting for the day, everything at the park has to run smoothly – including from a hygiene perspective. For example, the operators are obliged to ensure that the drinking water systems in all of the residential units work correctly. To make this possible, regular water replacement is necessary. In holiday facilities where rooms and apartments may stay empty for some time as a result of the off season or bad weather, it is necessary to replace the drinking water in the pipes at



CENTER PARCS

Operator: Center Parcs

Location: Leutkirch im Allgäu (DE)

Opened: Autumn 2018

Sanitary engineer: Fritz Planung GmbH

Geberit know-how: Geberit sanitary flush unit

least every 72 hours. This is because only a regular circulation of water can prevent stagnation and guarantee the perfect quality of the drinking water in the pipes.

A CONVINCING SOLUTION

In order to guarantee the drinking water quality in the 1,000 residential units on a long-term basis, the people from Center Parcs took the necessary steps back when planning the holiday homes. A solution was found quickly, namely an intelligent sanitary flush unit that flushes the pipes automatically at prescribed intervals. The project manager responsible for the planning of the sanitary systems – Bernd Mayer from Fritz Planung GmbH in Bad Urach – recommended the installation of Geberit sanitary flush units for maintain-

ing the drinking water quality. "The systems should work in a self-sustaining manner so that there are no hygiene problems in unoccupied holiday homes. With their individual consumption control, the sanitary flush units from Geberit offer an operating mode that is a perfect fit for the requirements laid out by Center Parcs," comments Bernd Mayer on his recommendation. The available product quantities at the time of installation were also an important factor, with the required 1,000 units all available within a short space of time. The sanitary flush units were installed underneath the kitchen sink, meaning they are concealed yet also easily accessible for any maintenance work that may be required. →

“Consumption control at large holiday parks such as Park Allgäu not only results in reduced water consumption, but also lower operating costs.”

Bernd Mayer

Project manager for sanitary systems Fritz Planung GmbH



↑

Well hidden: the sanitary flush unit is cleverly located underneath the sink in the modern kitchen.

INTELLIGENT FLUSH TECHNOLOGY

The consumption control was programmed directly after installation by Bernd Mayer. A volumetric flow rate sensor measures the effective water consumption and triggers a volume-optimised differential flush when required. In this way, when the flush is actuated only as much water is replaced as is necessary to ensure correct operation. To check whether the pipes have to be flushed and the water volume required, the sensor measures the flow rate and water temperature. For example, if a flush volume of ten litres within 72 hours is prescribed, but the flow rate at the time of measuring is only four litres, the sanitary flush unit triggers the missing flush volume of six litres instead of flushing with the full ten litres.

DOCUMENTED SAFETY

Installation of the sanitary flush units also brought an unforeseen additional benefit for the park management that became apparent in operation. The integrated log function automatically generates a record of each time the sanitary flush unit is triggered and also provides the corresponding relevant measuring data to boot. The function can be called up at any time via smartphone or tablet using the SetApp. This means that the holiday park can meet their obligations to provide proof of correct operation without any problems.

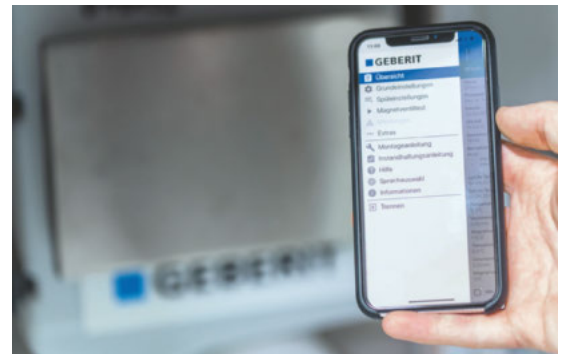
THE GEBERIT SANITARY FLUSH UNIT AT A GLANCE



Overview	Product versions (WSC = water supply connection)	<ul style="list-style-type: none"> - Single WSC - Double WSC - Single WSC + volumetric flow rate measurement - Double WSC + volumetric flow rate measurement
	Operation	<ul style="list-style-type: none"> - Operation and initial commissioning with Geberit SetApp - Log detailing flush times and flush volume can be read out with the Geberit SetApp - Digital I/O interface and RS485 for integration in the building management system
	Operating modes	<ul style="list-style-type: none"> - Time control - Interval control - Temperature control - Volume control - Consumption control
	Application purpose	<ul style="list-style-type: none"> - For preventing stagnation in drinking water pipes - For preventing microbial contamination - For connection to a cold or hot water pipe - For exposed or concealed installation - For Geberit Duofix and Geberit GIS prewall installation
	Power supply	<ul style="list-style-type: none"> - External power supply unit
Technical data	Flow pressure	0.5 to 10 bar
	Operating temperature	0 to 70 °C
	Flush performance	10 l/min
	Factory setting for interval flush	72 h
	Factory setting for flush time	180 s

↑

When a flush is actuated, the sanitary flush unit replaces the drinking water in all the pipes in the holiday home.



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Using the Geberit SetApp, the sanitary flush unit can be set up and put into operation via mobile phone. Thanks to the log function, all flushes made can be seen at any time.



NEW SYSTEM SOLUTION IN USE

A RADICAL UPGRADE THANKS TO **GEBERIT ONE**



EXAMPLE 1

After the children have flown the nest, the former family bathroom has become too large. This once functional wet room has now been transformed into an oasis of comfort thanks to the Geberit ONE mirror cabinet and washbasin in floating design (width 105 cm) and Geberit AquaClean Mera Comfort, plus the Geberit ONE niche storage box with sliding door and Geberit CleanLine60 shower channel (both not pictured).



With its innovative interfaces between sanitary technology behind the wall and bathroom equipment and furniture in front of the wall, Geberit ONE is causing quite a sensation. The first implemented conversion projects show how the systematic approach plays to its strengths.

When it comes to the bathroom, customers want more cleanliness and more space.* With Geberit ONE, there is now a system solution available that meets these demands precisely. Geberit ONE consistently utilises the benefits of the proven installation systems GIS and Duofix. On one hand, this leads to simplified

planning and stress-free implementation of building or conversion projects where different trades are involved. On the other hand, building owners can also look forward to a minimalist design that ticks all the boxes on their wish list.

ADDED CLEANLINESS

As they say in fine dining, the first bite is with the eye. When it comes to the bathroom, one could say that a good overall impression makes every moment you spend here enjoyable, whether rushing to get ready for work in the morning or relaxing in the evening. Ideally, the bathroom gives an instant feeling of cleanliness without even needing to prove its hygiene credentials. →

* Source: GfK Custom Research



EXAMPLE 2

This is a second bathroom with all the fittings – toilet, washplace and shower. Where things were once dominated by the tight space and chaos was par for the course, there is now a spacious ambience thanks to the Geberit ONE mirror cabinet, washbasin and washbasin cabinet in walnut real wood veneer (width 75 cm), the shower partition wall (90 cm), niche storage box with sliding door, Geberit CleanLine20 shower channel and Geberit AquaClean Sela.



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The generous amount of storage space on offer in the Geberit ONE washbasin cabinet helps the bathroom achieve a real sense of space – despite the small floor plan.



However, cleanliness only becomes tangible when examined in more detail, particularly when it comes to the cleaning work required – in other words, the cleaning frequency and effort required to make the ceramic sanitary appliances, mirror, glass and taps shine. Free areas around the places where water flows play a critical role here, particularly at the washbasin. Geberit ONE offers the perfect solution here, with the wall-mounted tap and washbasin perfectly coordinated with one another, for example. Areas where limescale can accumulate are therefore thin on the ground.

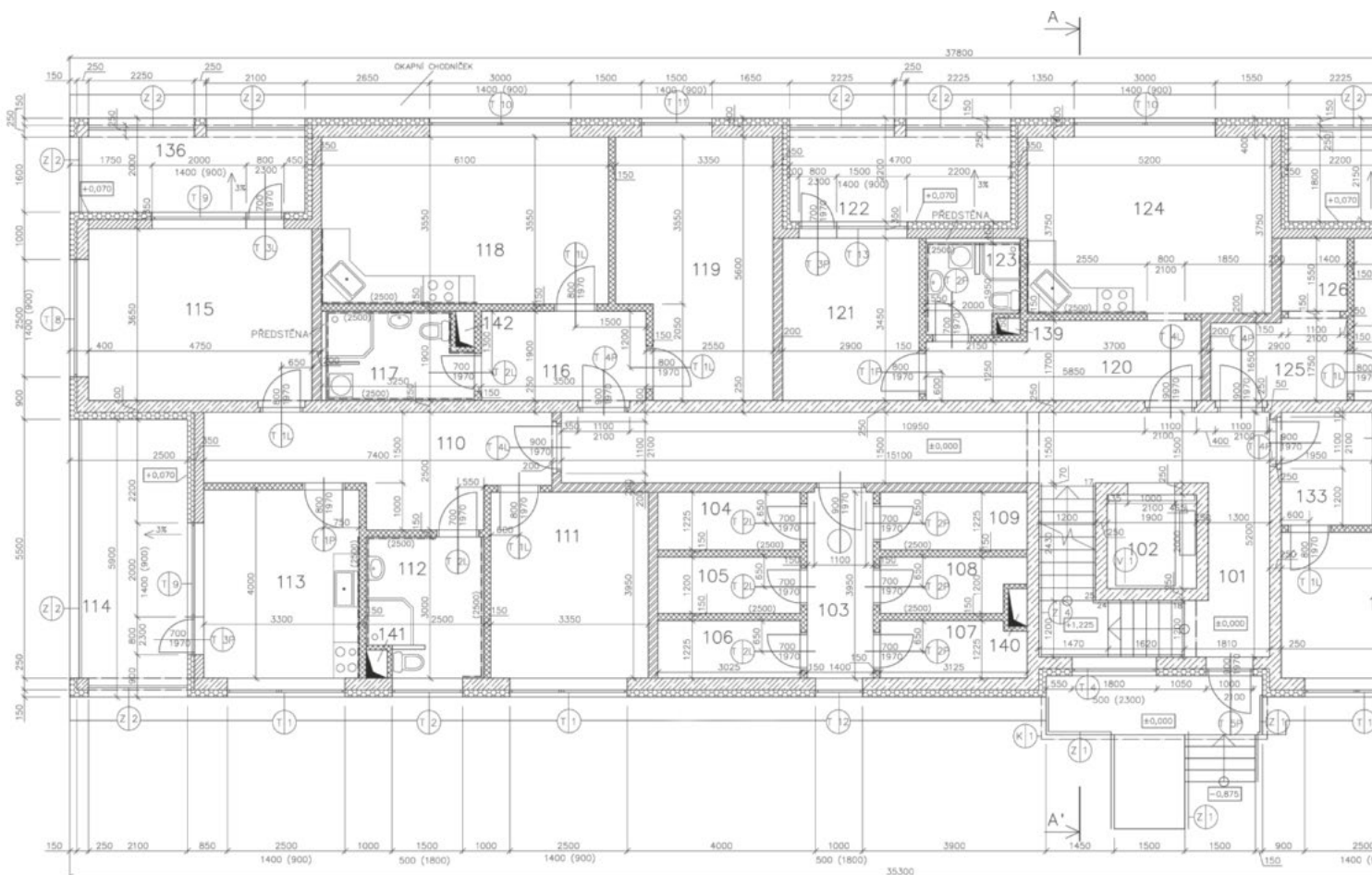
MORE SPACE

By shifting the technical components behind the wall – the trademark of Geberit ONE – a sense of minimalism becomes apparent that cleverly conceals how many bathroom accessories, cosmetics and other items are in use every day here. Only when the drawers are opened does it become clear just how significantly moving the trap behind the wall increases the available storage space. It is aspects such as these that make Geberit ONE the ideal choice where space is at a premium and high quality is in demand – such as in urban surroundings, for example.

CALCULATING SANITARY NOISES VIA COMPUTER

"HOW LOUD IS IT GOING TO BE?"

Digital calculation models may be used to predict the extent to which sanitary noises spread in a new residential building. The programs required for this are already in use in some places. Geberit not only supports sanitary engineers and architects by providing the relevant data, but also practical advice.



For many years, Geberit has determined the sound levels of sanitary installations in its own building technology and acoustics laboratory and had the results validated by an independent testing institute. Measuring results from hundreds of different installation situations and sanitary systems seen in solid construction projects are now available. Based on this data, which has been determined as part of very realistic tests, the acoustics experts at Geberit can assess the sound propagation in building projects with a high degree of reliability – at least when it comes to

sanitary noises. Given the increasing importance of computer-generated forecasts for installation noises, Geberit set up a new test facility in the Building Technology and Acoustics Laboratory. This can be used for determining the data that is required for the digital calculation models.

THE RECEPTION PLATE METHOD

The first standards for computer-based forecasting of sound propagation in solid structures have already been established, with calculation models for instal-



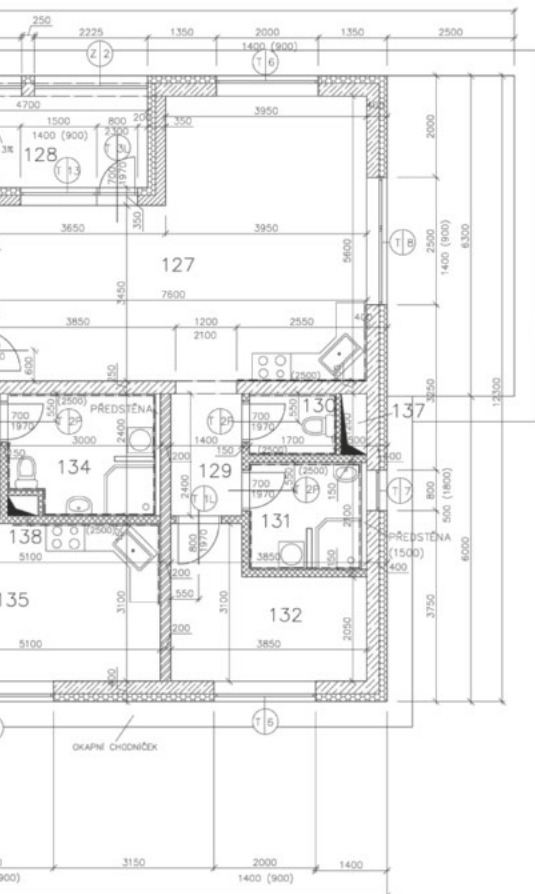
“With EN 12354-5, uniform calculation models for installation noises are available for the first time. This is a major step in the right direction.”

Oliver Wolff

Head of Building Physics Geberit Group



During this planning stage, it can be determined how much structure-borne sound will eventually be transmitted from the sanitary walls to the building structure and how loud the sanitary noise in neighbouring rooms will be.



installed but only half-height GIS sanitary module with the same fittings. The sometimes significant differences can largely be attributed to the different system configuration and connection technology.

THE DIFFERENCE FROM THE REALISTIC EXPERIMENT

To now determine how much sound is transmitted from a certain sanitary installation to the building structure, the installation is measured acoustically in a test facility for reception plates. A facility like this has been built at the Building Technology and Acoustics Laboratory in Rapperswil-Jona (CH) according to the specifications laid out in the EN 15657 standard. This consists of three decoupled, homogeneous, 10-cm-thick concrete plates (one horizontal and two vertical). The plates are also decoupled from the floor and walls.

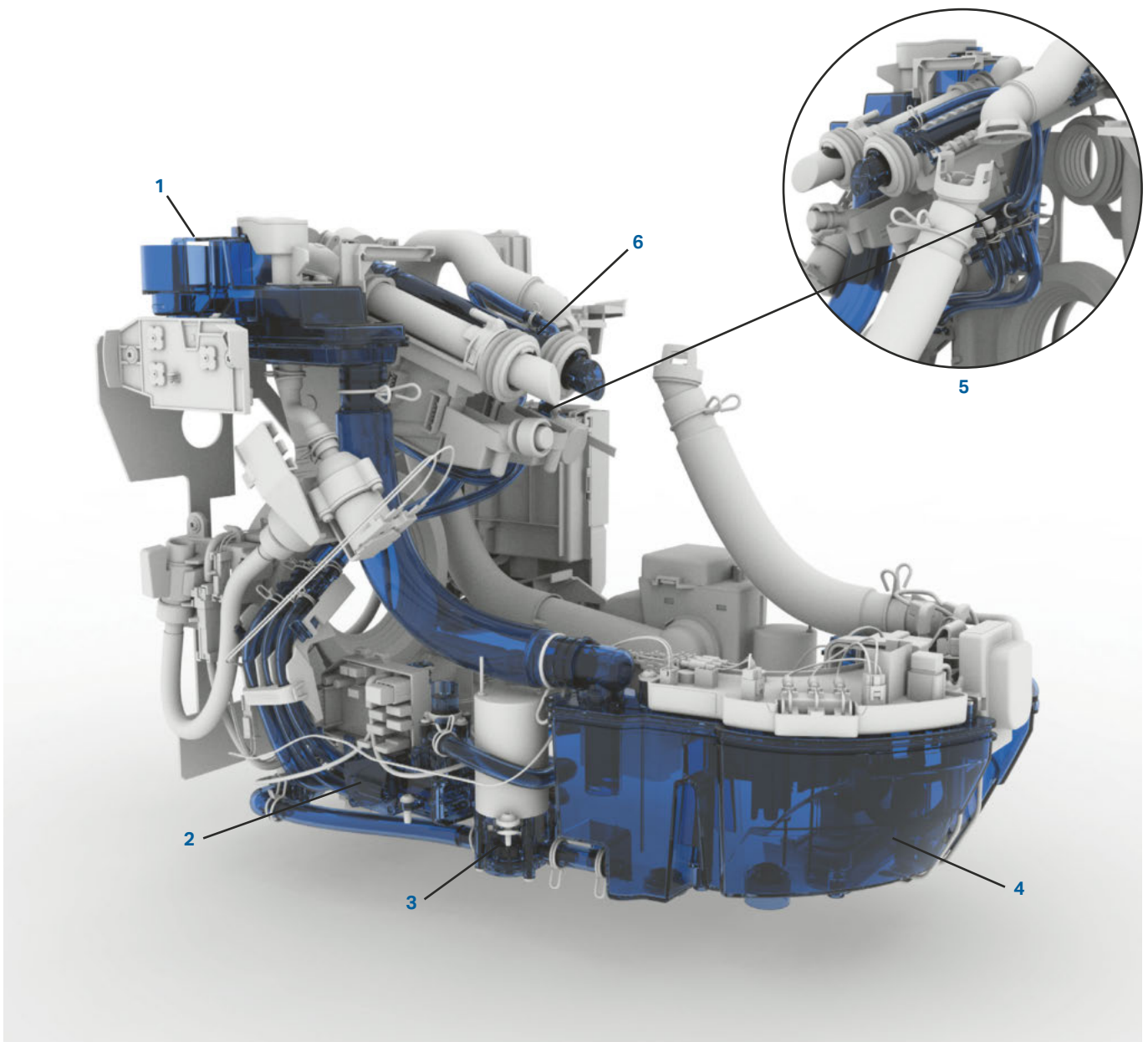
The installation elements and sanitary walls to be inspected are professionally installed on and in front of these plates. The structure-borne sound that these elements transmit to the individual plates when in operation can then be determined. The results are used afterwards as input data for digital calculation models. “The sound propagation values that are forecast by these models sometimes differ significantly from the measuring results seen earlier when using the realistic test setup,” comments Oliver Wolff, Head of Building Physics at Geberit International. “The reasons for this are varied. Therefore, in complex building projects in particular it is important that the architects and sanitary engineers not only rely on model calculations when planning the layout of the sanitary installations, but also on the expert knowledge of the manufacturer.”

lation noises now also available with the EN 12354-5 standard. These models work with input data that has been calculated using the reception plate method (EN 15657), which is explored in more detail below.

Each sanitary wall has its own acoustic characteristics. A correctly installed floor-to-ceiling Geberit Duofix installation system with elements for the cistern and washbasin that is connected to a floor drainage system consisting of Silent-PP pipes, for example, has different acoustic characteristics to a correctly

GEBERIT AQUACLEAN

DESCALING MADE SIMPLE



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The descaling agent is flushed through all water-bearing parts (highlighted here in blue).

- 1 Inlet for descaling agent
- 2 Continuous flow heater
- 3 Water pump
- 4 Water tank
- 5 Turning valve
- 6 Spray unit

Hard water is found in many places. Shower toilets contain pipes and parts whose functionality can be affected if operated with hard water for long periods. For this reason, Geberit shower toilets are equipped with an automatic descaling programme.

Lime – or calcium carbonate to give its chemical name – can be found in a range of different rocks and soils, where it is washed out by rainwater. In doing so, the calcium carbonate reacts with the carbon dioxide dissolved in the water and forms highly soluble calcium bicarbonate. The enriched water then reaches the consumer via the waterworks as drinking water. If the drinking water is heated in the shower toilet, the soluble calcium bicarbonate decays to form insoluble calcium carbonate – or limescale. This limescale settles on all surfaces that come into contact with water and results in malfunctions over time. If a layer of limescale builds up on heated parts – such as the heater in the shower toilet – the transfer of heat from the heater to the shower water is restricted. In the worst case, this can lead to faults on the heater.

AUTOMATIC DESCALING PROGRAMME

In order to prevent damage to water-bearing components, the shower toilet has to be descaled regularly. For this reason, all Geberit AquaClean shower toilets are equipped with an automatic descaling programme. On all models, the control panel shows when descaling is necessary. After the descaling agent has been added by hand, the procedure can be started at the touch of a button. In the subsequent 30 to 60 minutes, the descaling agent is fed through all water-bearing components such as the water tank, continuous flow heater and water pump. During the procedure, it reliably removes deposits from all components. Finally, the agent is flushed out together with the removed limescale. The descaling agent is safe for the environment as the reaction of the agent with the limescale neutralises the acids contained within.



The Geberit descaling agent can be ordered conveniently from home via the WebShop.

www.geberit-aquaclean.com

USEFUL INFORMATION

- Descaling is required at least once a year.
- All water-bearing components are treated in the descaling programme.
- The Geberit AquaClean app is there to let the operator know when the next descaling is due.
- All Geberit AquaClean models can be used without the spray functionality during the descaling programme.
- The time required by the descaling programme varies depending on the model: Mera = max. 60 minutes, Sela = max. 40 minutes, Tuma = max. 30 minutes.
- In order to prevent damage to the device caused by aggressive media, it is recommended to only use Geberit AquaClean descaling agent.
- After filling with descaling agent, the descaling procedure should not be cancelled as the agent would then be flushed out without being used.



To learn more about how the descaling procedure is carried out on the different models, check out Geberit's YouTube channel.

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