

Steel, naturally.

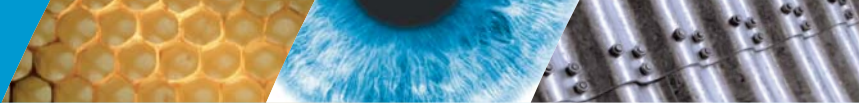
*Flexible, stable, custom-made
Hamco corrugated steel products.*





Sturdy structures, light material

Small material consumption, fast assembly, however stable constructions - nature highly economizes on its resources. What applies for honeycombs or cellular framework of plants, we adopted to our Hamco products.

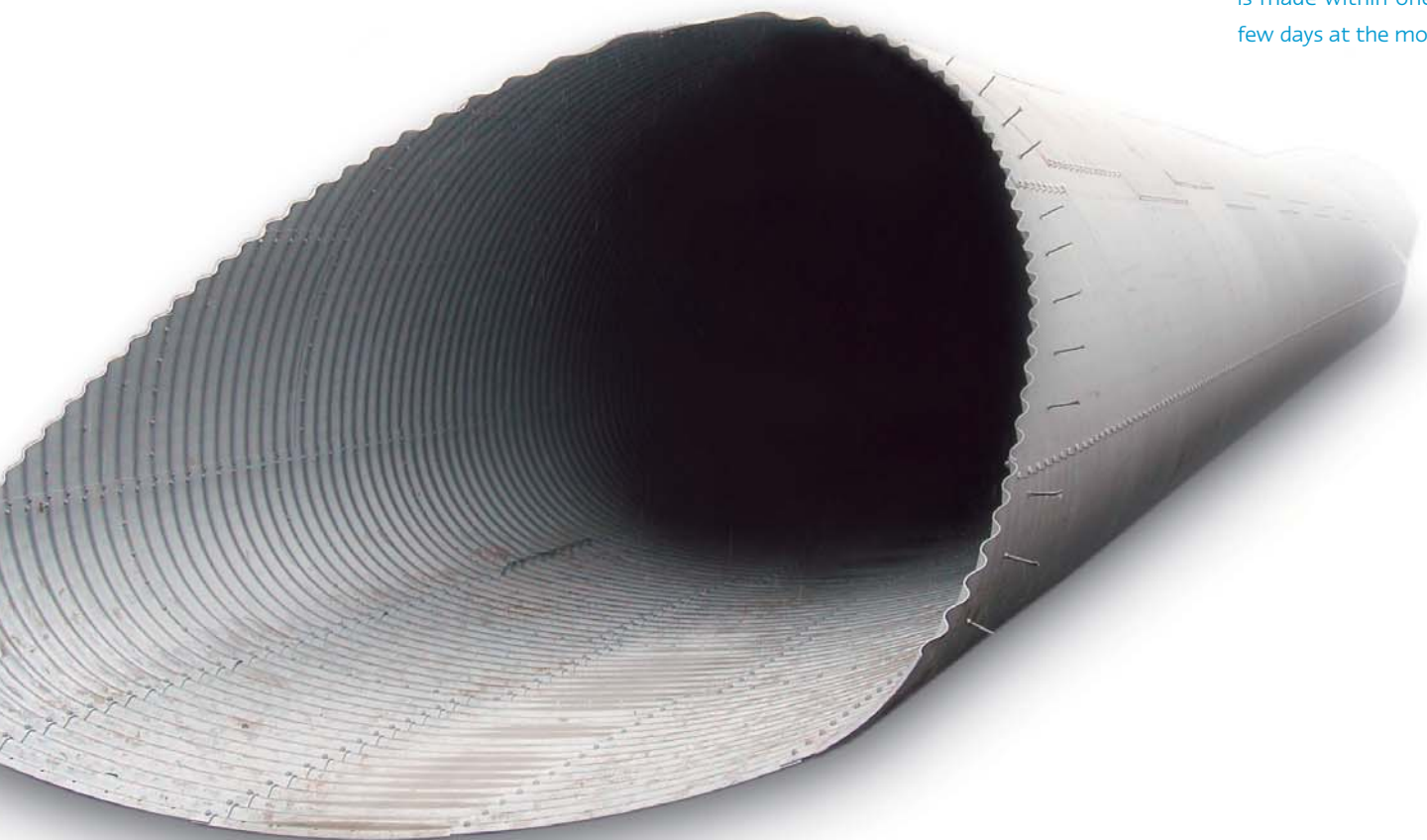


Stability without waste, a characteristic of Hamco products. Steel – our basic material – combines high loading capacity with relatively little weight. The combination of bolted, corrugated steel segments and the surrounding, compacted soil adds high stability to our constructions. Nevertheless, they are as flexible as needed.

Stability without compromise – bridges, culverts, shafts and silos have to withstand enormous loads. Where built with our products, you can be sure they actually come up to. As our corrugated steel structures, which are made of MultiPlate or LinerPlate, are based on structural calculations: Special structural analyses (Klöppel/Glock) give evidence of how you can load our products.

Fast construction, uncomplicated assembly: Whether culvert made of MultiPlate, shaft made of LinerPlate or steel guardrail – our products are mainly assembled on site. The prefab, corrugated steel parts join quickly and smoothly, immediately after installation and backfilling the structures can be loaded.

Bamboo: Plant growing rapidly, the “wood” is extremely light, however robust. It is similar with “MultiPlate” the main Hamco product, from which primarily culverts and underpasses are built. In short time. The installation is made within one day, a few days at the most.

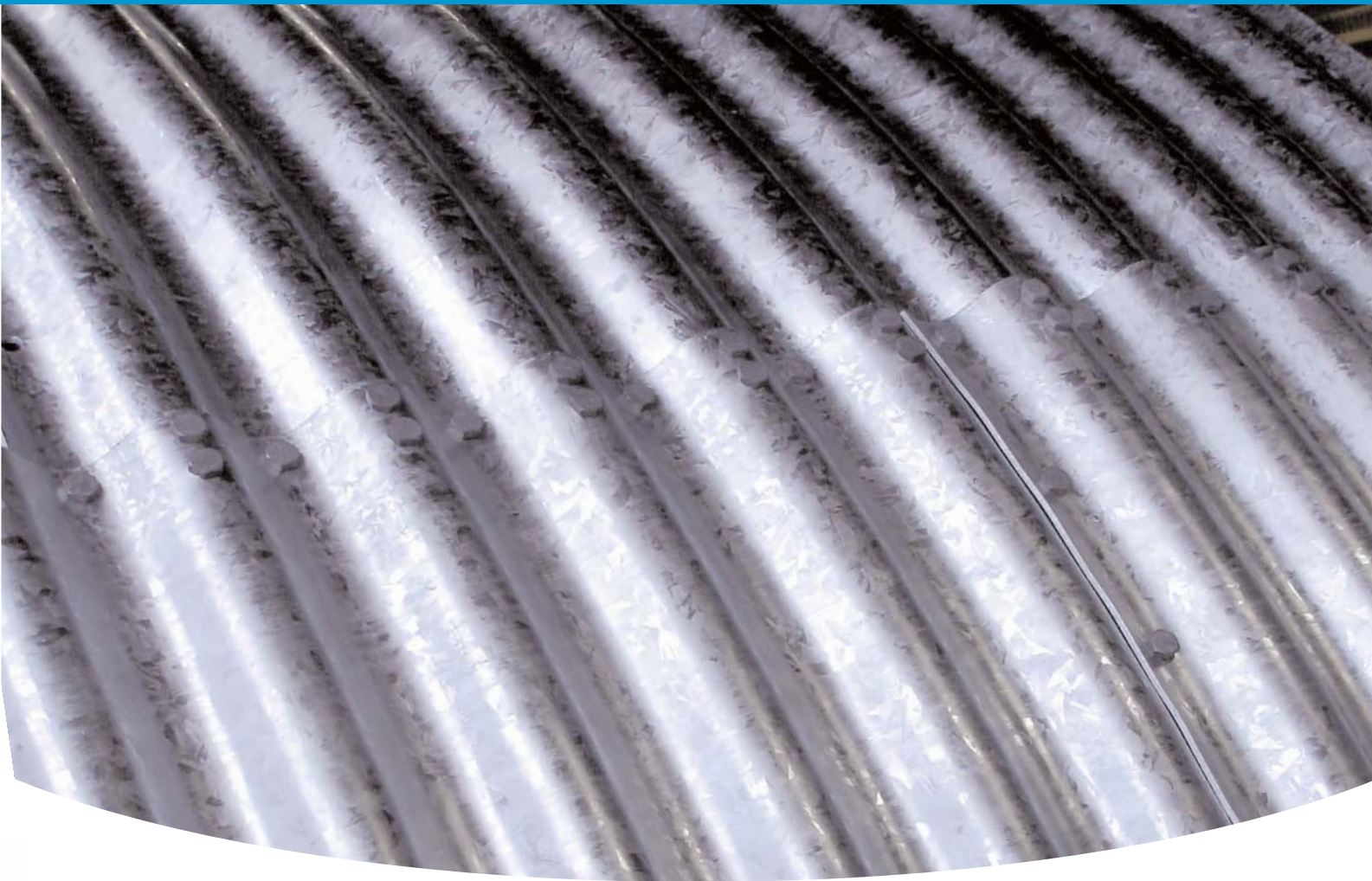




All similar, however, everything different

In principle, success renews, especially in nature. On further consideration, no structure accurately resembles another. Optimum adjustment is the aim. This applies just as well to Hamco products.





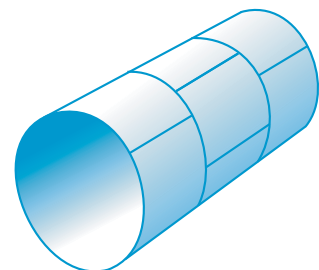
High standardization, maximum identity: Looking at the modules, from which our corrugated steel profiles are composed of, you may always see something similar: corrugated steel elements bolted together. Still, not one structure accurately resembles another. Much to specific design, varying places of installation, to which we have to adjust our products: Only the procedure is standardized. Thus, the result is quick and efficient. And still customer made.

Elaborated system, flexible employment - When the course of the tunnel, culvert or shaft is determined, when the cross-section (we say: profile) is determined, the great puzzle begins: The structure is divided into steel segments small enough to still be moved. This is calculated by a specific software, which takes care that maximum three elements overlap at one place.

Surface standards for all cases of employment. Similar to the modules, we also chose between standard and customer-made for the surface: an extremely longlasting combination of hot-dip galvanizing and plastic coating – the Duplex system – is used.

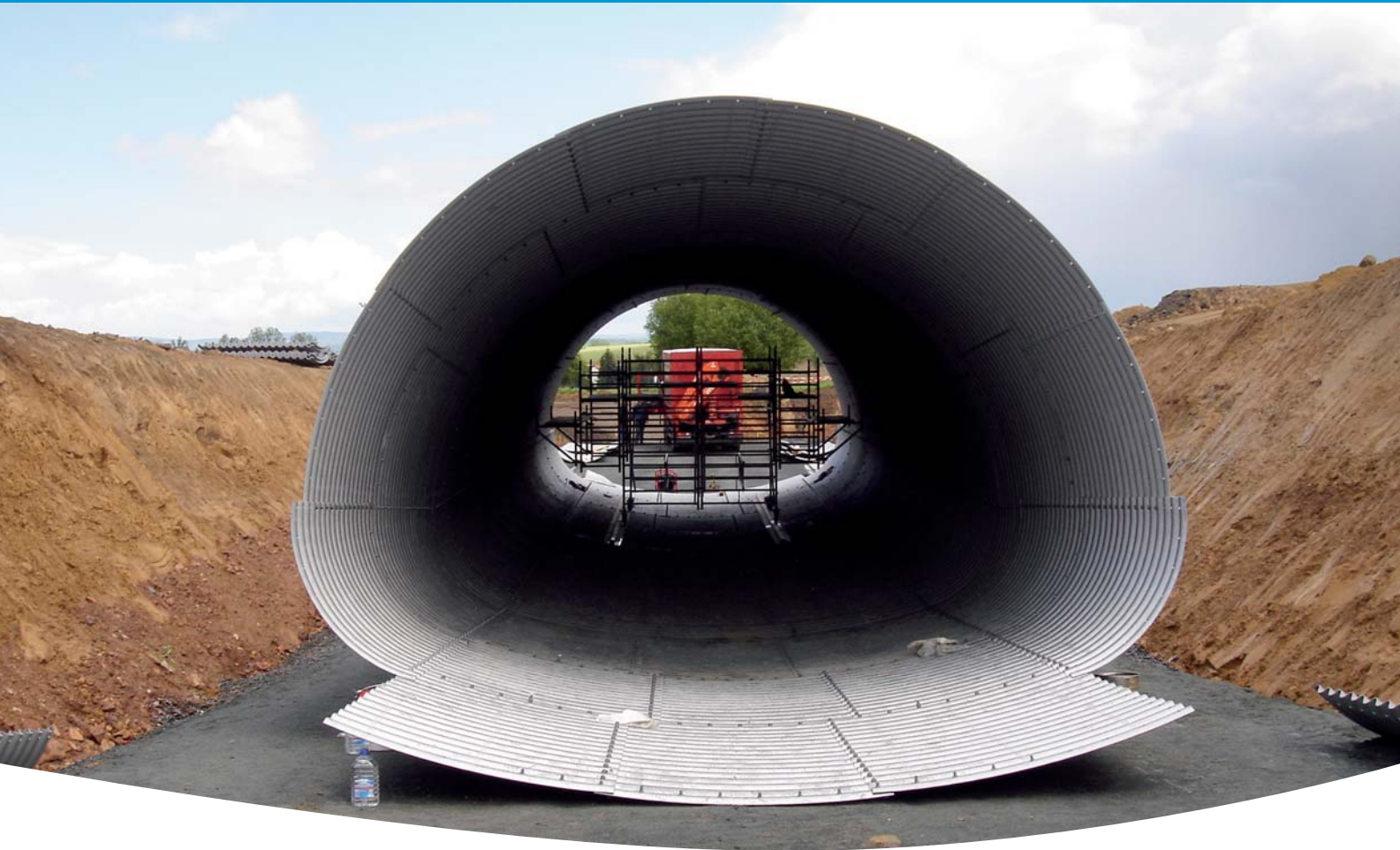
Bivalves (mollusks): the formation principle is always the same, since it proved successful in million of years. But you will never find two identical ones.

Our experience with Multi-Plate does not quite cope with this, however, also here almost every single plate ist different.



MultiPlate: Segmented pipe construction for tunnels and silos.

LinerPlate: Segmented constructions mainly for vertical shafts. Parts can be connected from the inside by means of flanges.



Day-site: A new railway tunnel had to be built as quick as possible on a section of the Hohenzollerischen Landesbahn (Swabian Alb). The nearly 15 metre long **MultiPlate underpass** was assembled outside and lifted into the trench. Including backfilling and compaction everything was completed within 48 hours.

A new underpass within 48 hours: We must admit – of course, it does not always work as quick. However, with MultiPlate, our standard construction for building underpasses, culverts and other tunnel structures, we run at high speed. One reason is a.o. our skilled and, normally, own assembly crew at site.

There is also method in our speed. Our corrugated steel pipe is delivered to site in custom-made, easy-to-handle parts. Either assembled outside the trench and placed into position by means of a crane or directly assembled in the trench. Backfilling of the pipe is made in accordance with our installation requirements and the appropriate regulations. Immediately afterwards, the pipe can be loaded.





Rebuilding or new building: Rapidly is the key

Assemble, backfill, drive – with MultiPlate our tunnel constructions are ready for use quickly. This is not the only reason for their economy.

Rebuilding under continuous operation: No disturbance, no interference – apart from the delivery of parts. Above, everything continues to operate – or to drive – while the ruined underpass is rebuilt. Almost the same as the system “new bathtub in old one”. Only lasting longer.

Maximum use of space: The diversity of our profiles allows for optimum utilization of almost all cross-sections of old culverts. The space still remaining is filled – with binder or concrete. It is always a challenge. In the end, the system has to be assembled outside, step by step, and in most cases pulled into the old structure accurate to the centimetre.

Made-to-measure: An old underpass at Bochum was in demand for rebuilding. The bridge had to be renewed without interrupting the traffic. With a MultiPlate underpass profile we fully used the clearance and carried out assembly at the renewable structure fitting precisely.





One basis technology – many stages of expansion

Whether creek or flood bridge, small path or multi-lane highway, straight passage or winding alleys – our structures with custom-made standards meet all demands.

Flexible cross-sections solve many questions – less space at height, however large rate of flow to be expected? Or great width of span required? Our system offers different standardized cross sections: Pipe arch, underpass, ellipse, circular profile, circular arch profile, Super-Span. They all can be supplied in various sizes.

Open or closed – Normally we build closed profiles, they offer greatest stability and installation is most economic. Very often, however – for some culverts and certain subsoils – bottom-open profiles are in demand, which we place on concrete strip foundations prepared at job-site.

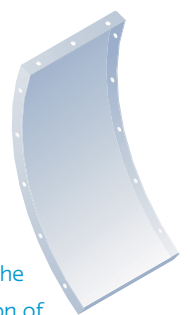
Various fields of application – various profiles. High and small, flat and wide. Even our standard profiles offer a wide spectrum. A number of profiles is built as pipe arch, thus without bottom plates.





Special projects are the rule – our wide range of profiles and designs enable us to quickly respond to totally different demands. We are also open to custom-made products.

LinerPlate: When it gets very narrow. Especially for rebuildings of small culverts with lack of space to pull in our profiles from outside, LinerPlate is used. Single parts provided with two flanges or four flanges can completely be assembled inside. Main field of application for LinerPlate is however vertical shafts.



Due to the flanges the connection of **LinerPlate** segments is completely accessible from the inside.





Extreme places do not allow for great constructional expenditure: The railway station Zugspitzplatt and the German Research Station on the ice shelf in the Antarctica.

Your use, corrugated steel. Unsupported span widths up to 16 metres, corrosion-protected, stable however flexible material, which, as well, can be supplied in handy single parts – hence, it is not surprising that with our technology we constantly set up quite other buildings. Not always as high as the mountain railway station on the Zugspitze. Not always as far south as the accommodations in the Antarctica. However, always interesting.





Mountain railway station, silos with discharge tunnel

Culverts and underpasses are our speciality, however, our ideas are far-reaching. With our corrugated steel products the Zugspitze got its railway station, we take care of efficient material flow for bulk materials, there is security for Antarctic researchers.

Discharging has to be supported. (Building material) Industry counts on MultiPlate structures. For example, when discharging loose bulk material or bulk material from silos, e.g. in gravel mills. Here, prior to filling, the discharge openings have to be placed to enable the conveyor belts to reach into the centre of the bulk material. Our tunnel takes care that the belts reach there. MultiPlate is also used for the construction of silos itself. Here, we accomplish diameters of up to 30 metres and heights of up to 15 metres.

Economic discharge of material: For silos and bulk material plants our tunnels offer place for conveyorbelts





Complete pipes, non-slip grids, smart ideas

Our portfolio completes a product range originating from the experience in tunnel and hydraulic engineering. Here, too, efficiency, robust, practical feasibility, intelligent solutions and maximum flexibility count.

Continuous system: For small diameters we offer prefab pipes with lengths of up to 10 metres. This HelCor system offers advantages similar to segmented pipes – the corrugated structure of HelCor pipes, helically arranged around the pipe body, provides high strength and great flexibility and minimum material consumption. Extremely light, however very strong – a characteristic feature of HDPE pipes made of high-strength and non-decomposable polyethylene. The high carrying capacity is also obtained from the helically, profiled outer skin. The pipes are double-walled and smooth on the inside.

“Down-to-earth” network: We are well-versed in slope construction and different soil conditions – implicated in the construction of culverts and tunnels. One does not always encounter the optimum soils. Too unstable, no shear strength. Very often the exchange of soil is inappropriate, for reasons of cost and time. Geogrids made of polyethylene establish solid conditions.

High-strength polyethylene: material for helical **HDPE pipes** (left) and soil-strengthening **geogrids**.





HelCor: prefab pipes for small diametres.

More than pipes: With Tempac our portofolio includes an emergency accommodation programme, which allows for rapid help just like tents – however much more solid. In cooperation with an architect we can offer low-cost, exceptional, fast-to-assemble and custom-made buildings, which on account of installation into the hillside, earth-cover or green roof allow for living close to nature, unlike prefab houses. Fast at assembly, the solid elevated bed for the allotment garden completes our product range, as well as our “RegAR”-system, the compact irrigation set for trees in cities.

Exceptional **MultiPlate** use. Green roof residential house on water (left) and elevated bed for allotment garden.





Simply effective – but not simple at all. Our steel guardrails always seem to be the same – two basic profiles (A- and B-profile) can be combined with a number of fittings and floor anchors. Thus, we got the right solution for each type of use. Just like for MultiPlate systems we go for standards, to be adjusted at choice on demand. In addition to sufficient stability and the right plasticity, also longevity plays an important role. Our guardrails are hot-dip galvanized and quality-tested – to get a good paying investment.

Whether simple road barriers or extensive construction for toll gates for trucks: **Steel guardrails** serve at many places.





Unimposing life-saver without sharp edges

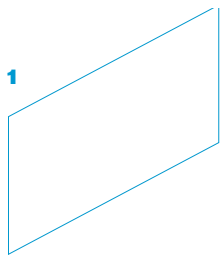
They should not attract attention, but detain. They should protect but not hurt – steel guardrails detain, what customers hope for.

Not only along embankments. Whether it is a twin-arrangement in the central reserve of a highway, or whether toll gates for trucks need additional protection or whether traffic-loaded entrances and exits or parking lots are to be protected against randomness of everyday use: Hamco guardrails can also be found off the provincial and federal roads.

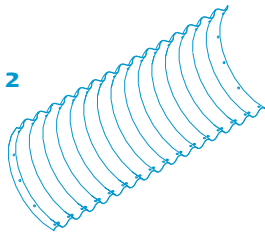
Experts for custom-made products: custom-made products for special use – e.g. to protect tree-avenues – round off our product range guardrails. Our skilled assembly crew does not properly set up guardrails for special use only. Otherwise the best safety measure is useless.

Safety for storehouse of German retail trade and on Danish highways: Important is an appropriate installation.

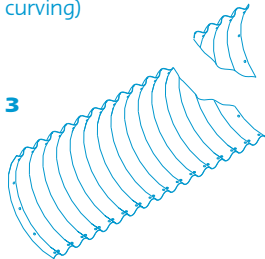




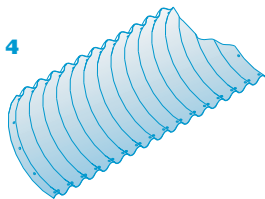
1
Raw material
Steel plate 1,5 – 8 mm



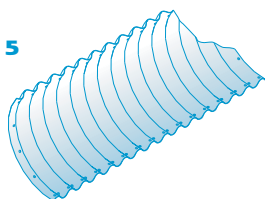
2
Cold forming
(corrugating, punching,
curving)



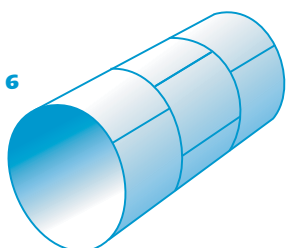
3
Flame cutting and
welding



4
Hot-dip galvanizing in
acc. with DIN EN ISO
1461



5
Plastic coating as re-
quired by customer

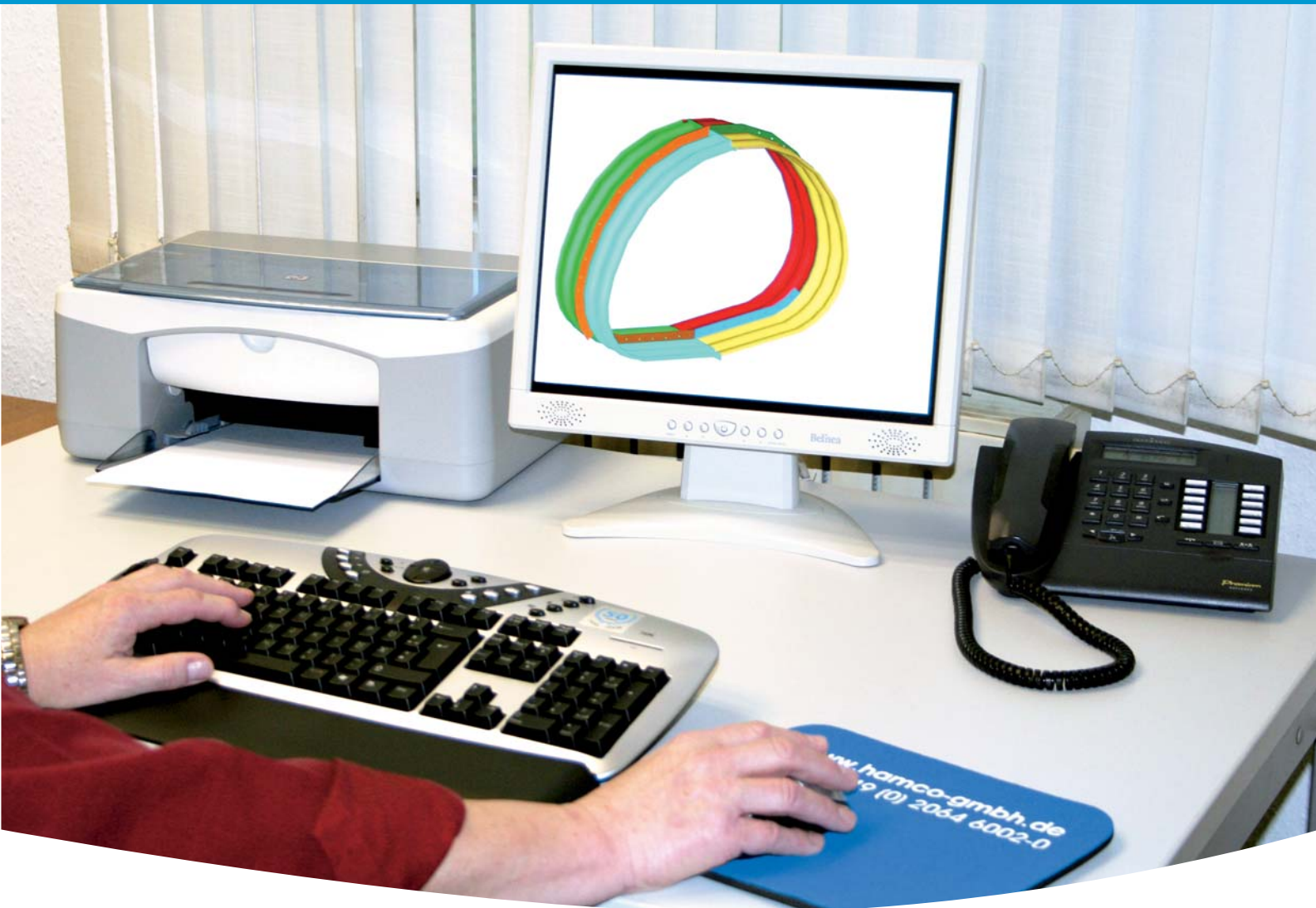


6
Finished corrugated
steel structure

Skilled work from Germany. We say “yes” to the business location Germany, and this is no lip service. We manufacture all steel parts at our headquarters in Dinslaken – our well-skilled employees all act in concert. The engineer as well as the administrative department and last but not least our production team. It is only the steel we do not produce ourselves. Our vertical integration enables us to constantly maintain our quality during all manufacturing processes. The raw material is corrugated and curved with our own presses, it is cut true to size, surface finishing – hot-dip galvanizing or additional plastic coating – is also made in our factory.

High-tech solves tricky problems. Actually, everything is quite simple: Flexible, embedded, corrugated steel pipes are built with plates. In detail, things are getting more complicated: After all, there is a great number of different standard cross-sections (profiles). For some cross-sections, we have to curve the corrugated plates in up to four different radii. The real challenge, however, is the course of the structure: How long is it, what is the angle of the ending slope, what is the skew between road or path and structure? It is getting completely intricate, if our structures have to follow a radial course or branches have to be considered. At the end of a day everything has to be converted into relatively handy, small, differently curved steel parts, which – assembled at site – have to fit well. Our own CAD software carries out complex calculations for the selection of plates and lay-out.

Even inspections, we handle ourselves. Quality is our utmost concern. Sheer selfishness does not permit inaccuracy: If something does not function at site, impedes operations, consumes money and time. Moreover, safety and stability are of great account. To know to be on the safe side we use the calculation method Klöppel/Glock, which we developed in cooperation with the TU Darmstadt.



High-Tech and solid quality - everything made in Germany

We completely work up the steel ourselves, corrugating followed by cutting to size and coating. We rely on skilled work as well as innovative design methods.



Tradition obliges - to take a look ahead

In the beginning, there was an US-American method. We made it popular in this country – and consequently advanced the method. The impetus we achieve from our successes, we use to look for new challenges.

2007 Idea sketch of multi-sports race-track across a shopping mall (figure above)

In the beginning there was the American Rolling Mill Company (Armco). The innovative steel company from Ohio, not only, had great success in producing steel and thus was a synonym for technically pure iron. Armco also took over the license for the production of corrugated steel pipes and consequently advanced the method, which soon was accepted in civil engineering. In particular, this applies to the MultiPlate construction method, where plates are bolted together at site. In 1956 the Americans established a joint company with Thyssen, the Armco Thyssen Breitband-Verarbeitungs-GmbH, and thus the foundation was laid for today's Hamco. In 1957 the factory was built in Dinslaken. The new company took care of the acceptance of the prefab corrugated steel parts also in Germany.

Load-carrying tests proved the utilisability. After the start of the company in Germany a change in ownership took place and following some changes of Names Hamco has been operating on the market under his present name "Hamco Dinslaken Bausysteme GmbH" since October 1988. Since that time, nothing has changed the MultiPlate principle, however, the product range was improved significantly: More profiles, more complex structures, branches and elbows in many variations are available meanwhile. In the past, the company already proved that corrugated steel pipes pass scientific examinations.

Together with the TU Darmstadt we developed a long-term load test and a load carrying test. The test pipe safely resisted load cycles of 3 millions with up to 30 tons and the load carrying test with a pile of steel slabs of more than 1000 tons had to be stopped. The staple was too high, and thus the test was too dangerous. The profile appeared untouched.

The future: Houses alongside tunnels, ice sports in the desert. Hundreds of thousands corrugated steel structures were built worldwide – however the demand for fast-assembled tunnels and culverts still exists even in Germany. Moreover, our achievements in Eastern Europe show that suitability and economic efficiency of our system is estimated more and more. However, we do not rely thereon. With our idea, to offer solid and fast-to-built emergency accomodations or green roof residential houses made of corrugated steel parts, we take a first step onto new markets. An ambitious biathlon project shows that it pays off to take a look beyond one's own nose: A year-round training camp is built consisting of a complex, one kilometre long round course, which can be cooled down even in summer. As best, and we have now made plans for a multi-sports building with shopping mall in the desert. The MultiPlate tunnel is one mile long.



1962 Large-scale load carrying test (> 1000 tons)



1981 First research station Antarctica



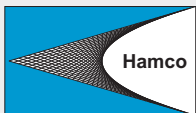
2002 Underpass near Bau-nach



2004 Rebuilding of tunnel with MultiPlate



2006 Year-round Biathlon training-camp



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