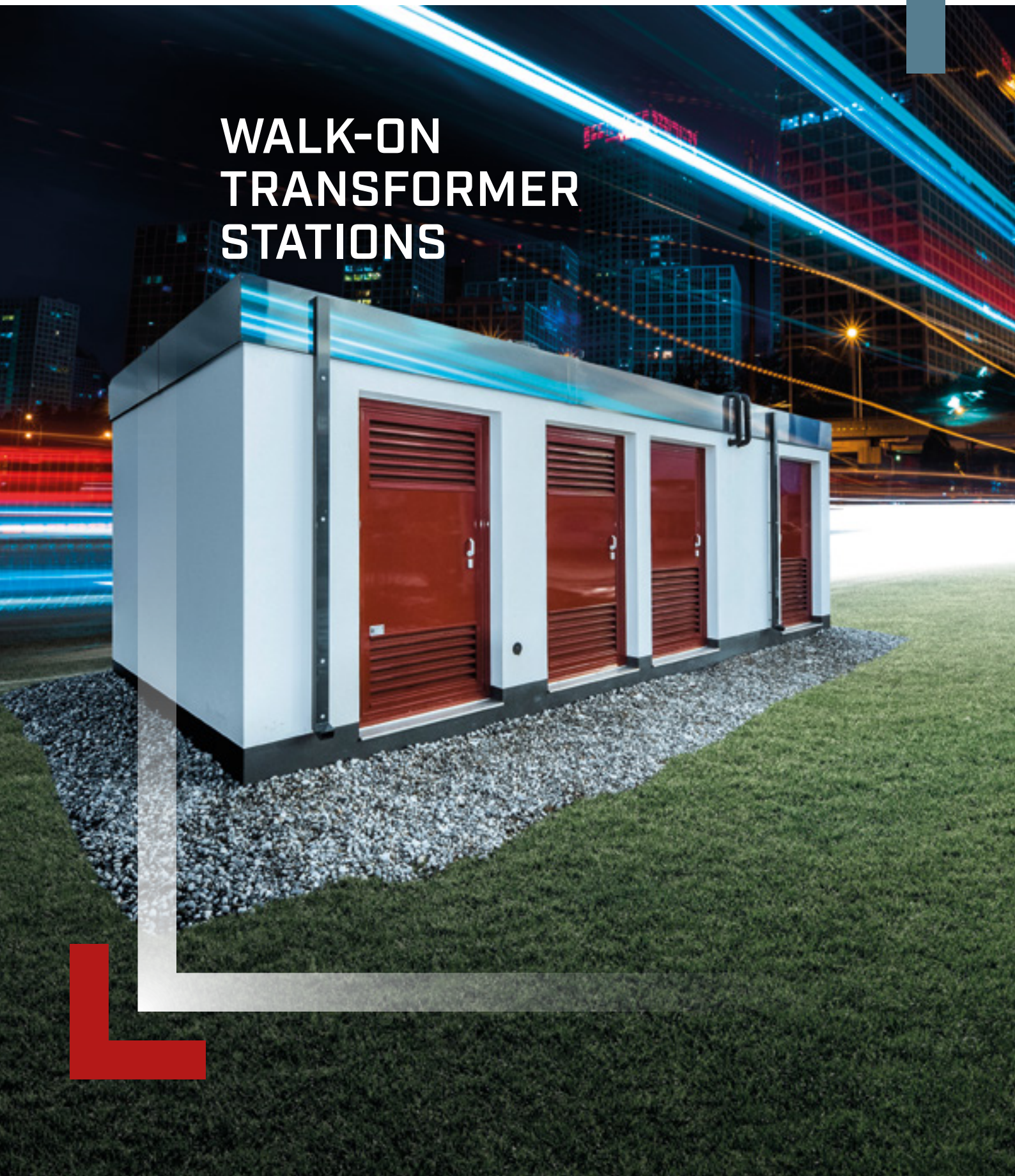
BETONBAU

WALK-ON TRANSFORMER STATIONS



BETONBAU walk-on stations
can meet even the most demanding requirements. We fit them with 4.8MVA transformers, and even more powerful ones for special projects. The stations are a walk-in design, accessible from inside for operating personnel. Due to their dimensions, the stations form a distinctive feature in a built-up or rural area. For that reason, we offer a range of surface finishes and technologies for conveniently blending the buildings into their settings.

SUMMARY DESCRIPTION AND COMPARISON WITH THE COMPACT STATIONS

STATION TYPE AND CODE	WALK-ON	COMPACT
BETONBAU model series code	**UF**	UK
Operator access	**walk-in**	non walk-in
Height from ground	**approx. 2.8m**	approx. 1.5m less than 1m for underground (or, half-buried) stations
Footprint	**approx. 6–25m²**	approx. 3–6m²
Weight, equipment inclusive	**13–50t**	7–13t
Transport	**oversize load**	common road truck
Transformer output power	**up to 4.8MVA, or more depending on project**	normally 630kVA, up to 2.5MVA depending on project
Transformer placed on	**rails**	on transformer station floor
Transformer replacement	**through door**	following roof dismantling
HV switchgears	**insulated with SF6 gas or air, up to 38kV, both compact and modular**	common compact design, insulated with SF6 gas, air or vacuum

BETONBAU

We are a leading European manufacturer of technical buildings for the power and water management sectors. We develop and make precast reinforced concrete buildings, and fit them using system components from our in-house machine shop, along with installing technologies according to their use. We are serious about integrating every building into its surrounding environment and therefore offer a range of surface finishes and technologies.

Widely used in the power and water management sectors, our product applications include

- transformer stations,
- switching stations,
- transformer enclosures,
- natural gas regulator stations,
- water tanks,
- sewage treatment plants etc.

You can rely on

- **comprehensive service:** from design and implementation to maintenance and modernisation,
- **history and experience:** since 1993 in the Czech Republic and since 1963 in Germany,
- **custom products and solutions:** we make every effort to meet our customer requirements and to design optimum solutions for their projects,
- **long service life:** reliable solutions in compliance with standards,
- **human dimension:** individual approach to our customers and a sensitive way of integrating technical buildings into their surroundings.

ELECTRICAL TECHNOLOGIES

As a rule, 4.8MVA transformers are used to fit out the walk-on stations. The transformer output power may be increased for special projects. Oil and dry transformers are normally placed on steel sections (transformer rails) and their potential replacement is executed through the transformer vault door. An oil retention pit is ready under the transformer.

The HV and LV switchgears are placed on the raised floor of the substation that is as a rule separated by a concrete partition wall from the transformer vault, and accessible through a separate door. The HV switchgears up to 35 kV voltage may be both compact and modular, and SF6 gas or air insulated. The LV switchgears are a cabinet or wall-mounted design and may be deployed at high rated currents up to 3,500A.

The measuring boxes (USMs, universal measuring boxes) are installed in the external wall cutouts, thus providing for their accessibility also from the outside.

Robust, patented **cable grommets** serve as pass-throughs for all standardised cables used in the power engineering industry. Grommets from other manufacturers may be supplied upon request.

BUILDING AND STRUCTURAL SOLUTION

BETONBAU CONCRETE PRODUCTS

The body of a station is comprised of 4 external walls, at a minimum thickness of 10cm, and a bottom at a minimum thickness of 12cm. We precast the body using the "bell casting" method, as a single seamless casting. The manufacturing method gives the following features to the body:

- exceptional mechanical resistance. The body is a self-supporting box type element and, as a result, it needs no foundation and may also serve as a retaining wall when set in a slope,
- perfect tightness; the cast-in-place, seamless concrete body is watertight, serving at the same time as an impermeable pit to catch oil in case of a transformer accident,
- easy transportability, based again on the mechanical stability of the body itself,
- long service life and reliability.

We make the body, roof and partition walls from impermeable concrete of C35/45 strength class and XC4 and XF1 exposure classes compliant to ČSN EN 206-1.

The roofs may serve also for ventilation and for overpressure exhaust in case of internal short circuit. As is standard, we fit the transformer stations with a flat reservoir roof that may be additionally vented along its perimeter. Upon request, we will execute any sloped roof solution with clad or sheet metal roofing.

The raised floor is executed either from concrete or using an extruded aluminium shape system. The concrete raised floor benefits from being fire safe, while the aluminium shape system offers a high degree of flexibility. We mount the aluminium shapes on adjustable galvanised steel supports. The tread layer is of plywood with self-extinguishing and slip resistant surface treatment. The floor panels are fitted with a key operated latch preventing their accidental lifting.

The partition walls are at least 8cm thick, while their actual thickness and position are optional.

METALLBAU IRONMONGERY PRODUCTS

We make the doors and ventilation elements from anodized aluminium in our in-house METALLBAU machine shop. The material is corrosion resistant and its durability is on a par with that of the concrete used for the construction body.

We can fit our ironmongery products with a patented, highly efficient ventilation system. The system has been optimised for an airflow factor corresponding to IP 33 rating, while it prevents insect and rodent infestations of the station.

A ventilation element may be detachable, fixed or built into the door.

The doors are resistant to an arcing fault impact and fitted with a patented three-point locking system with an emergency exit feature. The number, dimensions and position of the doors and ventilation elements are variable within the station.

TYPES AND DIMENSIONS

BETONBAU walk-on transformer stations with the UF type code boast a wide range of individual types, derived from the basic module series UF 25 (width 2.5m) and UF 30 (width 3.0m). While the width remains constant, the length may vary from 2.4m to 8.4m, using a 0.6m grid.

The cell is as standard supplied with 3.2m height clearance, while with the installed raised floor the clearance of the substation itself is 2.4m and the cable space height is 0.8m. Additional dimensions are available upon request.

WALK-ON TRANSFORMER STATION	EXTERNAL WIDTH (m)	EXTERNAL LENGTH (m)
UF 2524	2.5	2.38
UF 2530	2.5	2.98
UF 2536	2.5	3.58
UF 2542	2.5	4.18
UF 2548	2.5	4.78
UF 2554	2.5	5.38
UF 2560	2.5	5.98
UF 2566	2.5	6.58
UF 2572	2.5	7.18
UF 2578	2.5	7.78
UF 2584	2.5	8.38

WALK-ON TRANSFORMER STATION	EXTERNAL WIDTH (m)	EXTERNAL LENGTH (m)
UK 3024	2.98	2.38
UF 3030	2.98	2.98
UF 3036	2.98	3.58
UF 3042	2.98	4.18
UF 3048	2.98	4.78
UF 3054	2.98	5.38
UF 3060	2.98	5.98
UF 3066	2.98	6.58
UF 3072	3.02	7.18
UF 3078	3.02	7.78
UF 3084	3.02	8.38

IMPLEMENTATION

For the sake of accelerating construction works, we install the electrical technologies in the station already at the production plant.

Self-standing stations are placed on a prepared ballast course without foundations. Foundations are required only for combination multi-body buildings.

We haul walk-on stations as an oversize load and use a crane to place them. The weight, equipment inclusive, ranges from 13 to 50t.

The engineering structure user provides for the base course preparation and for external cabling and earthing execution.

SAFETY

Our priority is to protect health and assets. Our products conform to all requirements placed on them by the standards and regulations. Thanks to our innovative solutions, we stand ready to provide even stronger protection and safety levels upon request.

ELECTRICAL EQUIPMENT SAFETY

- Minimum protection rating IP 23 DH, optionally IP 34 D or IP 44 D under ČSN EN 60529
- Arcing fault protection conforming to ČSN EN 62271-202
- Temperature-rise and IP rating test conforming to ČSN EN 62271-202
- Electromagnetic field (EMC) protection conforming to Government Order no. 291/2015 Coll., and ČSN EN 50499

FIRE PROTECTION

The concrete body provides EI 90 fire rating, and up to EI 120 upon request. Subject to the site plan and project, we also install fire protection gratings, fully separate the transformer space from the rest of station parts, apply firestop packing, or, set up ventilation cupolas on the station roof.

NOISE CONTROL

We manufacture walls, doors and ventilation elements with high to very high sound attenuation levels. Upon request, we are able to make double walls panelled from inside with perforated sheet metal and sound insulation, as well to install a double door. We use soundproof sheet metal ducts or concrete ducts with built-in damper frames. The stations may be placed into a slope or underground.

UNDERGROUND WATER PROTECTION

The seamless concrete body prevents potential transformer oil penetration into the subsoil.

BREAK-IN SECURITY

We offer special doors and ventilation elements, doors with concealed hinges and RC2 or RC3 burglar resistance classes compliant to ČSN EN 1627, as well as fitted with a mechanical or electronic three-point locking system with an emergency exit feature. The mortise cylinder is shielded with a steel cylinder guard.

TECHNICAL CERTIFICATES

Upon request we issue declarations of conformity, technical certificates and product certificates for the Czech market.

DESIGN AND APPEARANCE

We are committed to providing you with an option to modify the appearance of the technical buildings as part of the implementation process. We wish for our products to blend in well with their settings, while standing out at the same time. To that end, we offer numerous face surface finishes, roof and roofing types, as well as convenient options of integrating the building into the terrain.

- Face plastering colour options
- Architectural concretes, facing bricks, Klinker facing bricks or stone facing
- Building faces clad with planks, and a choice of cladding panels
- (Semi)flat and sloped, saddle and hip roofs
- Clad and sheet metal roofing, decorative ballast and green roofs
- Building situated on a slope, half-buried solutions or underground stations

OPERATIONAL AND POST-WARRANTY SUPPORT SERVICES

We offer comprehensive support services with our transformer stations at maintenance, rehabilitation and modernisation.

Upon request, we will provide

- electrical equipment checks and reviews,
- scheduled inspections,
- cleaning, rehabilitation and repairs,
- building adaptations,
- relocations
- and much more.

For detailed information, please read the Operational and Post-warranty Support Services leaflet or contact our sales representative.

BETONBAU

BETONBAU, s. r. o.
Průmyslová 698/5a, 108 00 Prague 10
Phone: +420 281034111
E-mail: betonbau@betonbau.cz

www.betonbau.cz