EPSILON - GEBERIT COLLABORATION

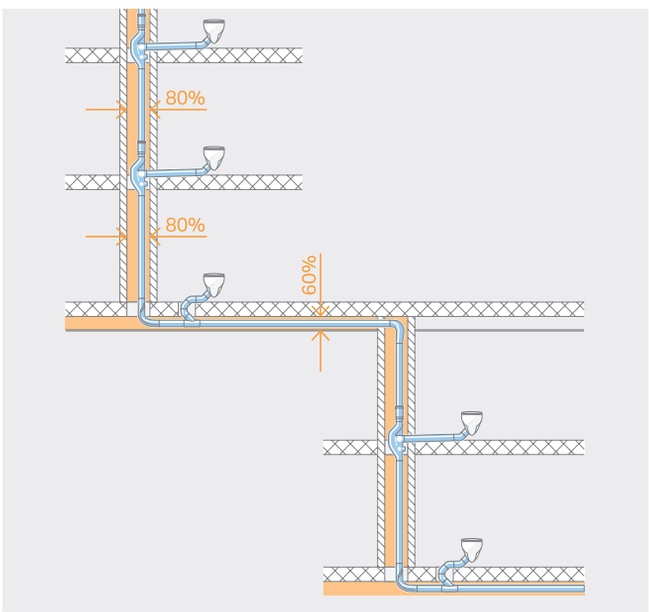
Epsilon is a Limited Liability Company (LLC) specializing in High-Density Polyethylene (HDPE) products and its aim is to become the first company in the market to implement versatile technological solutions to HDPE systems in projects and to revolutionize sustainable development in products and services provided to its clients.

Epsilon is specialized in most HDPE solutions, from pressurized water solutions to gas, sewage, and other solutions.

Epsilon's mission is to provide the Egyptian market, especially major projects and high-rise buildings with sewage and drainage systems of the utmost quality. Backed by an international multinational company, Geberit systems provide solutions and novel technologies to these projects of high quality.

SOPHISTICATED HYDRAULICS

EVERYTHING AN EFFICIENT DRAINAGE SYSTEM NEEDS



GEBERIT SUPERTUBE
This technology facilitates a consistent discharge pipe with a single pipe dimension. There is no need for a ventilation pipe and, what's more, the horizontal pipeline can even be laid to a length of up to 6 metres without a slope.

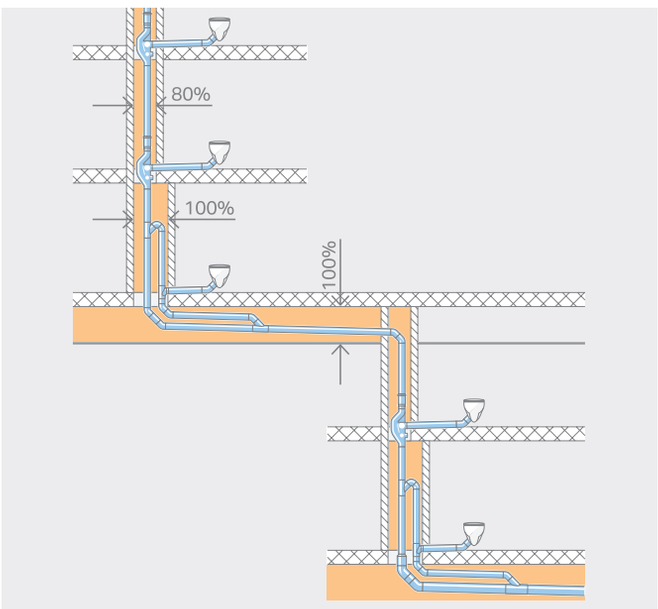
With its maximum discharge capacity of 12 l/s and a consistent pipe diameter of d110, Geberit SuperTube offers a comparable performance to a conventional system with considerable reductions in space and material requirements.

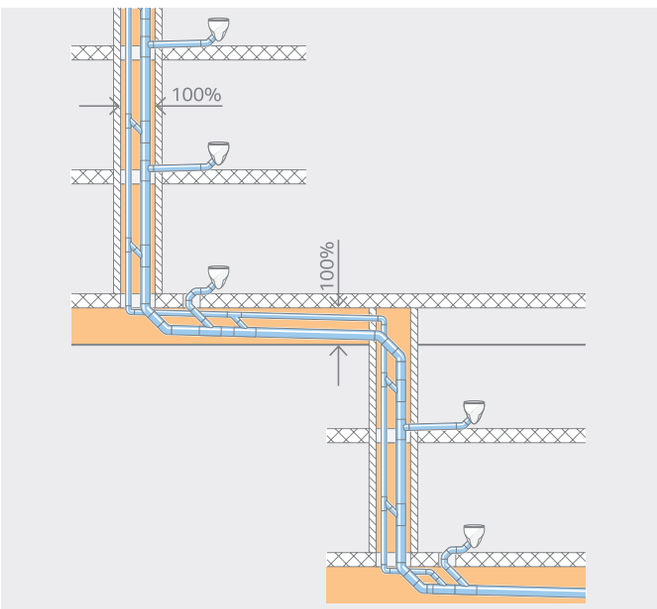
TAKING THE GEBERIT HDPE SOVENT FITTING TO THE NEXT LEVEL

The Sovent fitting has already allowed Geberit to succeed in offering a space-saving solution for high-rise buildings by making it possible to do away with a parallel ventilation pipe. The Geberit SuperTube technology is now taking this concept one step further. Changes in direction have always required an additional ventilation pipe in the past, but Geberit SuperTube has now made this surplus to requirements.

SPACE-SAVING INSTALLATION

Geberit SuperTube saves space in every direction. The ability to do without the additional ventilation pipe reduces spatial requirements in both the vertical stack and in horizontal pipelines, for example with an offset or collector pipe. What's more, there is also no need for a slope any more in horizontal pipelines of up to 6 metres in length. This makes it possible, for example, to install ceiling suspensions extremely close to the concrete ceiling at an offset.





OPTIMISED SYSTEM WITH THE GEBERIT HDPE SOVENT FITTING

The solution featuring the Geberit Sovent does not require a parallel ventilation pipe. This achieves a maximum discharge capacity of 12 l/s with a pipe dimension of d110.

CONVENTIONAL SYSTEM

A conventional drainage system achieves a discharge capacity of 12.4 l/s with pipe dimensions of d160 and an additional d90 ventilation pipe.

1. The outflowing water is set in rotation in the Geberit HDPE Sovent fitting.
2. The annular flow becomes a layered flow in the Geberit HDPE BottomTurn bend.
3. The layered flow becomes an annular flow once again in the Geberit HDPE BackFlip bend.

The result: A continuous column of air from the top floor to the collector branch pipe.

COMPONENTS

FITTINGS
THAT PUT A WHOLE NEW SPIN ON THINGS

The Geberit SuperTube technology is based on the perfect interplay between four system components. Three clever fittings coupled with the tried-and-tested Geberit HDPE discharge pipe with its high load-bearing capacity combine to create an innovative hydraulic solution that also brings clear additional benefits. These components are permanently welded to ensure a tight connection in the long term.

GEBERIT HDPE SOVENT FITTING D110

The optimised product geometry of the Geberit HDPE Sovent fitting guides the water into the stack and sets it in rotation, which causes it to press against the pipe wall. The resulting annular flow creates a stable, continuous column of air on the inside, which facilitates a discharge capacity of 12 l/s.

GEBERIT HDPE BOTTOMTURN BEND

With the Geberit HDPE BottomTurn bend, a change in direction causes the wall of water to break and the annular flow to become a layered flow without disrupting the column of air. This change significantly reduces impulse losses compared with conventional solutions.

GEBERIT HDPE BACKFLIP BEND

The twisted Geberit HDPE BackFlip bend causes the layered flow of water to swirl, which allows it to rotate through the vertical pipeline as it drains away in an annular flow. The inner air column in the subsequent stack is maintained.

GEBERIT SERVICE

HIGH AMBITIONS CALL FOR A STRONG PARTNER

Finding cost-effective and reliable drainage systems for high-rise buildings often presents a challenge for building owners, sanitary engineers and plumbers alike. With its consistent research into hydraulics and its own, in-house product development, Geberit is raising the bar not only on a technical level, but also when it comes to service.

Partnership and reliability are core values that our customers around the world can expect from us. Whether you are looking for planning support, help with invitations to tender, or building site support, the Geberit team is always by your side when you need it.

1 ADVICE & PLANNING → **2 QUOTE CALCULATION** → **3 PROJECT MANAGEMENT**

1 GOOD ADVICE & PLANNING
- Support with checking the possible applications of Geberit SuperTube
- Complete planning service including construction plans
- Geberit tool for SuperTube Planning
- Material planning
- Provision of BIM data for Autodesk® Revit® and CAD data
  www.international.geberit.com

2 EASY, RELIABLE CALCULATIONS
- Support with preparing a quotation
- Creation of a material list
- Creation of complete packages (pipelines, fittings, tools) for Geberit SuperTube

3 ON SITE SUPPORT
- Building site training for plumbers
- On-site inspections by Geberit specialists
- Support with change planning
- Final project acceptance

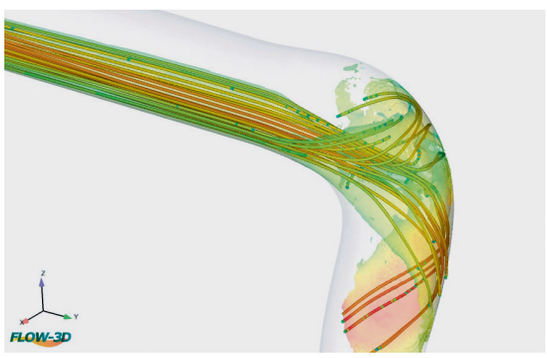
GEBERIT TOOL FOR SUPERTUBE PLANNING

Straightforward planning thanks to the dimensioning tool. The web tool guides you through the process of planning a one-dimensional discharge pipe step by step. The values and information obtained can then be collated and downloaded as a PDF file.

GEBERIT HYDRAULIC COMPETENCE

RELIABLE BUILDING DRAINAGE IS NO ACCIDENT

Contemporary buildings are setting ever-higher requirements, including for drainage systems. Large quantities of waste water have to be drained safely and reliably over long distances. The hydraulics specialists at Geberit develop and optimise product solutions and systems that can take on this task effortlessly. Our many years of experience in flow engineering, comprehensive physical know-how, and unparalleled simulation and testing opportunities also establish firm foundations in this regard.



SIMULATIONS AND TESTS

The Geberit researchers start by using computational fluid dynamics (CFD) to establish potential development variations on a virtual basis in order to filter out optimal solutions for further development within the laboratory environment. The in-house drainage tower, which has been part of the test laboratory for over 50 years, then offers the opportunity to subject the new developments to all relevant hydraulic tests under real-life conditions in a subsequent step. It is only once the prototypes have successfully confirmed the simulation results in intensive laboratory tests that additional practical tests are conducted to develop them further for market.

TAKING DEVELOPMENT TO THE NEXT LEVEL

With the Geberit HDPE Sovent fitting, which was first developed in Switzerland back in 1959, it was finally possible to create a drainage system that did not require an additional ventilation pipe. Countless private and national test installations throughout the world verified the capabilities of this revolutionary innovation before the product eventually made its way onto the market in 1970. Over the course of the continuous product development process, the familiar Geberit HDPE Sovent fitting with d110 dimensions was later relaunched on the market in a flow-optimised version. The basic physical concept behind this was constantly being redeveloped until the new Geberit HDPE BottomTurn bend and Geberit HDPE BackFlip bend fittings were finally created. These have now also made their way onto the market in the form of an optimal combination known as SuperTube technology.

COMPREHENSIVE PRODUCT TESTS

The existing drainage tower was expanded considerably as part of the development process for the SuperTube technology in a bid to simulate real high-rise conditions in practice and create an offset at a length of up to 6 metres. The structures above the roof were designed to represent floors above the offset. The successful results – as well as all of the installations including the comprehensive measuring technology – were documented and confirmed by an external, accredited testing facility once the development process was complete.

THE SOVENT SYSTEM IS CRUCIAL TO THE EGYPTIAN MARKET

Dr. / ENG.Ahmed Gamal El-Goharey
Member of the Egyptian plumbing code committee
Member of the Egyptian fire protection code committee

- In 1990 the first Egyptian committee for the preparation of the Egyptian Plumbing Code was founded, I was honored to be a member of this committee. It was my responsibility to study all water supply and drainage systems used in Egypt, in addition to all other advanced countries in this field like the USA and Europe. To accomplish this, I had to survey the most common water supply and drainage systems used in more than one code.

- The one pipe drainage system with its continuous, dry, and wet venting system was used in the United States of America. The vent stack in this system is used to protect the sanitary fixtures' water seal traps from siphonage and back pressure by balancing pressures throughout the system.

GEBERIT

1874 - HOW IT ALL BEGAN

- Regardless of the progress made in the field of venting sanitary drainage systems in the United States, the use of the oldest system of all, the single stack drainage system, has continued in a number of countries as a matter of economy and simplicity. Numerous modifications have had to be developed for high-rise building construction. The use of the single stack drainage system in Europe has expanded throughout most of Europe.

- As a cost-saving innovation, the single-stack drainage system has been the subject of research in three different countries, including France, England, and Switzerland. Innovation in the design of single-stack drainage systems developed in Switzerland is known as the "Sovent system", devised by Fritz Sommer.

- The Sovent system differs from the conventional single-stack drainage system in two significant respects. One is the installation of a special Sovent junction mixer fitting in the stack at each floor level to divert flow in the stack and to receive branch flow from fixtures there. The second is the installation of a special Sovent deaerator fitting just above the base of the stack. The result is a single stack that is self-venting with the fittings balancing pressure throughout the system.

    - SOil stack and VENT combine into a single SOVENT stack. The Sovent system has achieved acceptability in our Egyptian Plumbing code.

    - So, the Sovent system was originally developed to simplify drainage, waste, and vent piping in multistory buildings as a less expensive alternative to the traditional systems. From my point of view, to use the Sovent system's competitive advantage, I hope to see the Sovent system components being produced in Egypt and to be available in all Egyptian plumbing stores.

SECON NILE TOWERS, CAIRO, EGYPT

SAVING 1.1M EUR BY SAVING 50% SPACE

"Geberit Sovent was chosen because of its performance, technical solution, maintenance and the ways of installation. Moreover its price was moderate considering the necessary modifications in our project."

Hossam Abu Zeid,
Head of Plumbing & Fire Department of EHAF

PROJECT OVERVIEW (ALL FOUR TOWERS)

- Developer: Secon Real Estate
  Architects: EHAF
- Owner: Secon Real Estate
- Plumber: Siemens
- Height: 72 m
- Floors: 23
- Size of average bathroom: 5m^2
- Year of completion: 2019

THE CHALLENGE

The shafts were planned so narrow that a conventional drainage system was actually hard to place. The planners were looking for solutions and got convinced to go for the space-saving Geberit Sovent system. The hardest challenge was to convince the customers, who were used to the multi-stack vented systems with UPVC. Why trying out a new system that is not really tried and tested in Egypt? The consulting engineers of EHAF had to bring in their long-time experience with Geberit to convince the customers.

THE SOLUTION

Due to the narrow shafts designed in this high-rise project it was not sufficient to use the ordinary solution for the plumbing work but the final decision for a new technique was taken. A single stack system is not the usual case in Egypt.

The requirements to save space in the shaft was fully met and almost half of the originally planned space could be saved. The reliability of the Geberit products was also convincing and thus both towers (one a residential tower, the other one a Hilton hotel) were equipped with the Sovent system.

TECHNICAL BACKGROUND

With the Geberit Sovent system they finally could save up to 50% of the originally needed space.
The conventional planned triple stack system (soil, waste and ventilation) could be changed to a singe stack system.

Saving space in that project was very important as to rent out as much space as possible, and in a hotel, especially in such a luxurious one, it is important to offer the guest as much space and comfort as possible. It is interesting when you start calculation with the square-metre-price: saving 50% of the space, means more return when renting out the place. In this case it is 4.8 sqm times 10'000 Euro (local sqm price), which is 48'000 Euro times 23 (floors): a total of 1'104'000 Euro.