

## Amible Stream



Pierre Sommereijns, CEO Amiblu Group
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## Message from the CEO

We expected a huge success, but the eventual magnitude still took us by surprise: I am talking about the launch of our Amiblu NC Line, featuring a new laminate design for increased bending strength, a new liner material for better resistance against chemicals, a higher impact resistance, and a longer expected service life. We have received - and keep receiving - a remarkable number of enquiries, and our NC production center in Gdańsk will be running at full capacity until July 2019 to complete all current orders.

Another very strong product that has now entered the Amiblu product portfolio is Hobas PU Line. The highly abrasion and impact resistant pipe featuring a polyurethane inliner has proven its worth in several projects already - find a recent one on page $15 i$ $n$ this magazine edition.

Have you visited our Amiblu website recently? If not, make sure to do so - we are constantly updating and extending the contents. You can find the brand-new Amiblu brochure range, a focus on GRP, new references in the project database, and an increasing choice in the Amiblu product selector.

Our continuous innovation and the diversity of our applications as well as the flexibility of GRP are perfectly illustrated in the project reports on the next pages. Thank you for your trust and efforts in Amiblu's road to success - enjoy reading Amiblu Stream!

Kind regards from Klagenfurt,
Pierre Sommereijns

## New fittings production hall in Poland: another step ahead!

On September 21, we cut the ribbon to inaugurate not only a building, but a great new era of Amiblu GRP: The new fittings production hall in Dąbrowa Górnicza is an important cornerstone of our plant specialization concept. Thanks to this 4 million Euro investment, the factory of Poland South will become the main production center for fittings in Europe. It will enable us to produce top-quality products with maximum efficiency and flexibility. Learn more about its structure, equipment, and benefits in an interview with plant manager Piotr Strzelczyk on the next two pages of this magazine.

By the way: The new production hall can be considered a "pioneer project" for implementing the Lean manufacturing concept in the Amiblu Group. Particular emphasis was therefore placed on optimizing internal processes, improving workplace safety, and creating more ergonomic working conditions. I am very glad about the continuous developments in this regard and the positive feedback up to now. Let's continue the good work!


Maik Altendorf, COO Amiblu Group

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## Amiblu Poland opens new production hall for GRP fittings


#### Abstract

$1500 \mathrm{~m}^{2}$ additional space for increased production capacity, higher flexibility, and improved working conditions for employees: With the inauguration of a brand-new hall for fitting production on September 21, the Amiblu factory in Dąbrowa Górnicza is to become the main production center for all sorts of sophisticated GRP elements in Europe. The new hall's "birthday" was celebrated on the same day as the factory's $15^{\text {th }}$ anniversary. We talked to plant manager Piotr Strzelczyk about this future-oriented investment.


Amiantit Europe and Hobas merged about a year ago to become Amiblu. With two factories in Poland - one former Hobas, one former Amiantit - why was it necessary to build an additional production hall?
Strzelczyk: According to the business concept of the Amiblu Group, each factory is or will be specialized and equipped to cover certain production ranges. For example: The factory in Gdańsk will increase its production capacity of non-circular profiles, and the factory in Dąbrowa Górnicza is to become the main production center for fittings in Europe. This expansion and reorganization of our work will enable us to cope with the increased number of orders for time-consuming and labor-intensive elements such as wells, reservoirs, arches, etc.

Tell us a little more about the scope of the investment. Strzelczyk: The project "new fittings production hall" started in 2016 and involved a broad range of long-term activities: Planning additional storage for products and materials, realizing additional parking spaces for a larger number of employees, expanding the office work space, creating social facilities next to the production hall and, of course, building and equipping the hall itself.

Which equipment and special features can be found in the new hall?
Strzelczyk: We bought a water-jet cutting machine to create precisely cut elements for further processing in little time and with no dust. This way we can reduce the number of employees needed for the cutting process and make the working conditions more modern and comfortable. Of course, we also equipped the hall with other necessary and convenient production facilities: a central dust extraction system, production boxes equipped with all necessary utilities (like local sources of compressed air and electricity), a mechanical saw, new hand tools, and a roller system. Particular emphasis was placed on optimizing all work flows, and improving workplace safety and ergonomy. $\longrightarrow$


## Amiblu <br> Stream

Does the new hall create new jobs at Amiblu Poland?
Strzelczyk: We currently employ 380 people in both Amiblu factories in Poland, 195 of them in Dąbrowa Górnicza.
With the new fittings hall, we now have vacancies for another 50 employees.

What will the new fittings hall mean for Amiblu and the market?
Strzelczyk: Increasing our production and processing capacity will result in shorter waiting times for our clients. We will be more flexible with regard to our clients' demands and the highly seasonal construction industry. For me, this investment means above all an improvement of working conditions for my employees. The new hall also allows us to employ women in production. In Europe, it is known that the market in Poland offers well-educated employees, and the location of the plant in the Silesian agglomeration provides Amiblu with access to specialists in almost every field. In general, Poland is a dynamically developing country with a convenient geographical location in the center of Europe, which makes us very confident about our future.

## When will production in the new GRP fittings hall start?

Strzelczyk: Currently, an equipment layout and technological start-up is taking place. Final approvals of construction works of the building are scheduled for October 2018. Following all final technical checks, the hall will be taken into operation.

What about the factory in Gdañsk - will investment be made also there?
Strzelczyk: Of course, Amiblu plans also include the further development of the factory in Gdańsk. We are currently working on constructing offices and social spaces, expanding the laboratory, and implementing the new, improved production line for non-circular pipes.


## Hydro-powerful Norway boosted by Amiblu GRP

Two remarkable hydropower projects are being realized in the Norwegian region of Fjærland with penstocks made of Flowtite GRP pipes by Amiblu: For Project 1, Skeidsflåten kraftverk (output 5 MW, production 19.5 GWh/year), 2500 m GRP pressure pipes DN 1800 and DN 1600 were supplied. Project 2, Tverrdalselvi kraftverk (output 5.7 MW, production $18 \mathrm{GWh} /$ year) will feature an 1150 m Flowtite penstock DN 1100 Both projects are implemented by Jostein Sunde AS and will be completed before spring 2020.


## Pipe jacking under Dutch highway

In the municipality of Roosendaal in southern Netherlands, 150 m Hobas GRP pipes OD 1280 were installed via microtunneling in a depth of 4.5 m underneath the A58 highway. The pipes are part of a sewer system extension for Norbartlaan road - they will drain stormwater in case of heavy rains and thereby reliably prevent the road from being flooded.

Click on the image to watch a time-lapse video of the installation:


SUSTAINABLE
WATER SOLUTIONS

## Kite-shaped GRP upgrade for Wilhelmshaven's city sewer

The coastal town of Wilhelmshaven in Northern Germany decided to renovate parts of its sewer system to prepare the town hall district for heavy rainfall. Amiblu Germany supplied 320 m of Flowtite GRP pipes DN 1500 with a very special inside design for this purpose.

The town hall district section of Wilhelmshaven's 520 km long sewer system was in a critical state: The installed pipes were more than 100 years old and fairly deteriorated, and the whole structure was not designed for coping with very intense precipitation. The city counsil therefore decided to renovate the combined sewer on a length of 320 m , and they chose Flowtite GRP pipes DN 1500, SN 10000 by Amiblu for this challenging project.

Construction works started in April 2017 and involved the installation of sewer pipes, new service lines, as well as five large-diameter manholes. The channel diameter was extended from formerly DN 700 to DN 1500 in order to improve the hydraulic capacity within the town hall district. A crucial factor that had to be considered was the very small slope throughout the urban area. To ensure sufficient flow even during dry periods and avoid unpleasant odors, Amiblu designed special pipes and manholes with a kite-shaped inside profile. They were produced by laminating quarter sections of pipes inside the DN 1500 pipeline. Thanks to the high stiffness of the rounded pipe segments, it was not necessary to grout the void space and the pipes stay very light despite their "bonus feature".


Light weight was, in fact, a decisive benefit with regard to the site location right in the city center, where the workspace was very limited. Another important factor was the pipes' high stiffness at comparably small wall thickness: With a soil cover of merely 63 cm in some places, other materials with thicker pipe walls would have critically interfered with the road substructure

To realize the installation with maximum efficiency, Amiblu Germany supplied the pipes with ready-made connections for the household service lines and consecutively numbered according to the installation plan. Despite several installation challenges such as heavy rain and instable soil conditions, the project could be successfully completed end of October 2017.

The Flowtite pipes and manholes for Wilhelmshaven's new sewer were custom manufactured with kite-shaped inside profiles to provide maximum flow capacity.


SUSTAINABLE
WATER SOLUTIONS

## XL GRP storage tank installed in Austria

Due to the development of new housing estates, the town of Grieskirchen in Upper Austria had to extend its storage space for stormwater. Amiblu designed and supplied a $750 \mathrm{~m}^{3}$ Hobas GRP retention tank, consisting of two 53 m long pipe strings DN 3000 and four prefabricated manholes DN 1000, for this purpose. The storage tank was installed in only one week end of September 2018.

Additionally, 880 m Hobas GRP pipes DN 200 were supplied and installed as part of the sewer line extension. The area has a very small slope, making it a literal home run for Hobas pipes with their smooth inner liner and optimum hydraulic flow.


## Optimum solids retention with 190 m² Amiscreen

Eula is the name of a stream nearby the small town of Geithain in the German Free State of Saxony. During heavy rainfall, it kept filling up rather quickly with water entering from the overflow structure connected to the local sewer system. The stream even regularly burst its banks, leaving neighboring properties soaked and polluted. A condition that the municipal waterworks (Kommunale Wasserwerke GrimmaGeithain) found was no
longer bearable: It was decided to upgrade the existing 120 m long reinforced concrete storage sewer DN 2200 with an Amiscreen solids retention system.

In a first step, a 50 m Iong GRP platform with overflows was integrated in the sewer. Two channels consisting of 100 m Amiscreen elements DN 600 were attached to the platform, creating an extensive screening surface of $190 \mathrm{~m}^{2}$. With a perforation of
$8 \mathrm{~mm} \times 8 \mathrm{~mm}$, the screening elements reliably filter all suspended solids from the combined sewage. In fact, while the Amiscreen system cannot prevent the Eula stream from overflowing, it ensures that neighborhoods are no longer subject to sewage dirt and pollutants. A considerably increased volume of pollutants at the wastewater treatment plant Geithain already gives impressive proof of the system's functionality.


## Stormwater retention in hilly Netherlands

A new 1000 m $^{3}$ storage sewer was built of Hobas pipes DN 2200 and 3000 for the Dutch village of Berg en Dal.

The Netherlands is well-known for its flat terrain. However, in the eastern part of The Netherlands lies a beautiful village called Berg en Dal (Mountain and Valley), which, as the name suggests, is surrounded by a hilly environment. The village's combined sewer system is connected to the sewer system of the neighboring city Nijmegen. During periods of heavy rainfall, Berg en Dal regularly suffered tremendous floodings due to the system's insufficient capacity. Therefore, the two cities together decided to renovate the sewer.


In September 2018, Amiblu Netherlands was commissioned with the design of a new 154 m long storage sewer that should replace the old concrete sewer. The new GRP sewer is built of Hobas pipes DN 2200 and DN 3000 and will have a total capacity of almost $1000 \mathrm{~m}^{3}$. GRP was the only suitable choice for the application - no other material could compete with respect to the light weight, availability, sustainability, corrosion resistance, and quick and easy installation despite the narrow surroundings. The project is currently under construction and will be handed over to the city of Berg en Dal end of 2018.

Click on the picture below to watch a short video about the installation:


## Amiblu <br> Stream

SUSTAINABLE WATER SOLUTIONS

## Bournemouth CIS tunnel relined with Amiblu GRP pipes


#### Abstract

Located to the east of Bournemouth and only 300 m from the south coast of England, the Coastal Interceptor Sewer (CIS) of Bournemouth is a tunnel with an internal diameter of 1.8 meters. It was constructed in compressed air from 1964-1971 with a primary bolted lining and a secondary cast-in-situ lining for hydraulic conductivity. A recent survey of the tunnel identified a noticeable change in the structural capabilities of the lining at the extremes of the eastern leg.


The tunnel serves a large local population. One of the two rising mains suffered sewage resting for long periods, resulting in the anaerobic conditions allowing the formation of hydrogen sulphide $\left(\mathrm{H}_{2} \mathrm{~S}\right) . \mathrm{H}_{2} \mathrm{~S}$ forms sulphuric acid $\left(\mathrm{H}_{2} \mathrm{SO}_{4}\right)$ via conversion associated with bacteria feeding upon the nutrients readily available which, in turn, corrodes the concrete, a ubiquitous process observed across the world. The conclusion was clear: The tunnel had to be structurally repaired and parts of it refurbished.

Amiblu Poland designed 200 m of circular Amiblu GRP relining pipes with an internal diameter of 1600 mm according to the German standard DWA A143-2 (ATV M127). In the German design code, three host pipe states are differentiated, and the CIS fell within the most severe 'State III', for cracked pipes with larger deformations. The pipes were supplied by Amiblu Poland in 1.2 m long sections and installed over a two-week period by Matt Durbin Associates Ltd of Taunton. The 42 mm thick segments were connected by means of a winch, and the annulus between the original secondary lining and the GRP segments filled with grout.

With a design life of 150 years, Amiblu GRP relining pipes are especially suitable for the rehabilitation of existing structures as they offer optimum hydraulic performance, their perfectly smooth inner surface minimizes friction preventing the build-up of deposits, and the pipes are inherently resistant to corrosion or abrasion.

CLICK HERE to read the full
technical paper written by Julian
Britton, Wessex Water published
in Water Industry Journal


## Amiblu: <br> Stream

WATER SOLUTIONS

## Turning ocean into drinking water with Amiblu GRP

The newly built Ensenada Desalination Plant provides valuable drinking water for the inhabitants of the Mexican coastal city. Amiblu designed, supplied and installed the required piping for this sophisticated application and fully supported the client with thorough analyses, performance tests, and customized accessories.

250 liters per second, 21.6 million liters per day: That's the amount of ocean water the new desalination plant in the Mexican city of Ensenada converts into drinkable water for the local population. It does so by means of an approx. 12.5 km long pipe network, which is installed both underground (10.7 km) and above ground ( 1.5 km ) and customized to make the plant work with maximum effectiveness and efficiency. The client, Comisión Estatal de Agua de Baja California, chose Amiblu to design and implement the sophisticated pipe system for a clear reason: They needed a perfectly reliable, highquality network with a long lifetime, supplied as turn-key solution. The economic and social costs of one hour with no water production would in fact be higher than those of the entire GRP product range installed in the plant.

Amiblu designed and supplied 2670 m of uniaxial Flowtite GRP pressure pipes DN 1000
and 8100 m of DN 500 for underground installation. The pipes DN 1000 transport the salty brine from the desalination plant to the sea; the pipes DN 500 convey the processed water from the plant to a water tank from where it is distributed to Ensenada's households. 1500 m of biaxial Flowtite GRP pipes and fittings with vinyl ester (VE) liner were delivered and installed above ground. These pipes were painted according the requirements of the client and in order to distinguish the different phases of the desalination process.

In 18 months of highly dedicated work on site in Mexico, the Amiblu team also conducted stress analyses and hydraulic tests, provided isometric drawings and lamination kits, supplied all required accessories such as bolts, nuts, washers and EPDM gaskets, and organized the adequate painting of the pipes according to the project requirements. On June 11, the desalination plant was officially inaugurated by the President of Mexico Enrique Peña Nieto, and on July 9 it started operations. The plant increases the water supply by 33 percent for the city of Ensenada.

Top right: Flowtite pipes DN 1000 transport the brine to the sea. Bottom: Blaxial Flowtite pipes with VE liner were painted to identify the various stages of the deslination process.


# Amible <br> Stream 

## Amiblu GRP penstock for hydropower plant in Uganda

Kyambura Power Station is a 7.6 MW run-of-river hydropower station currently under construction in the Rubirizi district in Western Uganda. Amiblu supplied the 880 m long penstock built of Flowtite GRP pressure pipes DN 2200, PN 10, and DN 2100, PN 12 ( 440 m each), as well as flanges, bends, reducers and a flanged tee

The GRP penstock connects the forebay with the power station, which will be equipped with two Francis turbines. Kyambura Power Station will be ready to start producing electricity by the end of 2018 and have and annual production of 36.7 GWh .


## 30 km pressure pipes for irrigation project in Algeria



Amiblu currently supplies 30 km of GRP pipes and fittings for an irrigation project in the province of Sétif in north-eastern Algeria. The project has been initiated to irrigate 9391 ha of agricultural land with water from the El-Maouane reservoir. The Flowtite GRP pipes DN 600 to DN 1200, PN 6 to PN 16 will transport the water from the reservoir to Sétif in an efficient and reliable way.

The clients, Chiali Services S.P.A. and Amenhyd S.P.A. preferred GRP to conventional steel pipes for a number of reasons, among others the corrosion resistance, fast and easy installation, and long lifetime. The pipes are being manufactured in Spain and delivered by ship on containers through the Bejaia Port in Algeria.

WATER SOLUTIONS

## Joint GRP forces for sustainable stormwater system at Kraków Airport

Two powerful brands make an even more powerful solution: A combination of filament wound Flowtite and centrifugally cast Hobas pipes by Amiblu is being installed to build a new, highly efficient stormwater sewer system for Kraków Airport. The new underground infrastructure is an important cornerstone for the airport's increasing importance in international aviation.

Since its modernization around the year 2000, more and more new international connections have been established at Kraków John Paul II International Airport. The airport's continuous development and the increasing number of air operations also required an extension of the underground infrastructure - especially stormwater drainage was an important issue. The nearby stream into which the rainwater had previously been discharged could no longer handle the growing amounts. It was therefore decided to extend the stormwater sewer system by new pressure lines which should lead the water over a distance of 3 km into the Rudawa river.

The initial plan to implement the project with steel pipes was quickly dropped due to high risks of corrosion, the long installation period, and hydraulic parameters. HDPE was also rejected due to problems of welding and a long assembly time. Eventually, GRP prevailed as material and Amiblu Poland was commissioned with the production of the required piping. The investor can already draw on positive experiences with GRP pipes from Hobas which were installed under the airport in 2003 and are in trouble-free operation up until today.

The new stormwater sewer was realized with both Amiblu pipe technologies, Hobas and Flowtite, perfectly complementing each other: Filament wound Flowtite
products were installed in open trench as pressure pipes for conducting the stormwater, while centrifugally cast Hobas pipes were used for stretches underneath roads where microtunneling was required. A very particular section even involved a very close "collaboration" of the two technologies: Underneath the local provincial road and the A4 motorway, Hobas pipes OD 1280 were installed via jacking as casing pipes into which Flowtite pressure pipes with distance rings were then inserted

Works at the airport started in November 2017 and are expected to be completed ahead of schedule at the beginning of 2019. The installation of this new drainage network will lay the foundation for future expansions of the airport, among others a new runway and aircraft hangars. This will allow for the number of flight operations to increase and further strengthen Krakow Airport's international importance.



Top left: Flowtite pipes with distance rings were inserted into Hobas jacking pipes to create a sustainable and reliable pipe-in-pipe system. Top right: Hobas GRP pipes were used for microtunneling underneath roads.

## GRP stormwater system for railway line in Kraków

As part of the modernization of the railway line E30 Kraków Mydlniki, Amiblu supplied a comprehensive GRP stormwater drainage and retention system solution, featuring a range of Hobas quality products:

- 10 retention tanks DN 800 - DN 3000 ( 375 m)
- Drainage jacking pipes OD 272 - OD 1280 ( 1070 m)
- Drainage pipes for open cut DN 200 - DN 300 (120 m)


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## GRP sewer pipes installed in Luxembourgian nature reserve

For a new sewer main in the municipality of Bettenbourg, Flowtite GRP pipes DN 1200 and OD 1280 were installed in open trench and jacked underneath a highway.

In order to restrict the flow to the wastewater treatment plant Peppange and allow for a temporary storage of the accumulating water volume, the municipality of Bettembourg in southern Luxembourg planned to build a new stormwater overflow tank. The engineering office Schroeder \& Associés S.A. was commissioned with the design of the structure. A visual inspection of the existing sewer DN 1800 showed that it was in a relatively good condition. It was therefore decided to renovate it for further use as a reservoir with overhead discharge. As a result, a new sewer main had to be built to connect the overflow structure with the wastewater treatment plant - and the client opted for Amiblu GRP pipes to realize the project.

Amiblu produced and supplied 1200 m Flowtite GRP pipes DN 1000 for open trench installation and another 80 m of GRP jacking pipes OD 1280 for microtunneling. On the 1200 m section which features only a small slope, the smooth inner surface and resulting optimal hydraulic capacities of Amiblu GRP pipes prove extremely effective. The trenchless section involved microtunneling of 3 m long GRP pipes underneath the highway A3, which crossed the pipeline route.

Another decisive factor for choosing Amiblu GRP was of ecological nature: The new sewer is located in a nature reserve and all used materials have to undergo an environmental impact assessment beforehand. for Amiblu, not an issue. The construction of the new sewer was completed after less than seven months to the full satisfaction of the client.

From top to bottom: Flowtite pipes OD 1280 were jacked under the A3 highway (pictures 1 and 2).
1200 m of Flowtite pipes and fittings DN 1000 were installed in open trench (picture 3).


## Amiblu <br> Stream

## Multi-purpose top-performance culvert for Switzerland

A stream nearby Zurich was culverted with highly abrasion resistant Hobas PU Line pipes. Special features: a fish ladder, sediment barriers, and a water duct.

Ländenbach is a small stream flowing through Wetzikon, a municipality in the Zurich Highlands. In autumn of 2018, it was decided to culvert a section of the stream flowing through a residential area. The municipality had several demands with regard to the 20 m long duct: Since the stream transports abrasive stones and debris it required a particularly durable pipe material, and the pipeline would also need to provide a feature for the migration of fish living in the stream. Amiblu designed and supplied a custom-tailored solution for this project.

Hobas PU Line pipes DN 1800 SN 20000 with a wall thickness of 49 mm were prefabricated with a special interior: a fish ladder made from GRP plates, and sediment
barriers with a water duct for holding back the debris from the river water and distributing the water flow. The single GRP pipes were connected with mechanical couplings, and the culvert eventually encased in concrete and covered with road asphalt. Parallel to the PU channel, a second Hobas GRP pipeline DN 1000 was installed which will serve as bypass for the culvert in case of very heavy rainfall.

After no more than five days the installation was successfully finished to the satisfaction of the client and the residents of the housing estate.


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## Amible <br> Stream

## Our new Amiblu brochures are ready!

The past months have seen the development and revision of a number of brochures which are now ready for you to be used. The range of publications include a booklet on GRP explaining all features and benefits of the material, particularly of course regarding pipeline construction. Various applications with Amiblu pipes such as sewer, potable water, hydropower, and irrigation are covered in separate brochures.

For those who want to dig deeper in technical terms, the Amiblu Product Guide provides further details on the Amiblu product portfolio, technologies, pipeline design, installation, any other interesting facts. Enjoy browsing, reading, and learning - and if you have any questions or feedback, do let us know! Get an overview of all brochures HERE: www.amiblu.com/downloads



[^0]:    Hobas PU Line pipes DN 1800 were custom-tailored to the project requirements with a fish ladder and sediment barriers

