Sustainable developments and long-standing success stories

That’s the Wey.
Editorial

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Dear Customers and Partners

Wey 4.0 – I’m sure you are all thinking – oh no, not them as well?

But don’t worry, I won’t bore you with a long speech on digitization, save to say that we have of course been thinking about and implementing this topic for quite some time now. We hope that this is already apparent when looking at the strong performance of SISTAG as a result of even more efficient and optimized order taking and handling processes.

Changing the subject completely, one statement from the article on occupational safety during assembly work really stands out. I’m talking here about “reduced safety = best price”. As the concept of “the cheaper the better” unfortunately seems to have crossed over from consumer goods to industrial products, this can lead to decisions that are not sustainable for plant operators – or ones that are regretted even before commissioning. There should always be a balance between price and performance. In the valve industry in particular, it is absolutely crucial to be able to count on the reliable performance of a product where perfect service and functionality – in other words, long-term benefits – are guaranteed at all times. It is important not to be dazzled by rock-bottom prices here! In the following reports, you can read more about the versatility of Wey products.

We would of course be delighted to demonstrate the advantages of our services and products once again in 2018. If you are happy with us, then take a leaf from Facebook and pass on your “like” to potential customers. This is the one and only Wey!

We will once again be traveling to various international trade shows in 2018, where you can find out more about the latest news and products from our company.

We hope to see you there!

Kind regards,

Hans-Jörg Sidler
**Waldmünchen: Wey valves used at a biogas plant**

Wey knife gate valves are both state of the art and a global market leader. They guarantee absolute leak tightness in both flow directions and are suitable for a wide range of applications. One example of this can be found in biogas plants, where Wey valves have become increasingly popular in recent years.

**ELECTRICITY AND HEAT FROM BIOGAS**

One such plant can be found at BioEnergie GmbH & Co. KG in Waldmünchen, Germany, which is operated jointly by six farmers. In this plant, organic substances are fermented in a liquid mixture. This results in a gas mixture made up primarily of methane and carbon dioxide. Biogas is produced anaerobically in a hermetically sealed container before subsequently being converted into electricity and heat.

The plant produces a total of 4.5 million kWh of electricity annually for the grid operator Bayernwerk, which can be used to supply 1,300 to 1,500 four-person households. The plant also provides local heating for 38 buyers via a network measuring 2.3 km in length. Around 30% of this energy is generated in Waldmünchen from slurry and manure, a further 20% each from grass, maize and cereals, and approximately 10% from wheatgrass and silphium perfoliatum – a species of plant native primarily to North America.
KNIFE GATE VALVES IN THE DISTRIBUTION BEAM

The valves can be found in the distribution beam at the biogas plant. Here, the input substrate is passed on to the individual throughput stations required for biogas production. These include the dosing station, the fermenter (where the substrate is converted into gas) and the disintegration system, which is a kind of turbo system used for accelerating the digestion of the microbacteria contained in the substrate and thus increasing gas production. Other throughput stations are the secondary fermenter (used for digesting long-chain compounds) and the repository. The distribution beam can be controlled by hand or electronically via computer, the latter of which saw the development of a dedicated computer program tailored specifically to the biogas plant.

Due to cost reasons, the operators first chose conventional square gate valves during construction of the biogas plant. While these valves perform well in general agricultural operations (such as connection to slurry tankers for example), the farmers discovered that they were unsuitable for use at a biogas plant. After only a relatively short time, solids settled on the bottom of the valve as a result of the opening and closing processes, which then led to leakage. This meant that the valves had to be cleaned.
constantly, which resulted in significant additional workload, long downtimes and increasing costs.

INDIVIDUALLY TAILORED WEY VALVES ENSURE DOWNTIME-FREE OPERATION

As the situation became more and more critical, the six farmers decided to talk to Wey for a solution. The VG knife gate valves installed by Wey are specially customized for biogas plants as the conventional DIN valves for industrial pipes are not compatible with the connections seen at the plants. The six Wey valves regulate the upstream flow of the substrate on the distribution beam and distribution to the dosing station, fermenter, disintegration system, secondary fermenter and repository.

While the acquisition costs were higher than the square gate valves used initially, the high-performance products from Wey have run entirely without downtime for the past five years. This is because they are designed that solids cannot settle on the bottom of the valve. Self-cleaning of the valve body is carried out automatically during each opening and closing process. Josef Haller, one of the farmers involved in BioEnergie GmbH & Co. KG in Waldmünchen, is full of praise: “My five colleagues and I are extremely satisfied with the Wey valves. Our biogas plant has run smoothly and without any downtimes for five years now. We can now concentrate on the really important things instead of wasting time with cleaning work.”
Elimination of micropollutants
Project description for new process phase at the Werdhölzli wastewater treatment plant, Switzerland

REVISIONS TO WATER PROTECTION LEGISLATION
The federal government has revised the Water Protection Act (GSchG, SR 814.20) and Water Protection Ordinance (GSchV, SR 814.201) so that owners of selected central wastewater treatment plants are now obliged to eliminate organic trace substances from wastewater. The revised act and ordinance have been in force since January 1, 2016.

INITIAL SITUATION
The new process phase for eliminating micropollutants at the Werdhölzli wastewater treatment plant has been gradually put into operation since the fall of 2017, and will be in full operation from early 2018. The phase involves the ozonation of all the biologically treated wastewater (max. 8,640 l/s). This method has proven itself in drinking water treatment and has been successfully used for eliminating micropo-
llutants in wastewater on a large scale (100,000 inhabitants) at the ARA Neugut plant in Dübendorf since March 2014. The existing sand filter at the Werdhölzli wastewater treatment plant is used downstream as a biologically active process phase following ozonation in order to remove degradable conversion products.

With the new ozonation phase, the Werdhölzli wastewater treatment plant achieves the prescribed cleaning performance of 80% in terms of organic trace substances. An optimized selection of mechanical assemblies, a dedicated plant for generating oxygen and innovative control and regulation concepts allow for energy-efficient operation.

**NEW PROCESS PHASE**
The new process phase (four-line ozone reactors) will be implemented between the existing secondary treatment and filtration phase.
It is housed in a new building complex comprising a pumping station, rooms for oxygen and ozone production, ozone reactors and rooms for the energy supply. The current filtration pumping station will be kept for cases when the plant for eliminating micropollutants is being repaired. Additionally, the existing spillway had to be renovated and connected to the existing distribution structure in the Limmat. In order to be able to freely access the wastewater treatment plant, the connecting road from Paul-Pflüger-Strasse to Fischerweg was moved further west.

LOCATION OF THE NEW PROCESS PHASE IN THE WASTEWATER TREATMENT PLANT

View to the plant following the construction phase
TECHNICAL DESCRIPTION
The ozonation phase was constructed in four lines, whereby two lines each form one reactor block. The vacuum pressure swing adsorption (VPSA) plant was located in the engine room between the two reactor blocks and is used for generating oxygen from the air. In order to cover peaks in demand, a storage tank for liquid oxygen has been positioned in front of the engine room. The ozone generators are located in the end buildings in front of the reactors. The exhaust gas containing ozone is fed from the reactors to the residual ozone destructor, which converts the residual ozone into molecular oxygen.

TECHNICAL DATA

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>70 m wide and 45 m long</td>
</tr>
<tr>
<td>Pumping stations for ozonation</td>
<td>Facade height 8.35 m, area 914 m²</td>
</tr>
<tr>
<td></td>
<td>16 centrifugal pumps, each with a flow rate</td>
</tr>
<tr>
<td></td>
<td>of 250 to 650 l/s</td>
</tr>
<tr>
<td>Intermediate building</td>
<td>Facade height 11.60 m, area 543 m²</td>
</tr>
<tr>
<td>Hydraulic capacity</td>
<td>8,640 l/s</td>
</tr>
<tr>
<td>Oxygen generation plant</td>
<td>Vacuum pressure swing adsorption</td>
</tr>
<tr>
<td></td>
<td>O₂ production capacity = 520 kgO₂/h</td>
</tr>
<tr>
<td>Oxygen tank</td>
<td>Height 14.10 m, volume 60 m³, 53,000 kgO₂</td>
</tr>
<tr>
<td>Ozone generation</td>
<td>8 generators with a total capacity of 155 kgO₃/h</td>
</tr>
<tr>
<td>Ozonation reactors</td>
<td>4 lines of 1,535 m³, water level 7.80 m, area 1,240 m²</td>
</tr>
<tr>
<td>Maximum electrical load</td>
<td>3 MVA</td>
</tr>
<tr>
<td>Average electrical load</td>
<td>1.5 MVA</td>
</tr>
<tr>
<td>PV modules (facade)</td>
<td>70 kWp</td>
</tr>
<tr>
<td>PV modules (roof)</td>
<td>130 kWp</td>
</tr>
<tr>
<td>Plant availability</td>
<td>365 days/year</td>
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</table>
**COSTS**

Final costs for the project are estimated at around CHF 41 million (including VAT), whereby reimbursement of 75% of the allowable investment costs is expected from the federal government (BAFU).

When at full capacity from 2018 onwards, the plant will generate annual operating costs of around CHF 2.3 million (maintenance, operation, power, interest and depreciation). From this point on, the annual levy paid to the government of around CHF 3.7 million (CHF 9.00 per year, per inhabitant of Zurich) will no longer be applicable.

**FITTINGS**

Wey knife gate valves

Wey knife gate valves were selected for plant operation

- 24 x MGA DN 200 in stainless steel with handwheel
- 16 x MFC DN 500 in gray cast iron with pneumatic actuator
Occupational safety during assembly work

Time and again, the complexity associated with correct design and planning is underestimated, with the formula “reduced safety = best price” unfortunately given the nod. In doing so, the fact that incorrect planning risks lives is completely ignored. Ask yourself whether you would buy a car without an airbag, brakes or safety belts, for example. Probably not, even though the price would certainly be tempting.

SISTAG AG has taken a stand here and prioritizes the topic of safety at work for all employees. Eliminating and minimizing risks should be recognized at an early stage and assessed correctly.

Our installers, technicians and sales representatives take part in safety courses annually at ProSafety GmbH (www.sturzsicherungen.ch) in Eschenbach, where they receive practical training and support.
Energy-from-Waste
Wey in a useful application of residual waste

Every second in the Netherlands people throw away the equivalent of three house waste containers. That adds up to millions and millions of tons of waste. However, throwing it away is not the same as discarding it all together. In the Netherlands, the larger part of this waste is reused as a source of energy and a source of raw materials and Wey is making its own key contribution.

THE BEST OF ITS KIND
Our customer runs three unique Energy-from-Waste (AEC) plants. These plants are unique and belong to the best in the world from an environmental and technical point of view. After wind energy, the AEC plants in the Netherlands make the greatest contribution to the amount of sustainably produced energy. The waste that they receive and process on a daily basis is not homogeneous in its composition. Some materials burn well, others less and some waste streams produce more energy than others. Their management and controls are focused on a maximum energy and heat output, and that requires among others the most reliable equipment like our Wey knife gate valves.

Every year, 800 employees process around 3,5 million tons of waste of which 1,8 million tons is residual waste mainly from the Netherlands, but also from England and Ireland. They recover plastics, metals and cardboard by using post-separation. In their AEC plants they produce green gas, renewable electricity and sustainable heat from residual waste. This energy and the recovered raw materials replace fossil fuels and primary raw materials and that translates into environmental gains.

The post-separation and digesting produce green gas and plastic, metal and cardboard. Our customer also produces renewable electricity and heat and...
WIJSTER RESIDUAL WASTE

1. Reception hall
2. Waste bunker
3. Rotary screen
4. Disc screen
5. Magnet
6. Dosing unit
7. Mixer / feeding pump
8. Liquid product storage
9. Steam from incineration

10. Dranco digester
11. Extraction pump
12. Digestate to incineration
13. Incineration
14. Biogas
15. Biogas from wijster biowaste
16. Flare
17. Biogas storage
18. Biogas upgrading
19. Biomethane to gas grid
prevents it from ending up in landfills and therefore reduces CO₂ emissions. This is in line with European policy and makes a substantial contribution to halting climate change. The Wey knife gate valves are mainly used for isolation purposes in the digester and extraction area (see point 10 in the illustration).

**STABLE PROCESS THANKS TO WEY**

The calorific value, or the flammability of the waste, determines the energy yield. Therefore it is important to know what type of waste they receive and to make sure that the various flows are mixed in the best possible way before a dose is sent to the incinerator. Our customer has extremely tight controls on this process. Their committed and experienced employees face the daily challenge of controlling processes in the best possible way. After all, it is their objective to recover the maximum amount of energy from waste. Their plants also benefit from an even and stable process with the fewest possible fluctuations, because that saves on wear and tear and maintenance.

Our customer is ready for the future to process waste efficiently, safely and cleanly and shape the transition to renewable energy. We from SISTAG together with our customer are proud being part of state of the art and tailor-made facilities in the Netherlands, which work reliable like a Swiss clockwork.

**CUSTOMER REQUIREMENTS:**
- High abrasion resistance (sand, wires, gravels, stones, etc.)
- Ambitious availability factor
- Leakage free service
- Outstanding service life

**KEY FIGURES:**

**Wey knife gate valve type:**
MFA/MFH DN 150-400, MFC DN 300, VNH DN 150

**Body material:** Ductile iron EN-GJS-400-15 / EN-JS1072 / EN-GJL-250

**Gate material:** Stainless steel 1.4301 (A240-304) / 1.4034 HRC 51 in powder design

**Seal type:** 21 FPM/FPM/Scraper Brass / double transverse seal type 59, NBR/PUR/Scraper Brass with Seal type 27, NBR/PUR/Scraper EPGC
Oil sands are a mixture of sand, water, clay and bitumen. They are found in several locations around the globe including Venezuela, USA, Russia and Canada. Canada’s Alberta oil sands are the third largest proven crude oil reserve in the world, next to Saudi Arabia and Venezuela. In Canada, processing oil sands is particularly challenging because of the extremely abrasive nature of the slurry mixture (solids like sand and clay mixed in with liquids), corrosive liquids present, high pressures and extreme temperatures (-50°C to +35°C). When Canadian energy producer Suncor Energy decided to build its Millennium open pit mine in Fort McMurray, Alberta in 2000, they approached our local representative Summit Valve & Controls in Edmonton for assistance with their challenging isolation valve requirements. Summit partnered with Wey to provide Suncor with a high-performance isolation knife gate valve solution on the Millennium project. That was the first major order for Wey in the Canadian oil sands. Eighteen years later we have grown to be one of Suncor’s major business partners, continuing to secure annual project...
orders, the most recent being the Accelerated Dewatering Projects to help reclaim tailings ponds in the shortest period possible. Wey continues to develop products to meet the evolving needs of our customers in both the oil sands mining and oil sands in-situ (SAGD) markets.
As of December 31, 2017, there were over 10,500 Wey valves installed in the Canadian oil sands in pressure classes of ASME/ANSI 150 and 300 and sizes of 2” through 42”. Most of the valves sold are automated (hydraulic, pneumatic or electric). The pictures above show some of the applications, customers and projects we are proud to have participated in over the past 18 years.
### 2018 Trade Fair Participation

**Where you can visit us**

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Location</th>
<th>Hall/Stand</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IFAT</strong></td>
<td>14. – 18. May 2018</td>
<td>Munich, Germany</td>
<td>C2, Stand 233/332</td>
<td>World’s leading trade fair for water, sewage, waste and raw materials management</td>
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<tr>
<td><strong>weftec</strong></td>
<td>01. – 03. October 2018</td>
<td>New Orleans, USA</td>
<td></td>
<td>Trade fair for water, sewage, waste and raw materials management</td>
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<tr>
<td><strong>Valve World Expo</strong></td>
<td>27. – 29. November 2018</td>
<td>Düsseldorf, Germany</td>
<td>04, Stand 4F21</td>
<td>International world conference and exhibition for industrial valves</td>
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</tbody>
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