The diversity of modula®

Prefabricated platform systems

HERING®
Gleis- und Ingenieurbau

Prefabricated platform system

The development of modula® in 1997 revolutionised platform construction beyond Germany. The high degree of prefabrication, the factory's quality guarantee, the diversity of the design and the construction variants allow on-schedule, individual and need-based new development, conversion or alterations to stopping points.

Over the years the requirements of clients, users and operating companies have led to further development and a whole range of system platforms. The challenge to provide intelligent solutions already starts in the planning phase and continues during maintenance, upkeep and project support service.

Nowadays, a wide range of system platforms is available for various requirements in long-distance, local and city traffic and these are described on the following pages.

Platform Type 3 - Aschaffenburg (main station)

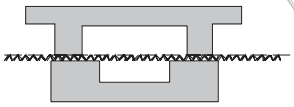
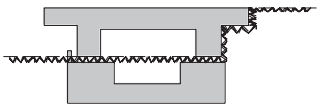
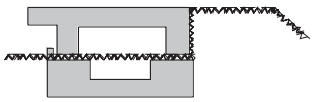
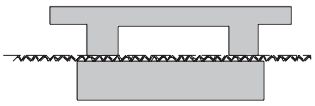
Special features of the system

In the meantime, 9 types boasting many variants demonstrate the high degree of system modularity:

- High-quality prefabrication in the pre-fabricated part factory
- Pi slab construction with spans up to 10.20 metres for free-standing and back-filled platforms (construction method approved)
- Foundation outside of the pressure range from live railway loads
- Foundation variant diversity
- Short assembly time – often possible during shut-down periods without restricting normal operation.
- Uninterrupted drainage of surface water
- Protection of the environment due to the reusability of all component parts
- Trouble-free retrofitting of supply lines and easy revisions
- Can be raised or lowered subsequently to a new access level
- Re-adjustable following subsidence due to poor load-bearing subsurface

modula® type overview

System Type		Applications	Special feature	Foundation
modula®	1	New building of external platforms	free-standing	Spread: in-situ concrete or precast foundation; Deep: bored pile or pile bearer
modula®	1a	New building of external platforms	can be backfilled, incl. overhang	Spread: in-situ concrete or precast foundation; Deep: bored pile or pile bearer
modula®	1b	New building of external platforms	can be backfilled, incl. overhang	Spread: in-situ concrete or precast foundation; Deep: bored pile or pile bearer
modula®	2	Temporary use of external platforms	ferroconcrete construction	Spread: in-situ concrete or precast foundation
modula®	3	New building of narrow and wide island platforms	free-standing	Spread: in-situ concrete or precast foundation; Deep: bored pile or pile bearer
modula®	3a	New building of island platforms	with conventional centre core backfilling	Spread: in-situ concrete or precast foundation; Deep: bored pile or pile bearer
modula®	4	Raising of existing, conventional external and island platforms	Flat slab construction	Spread: in-situ concrete or precast foundation
modula®	5	Alteration to the excess level of modular platforms	Subsequent raising or lowering by means of spacer elements	Spread: in-situ concrete or precast foundation
modula®	6	Temporary use of external platforms	Steel construction	Spread: in-situ concrete or precast foundation
modula®	7	Temporary use of external platforms	Steel construction	Without / anchoring by means of pegs
S + K	8	New building of external and island platforms for inner-city areas	free-standing with rounded platform edge	Spread: Precast foundation developed as round column
Intermodula®		New building of platforms for inner-city areas and bus stops	free-standing, can be backfilled Combined stop for bus and train	Spread: in-situ concrete or precast foundation
QuaWiDis®		Additional equipment for heating system	Heating by means of regenera-tive enery (terrestial heat)	By means of 100 metre long heating piles

German design certification (EBA)	Leasable	as frompage	System sketches
Yes		6	
Yes		6	
Yes		6	
Yes	Yes	9	
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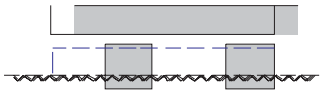
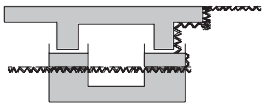
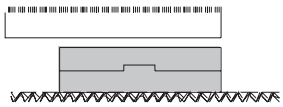
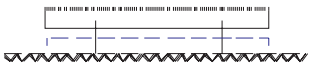
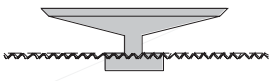
		10	
		10	
Yes	Yes	9	
	Yes	9	
		11	
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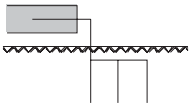
Yes		18	

Type 1, 1a and 1b modula® – external platform

The type 1 **modula®** is the classic among all platform types; a free-standing external platform that cannot be back-filled and in most cases with prefabricated part spread foundation.

The applied Pi slab construction involves valuable static benefits and allows large spans. Furthermore, the system that only consists of one component part is very fast to assemble involving little adjusting effort and fastening accessories.

Type 1a and b modula® external platforms, suitable for backfilling

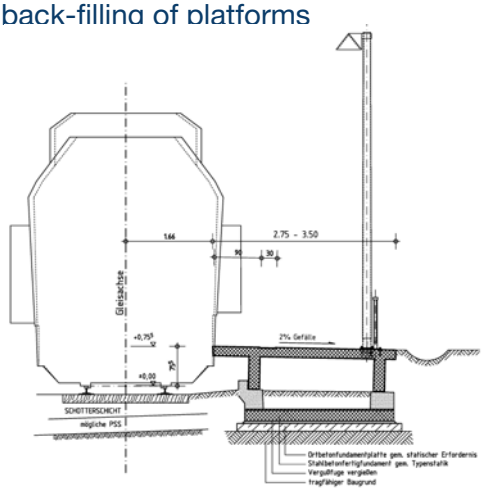
Standard dimensions

Element length: 6.00 metres or 7.50 metres
Platform width: 2.50 metres, 2.75 metres and 3.00 metres
Platform heights and widths can be varied for all carriers

Foundation variants

- Spread foundation by means of prefabricated foundations or in-situ concrete foundation on lean concrete blinding layer
- Bored pile or edge beam foundation with prefabricated or in-situ concrete top beams

Type of construction
Approvals for foundation variants with conventional back-filling of platforms



Type 1a System section

Back-filled type 1b platform (Leipferdingen)

Back-filled type 1b platform

Tube in Frankfurt - special construction

Foundations for types 1a and b

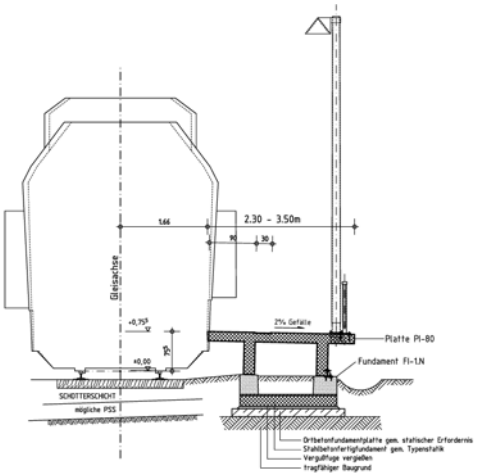
Foundation

Freight- and installation variants

In addition to the “Made in Germany“ technical processing, the pan-European freight and turnkey installation of platforms including prefabricated spread foundation elements for all platform types belong to Hering’s service package.

In the process, the delivery of the prefabricated elements by truck or rail freight is optional. This is carried out by experienced Hering employees together with building site logistics, installation from the top edge of the blinding layer or edge beams of the deep foundation. Necessary hoisting devices are selected and applied subject to the local conditions and supply possibilities. For the most part, the installation of the prefabricated parts is carried out with profile-free, rail-bound cranes during shutdown periods or in the field using mobile hoisting devices during natural train pauses. Suitable spreader bar suspension gears and special lift-off shoes are used as installation aids depending on the size of the element. Various systems are available for anchoring the platform fittings. Additional foundations are not necessary for this. The fittings can be installed directly onto the prefabricated platforms.

Loading at the factory



Type 1 system section

Transport by lorrys

Rail freight

Installation London

Type 3 and 3a modula® island platform

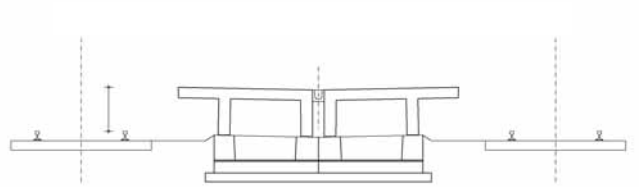
Type 3 Aschaffenburg with a hook-in slab

Type 3 Munich

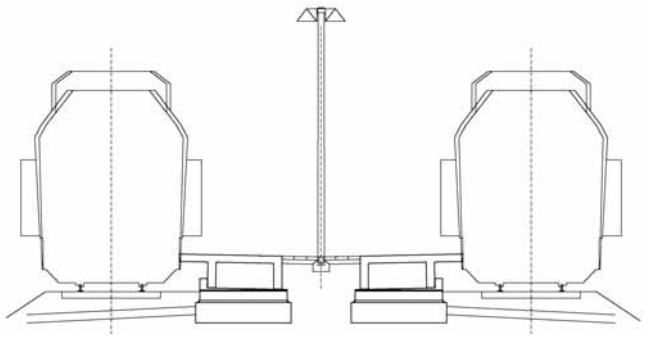
Lübz type 3 (new)

Cologne Weiden-West with conventional centre core backfilling - type 3a

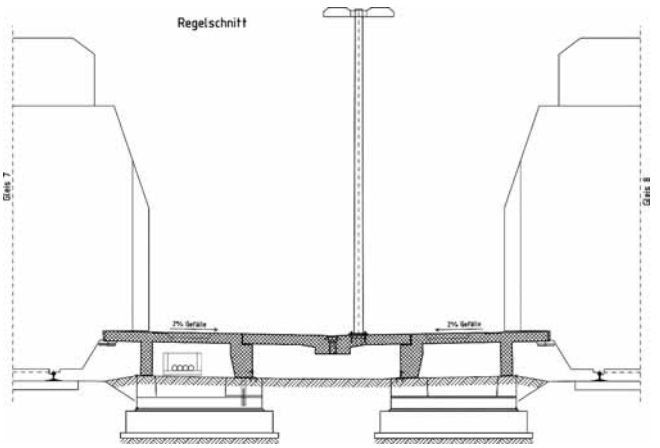
Island platforms can be designed with conventional centre core backfilling (type 3a) or also with a hook-in slab in the centre (type 3). For widths of more than 3.50 metres the platform is prefabricated in several parts. The foundation can be carried out as spread and deep foundation.



Type 3 system section



Type 3a system section with conventional centre core backfilling



Type 3 system section with hook-in slab and incorporated drainage channel

temporary modula®

If it is foreseeable that the utilisation time of a platform is already restricted upon construction, temporary platforms can be hired. When under construction, another temporary boarding point is often planned. In this case ferroconcrete platforms are also often suitable as a temporary solution. One can place them in their end position later. On account of the short installation time there are no restrictions for the user. Alongside this Hering keeps temporary steel platforms available, hires and installs them and reconstructs the primitive state after use. Hering also offers planning and technical processing.

Application:
- As a temporary remedy or interim arrangement for events
- Immediate use in the event of damage
- As lateral or island platform with FT foundation
- For temporary raising of platforms, also without frost-resistant foundation

Type 2 temporary modula®

We offer temporary type 2 modula® platforms for hire.
The element lengths of the Pi slabs amount to 6.00 metres and 2 standard widths of 2.50 and 3.00 metres are available. Dimensions deviating from this, which are of course possible as an option, are however only offered for sale. Type 2 is comparable with type 1. Only hazard area marking is provided instead of the guidance system for the blind. The foundation can be carried out by means of in-situ concrete or also by means of prefabricated foundations.

Type 6 and 7 temporary modula®

Type 7 platform construction is constructed in the same way as type 6 with the exception that in the case of raising the height of the platforms to a new access level the prefabricated foundations are replaced by pegs.

Type 6 makeshift platform VGF Frankfurt

- Two standard widths are available for hire: 2.50 metres and 3.00 metres
- Special dimensions are available for sale as an option
- Type 6 construction is approved by the Eisenbahnbundesamt Bonn (Federal Railway Office in Bonn) in accordance with the guidelines of the Deutsche Bahn AG (German Rail Corporation)
- Spread foundation made from prefabricated foundations; the foundations are stackable and reusable

Type 7 KVB Cologne

Subsequent change in level types 4 and 5 modula®

Subsequent alteration to the access level of modular platforms

The modularity of the prefabricated platform systems also lays in the subsequent conversion possibilities that have been fully developed down to the last detail.

Due to the use of new rolling material, it is often already necessary after a few years to adapt the access height of the platforms to make these accessible for the handicapped. It is possible to subsequently raise or lower a modula® range platform to a new access level at any time. (Type 5)

Type 4 Altenglan

Example

It was possible to adapt the external platform in Breitenweida near Vienna as required by the ÖBB (Austrian National Railway) by relining using ”steel shoes“ during pauses in regular train operation by means of hydraulic hand presses.

In operation after raising up to 15 cm (Type 5)

Type 8 S + K modula® platform

Hering has also acquired licensing rights for this trademarked platform system.

The optical delicacy of the filigree construction of this system platform lies in the rounded platform edges and the substructure assembled on circular columns.

Type S + K

Subsequent paving of types 8 S + K

Klemensplatz Düsseldorf

Lateral platform protruding on one side

Intermodula® - town platforms

Intermodula® is the consistent continuation of the modula® construction system idea. This involves prefabricated stopping points available for combined use by bus and tram.

Foundation variants:

As an option, the intermodula® platform can be based on the supporting concrete slab of the track. It is then anchored by means of dowels to secure the position against horizontal displacement. It can also be based on a self-contained in-situ concrete strip foundation next to the track. In this case, mandrels that are embedded in the platform element serve to secure the position.

Platform elements:

The facing surfaces of the prefabricated platform can be prefabricated in the widest range of textures to suit the wishes of the customer. A guidance system for the blind, manhole cover or anchoring elements for platform fittings are integrated. In addition to the prefabricated elements, the modular construction system also includes finishing elements with semi-circular layout as well as an applicable platform roof consisting of large prefabricated parts. Access ramps for the handicapped are also available as an option.

The high degree of prefabrication quality together with the associated short on-site construction period is a strong cost argument when it comes to inner-city building. It is often possible to carry out the installation without even disrupting operation or during short blocked-off pauses.

The Dresdner Combibords were developed by the Dresdner Verkehrsbetrieben (public transportation services of Dresden) and are subject to trademark rights (European patent no. 98112809.3).

Hering has acquired these rights as a licence. The Dresdner Combibord features a special profile that prevents projecting rims on the bus wheels being able to come into contact with the platform.

Intermodula® new

This involves a modular, fully developed prefabricated system as prefabricated flat slab with a high-quality textured facing surface and integrated guidance system for the blind according to customer requirement. Wheel impact loads are moved into the subsurface by means of spurs cast onto the prefabricated part.

Possible platform edges:

a) straight peeling b) angular peeling c) Dresdner Combiboard

Bus stop variant

This is a prefabricated system of modular construction with a prefabricated flat slab with a high-quality textured facing surface and custom-made integrated guidance system for the blind. Wheel impact loads are moved into the subsurface by means of spurs cast onto the prefabricated part.

No-barrier admission, adapted both horizontally and vertically to bus and train access.

Combined stop for bus and tram

Varieties of surface variants

The production of the dark facing surface is carried out applying high-quality recipes using facing concrete in dark granite or basalt. The colouring is thus guaranteed on a permanent basis. Multi-colour surface design is also possible.
The following surface variants can be produced in non-slip design, resistant to abrasion and permanently resistant to the influences of de-icing salts:

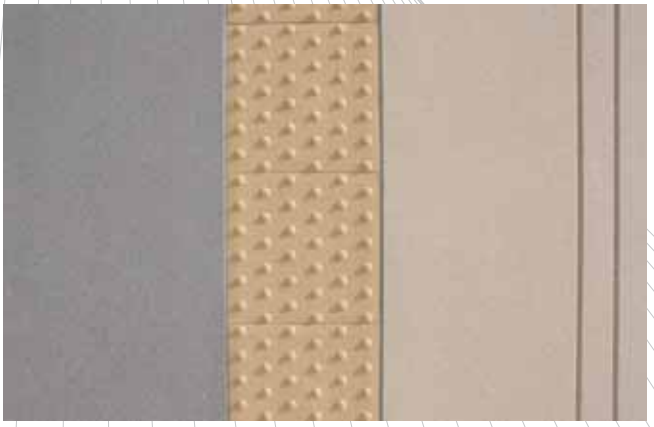
· blasted
· washed
· acidulated
· texture with mock seams in building stone format
· matrix-structure platform edge
· accompanying stripes concreted in one casting
· subsequent application of natural stone or building stone facing as an option if required
· grounded facings in protected areas
· matrix production of guiding stripes for the blind
· dark facing surfaces without accompanying stripes

Neustadt-Coburg

Alert field with accompanying stripes

Dark facing concrete

Tiles subsequently cemented into place



Network Rail London

Network Rail London, detail of joints

Diversity of variants for the various railway operating companies and traffic systems, among others for non-federally-owned railways and in other countries:

Important differences are required for example in the guidance system for the blind and in the structure of the platform facing due to the different traffic guidelines, technical regulations and national regulations of the individual railway operating companies. Up until now, we have been able to fulfil every one of these requirements.

ÖBB: Trasdorf

Network Rail London

DLR London

ÖBB, Neukirchen-Gampern

System details

System details for all types:

We are able to supply anchoring details, anchor plates for lighting and railings or other platform fittings, fixation bars, ramps, stairs or platforms if required. The formwork for these is allowed for by Hering and prefabricated in the factory.

With over 250 reference projects you can trust in the reliability of the details.

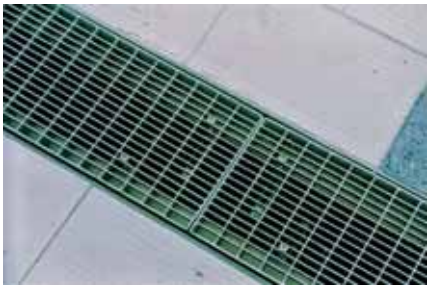
Pile foundation for type 1

Special equipment:

For DC-operated lines, isolation of the platform surface may be obtained by using an incorporated membrane.

Insulation membrane

Channel and railing base



Incorporated channel

Integrated manhole cover

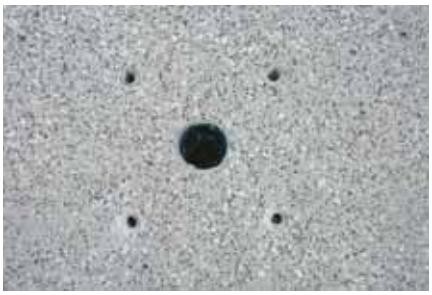
Spread foundation

Railing and lamp post anchoring

Reinforcement cage

Lamp post base

Fittings railings and stairs



Anchor basket with ductwork and threaded terminal ends

Lamp post anchoring and railing fastener

Punctiform platform broadening

Head-side fastening

Prefabricated stairs

Stairs with handrail

Planning / Technical Processing

Engineering offices receive the necessary system documents from Hering for blueprint planning such as standard sections, elevations and details as well as sample specifications in the required data format.

Moreover, Hering Bau produces cost estimates free of charge and on a non-binding basis for modular-design system solutions for upcoming projects.

Based on blueprint planning and the necessary project data such as soil survey and details of the targeted track position, Hering's technical office provides auditable documents for submission to the competent auditor based on available construction approvals.

QuaWiDiS®

The option - heating public passenger traffic areas.

The option of heating public passenger traffic areas The QuaWiDiS® winter service system was developed in cooperation with the technical university of Darmstadt, Meierhans & Partner and Hering. QuaWiDiS® stands for qualified winter service and is a project promoted by the Federal Ministry of Education and Research for heating walkable surfaces in outdoor areas by means of resource-friendly energy generated by terrestrial heat.

This kind of winter service is now a thing of the past.

Research result:

The heat obtained from the ground can now prevent the formation of frost entirely without the use of de-icing salt. Heating pipelines are fastened to the reinforcement cage in the prefabricated ferroconcrete parts.

Application possibilities:

Winter service, gentle to materials, without the use of harmful de-icing salts for public stairs, ramps, locations and prefabricated platforms of all types by means of intelligent area heating.

The energy that is drawn from the ground in the winter is fed back in the summer so that a well-adjusted energy balance is guaranteed.

Test system

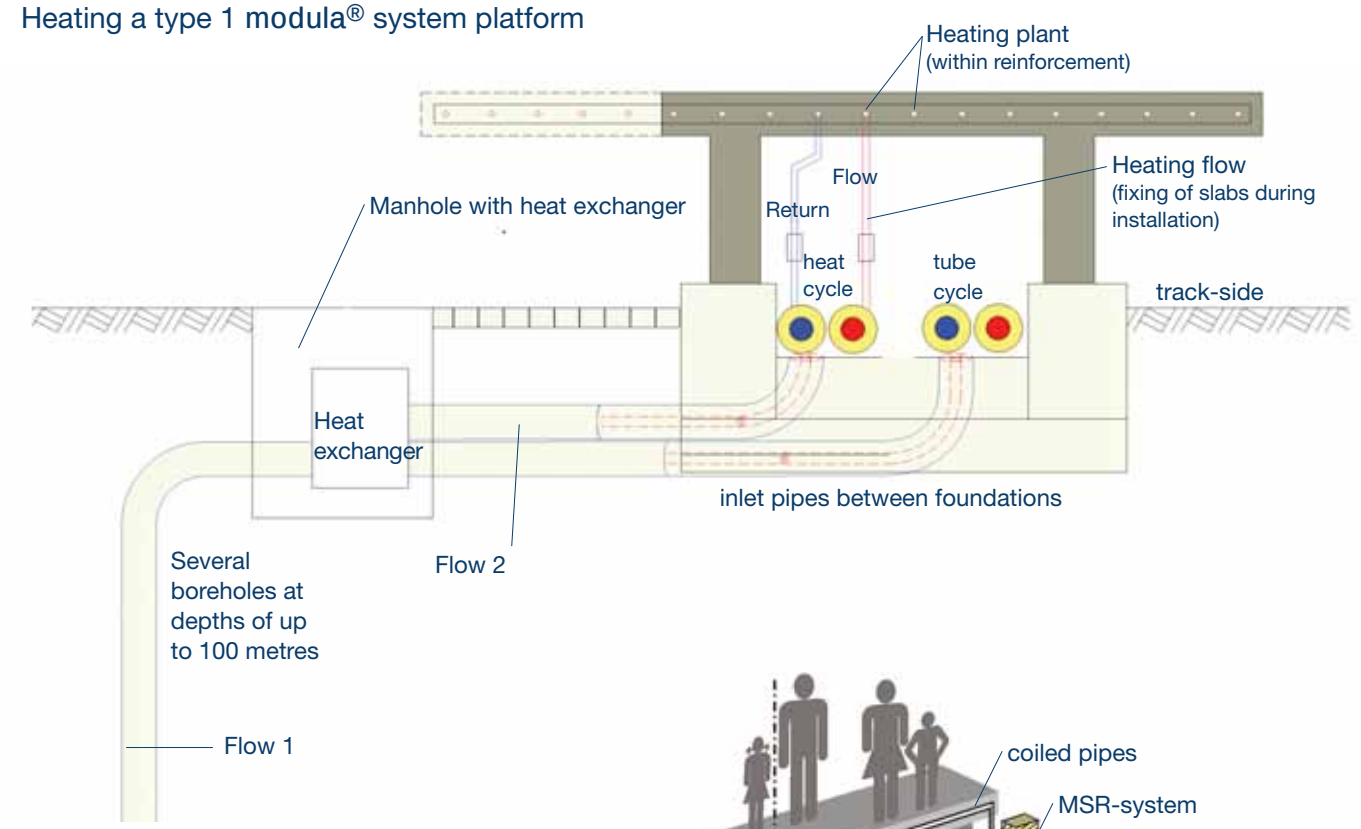
The tempered passenger traffic areas have the following features and benefits:

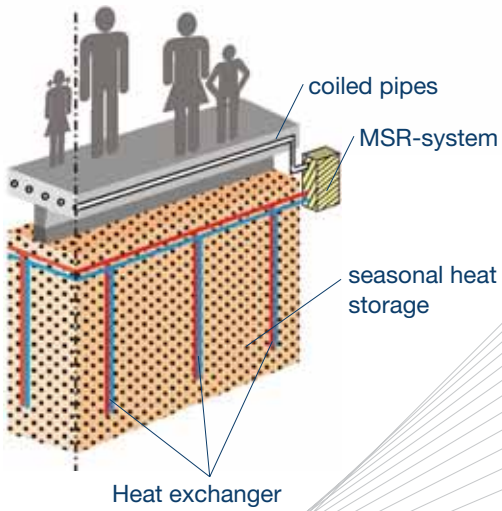
- The component parts are not exposed to high fluctuations of temperature. This increases their lifespan
- Doing without aggressive grit increases the durability of the component parts and fittings
- Geothermal heat is an environmentally friendly, regenerative source of energy
- An economical advantage arises due to the subsequent low overheads, because the terrestrial heat sensors and feed lines are maintenance-free.

QuaWiDiS® can be used on all modula® ferro-concrete platform types, thus types 1-5, 8 and intermodula®.

Example:

Heating a type 1 modula® system platform





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