

Underground engineering fit to be seen

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Electricity, gas, and water distribution installations can be annoying obstacles on foot-paths, in squares and in other open spaces frequented by the public. Here, underground street fixtures present a solution. The Amsterdam-based Ebatech engineering consultancy firm developed the PUTkast®, a solution for banishing technical equipment to where it is in nobody's way: under the earth. Angst+Pfister serves this customer with a complete, carefully customized product and service package.

Robust, unobstructive, and economical. Ebatech can truthfully advertise its PUTkast® solution as "underground engineering that is fit to be seen." A unique feature of PUTkast® is the air bubble principle. The cover and walls of the PUTkast® form a sealed chamber, but the underside is open. This way, an air bubble will form when water rises in the chamber, offering adequate protection even in the event of a flood. The acronym PUT stands for Protected Underground Technique. PUT is also a Dutch word meaning "opening dug into the ground."

Countless application possibilities

Cities, city architects and citizens as well are placing increasing value on public spaces free of annoying obstacles. This opens up prospects for PUTkast®. This highly innovative solution from the Ebatech engineering consultancy firm will take more and more aboveground boxes off the streets.

From fairgrounds to market squares and on public streets and houseboats, PUTkast® offers an extraordinarily wide range of application possibilities. The Amsterdam engineering firm's invention is not only gaining more and more renown in the Netherlands, but is also enjoying growing popularity abroad in Belgium, Denmark and elsewhere.

Different sets of components

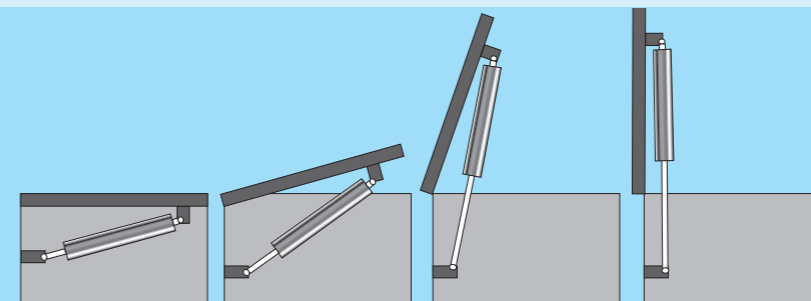
Owing to its broad range of application possibilities, the PUTkast® is already available in a dozen different variations. The control technology PUTkast®, for example, is used to control fountains, waste water pumping stations, traffic control units, communication equipment and safety installations. The water tap PUTkast® is the perfect solution for constructing permanent underground tapping points for water distribution. Underground engineering that is fit to be seen – this slogan also holds for the A+P components involved. In dialogue with the Ebatech engineering consultants, Angst+Pfister put together five component sets comprising thirteen different plastic parts, an industrial tube, nine different gas springs, four types of gaskets and fifteen accessory components that are not part of the A+P product range. All of this was integrated into one logistical concept.

Concrete customer benefits

The Ebatech engineering firm was not seeking a conventional subcontractor, but rather a strategic partner and systems supplier. This is the reason why Angst+Pfister was selected. Angst+Pfister helped this customer choose the right plastic materials and provided support in solving sealing problems.

Gas springs for lifting covers

The gas spring used for the following configuration was determined with the help of a simulation model.



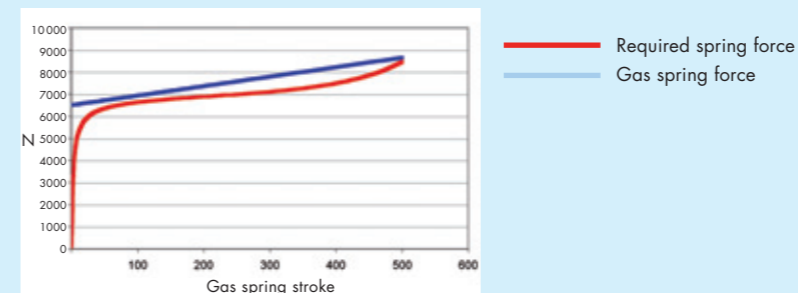
Since the cover weighs 500 kg, the positioning of the gas spring is important. In order to enable the cover to be lifted comfortably using muscle strength, the gas spring has to support a large part of the cover's heavy weight.

Common problems occurring as a result of incorrectly positioned and designed gas springs include:

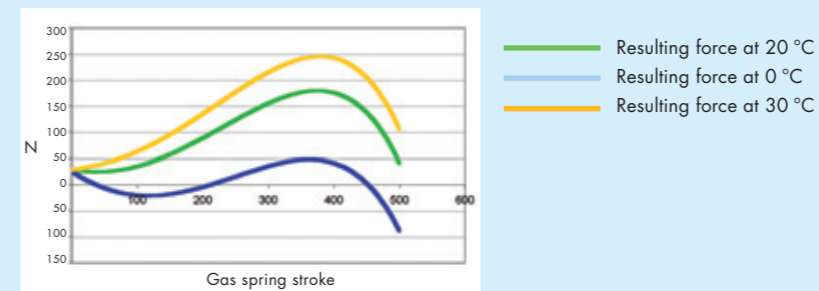
- The cover opens only half-way. Muscle force has to be employed (lifting/pulling).
- The first stage of closing an open cover requires excessive muscle force (pressing).
- The cover does not open completely (the spring touches the structure or extends past its highest point).
- At low temperatures, the spring force is insufficient to push the cover upward at all (the pressure within the gas spring depends on the temperature, and this affects the resulting force).

In view of this, the correct positioning (fastening points on both sides of the gas spring, length and stroke, force and its exponential increase) was determined with the help of a calculation program so as to achieve proper opening of the cover.

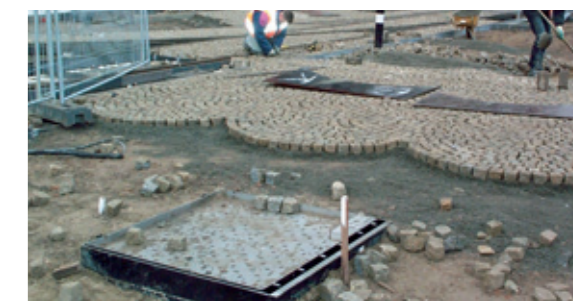
Required spring force vs. actual spring force



Resulting force when opening the cover



With this configuration, the required muscle force remains within the specified maximum of 250 N even under high or low ambient temperatures.



Installation preparations



Angst+Pfister also employed its technical expertise for building prototypes during the testing phase. In short, Angst+Pfister succeeded in translating its know-how and capabilities into concrete customer benefits: shorter delivery times and competitive pricing. One-stop-shop delivery saves time in the customer's procurement and administrative tasks. The cooperation increases the efficiency of development and manufacturing, thus enabling shorter cycle times.

Looking for a development partner

Are you looking for a dynamic partner who will relieve you of work and worries At Angst+Pfister, technical expertise and experience go hand in hand with high-quality products. Why not take advantage of a permanent contact for solving your problems and answering your questions Get in touch with us today.

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Underground street fixture