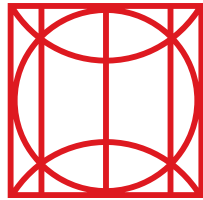


FIBERGLASS COMPOSITE



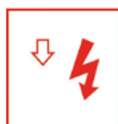
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BRIDGE CONSTRUCTION

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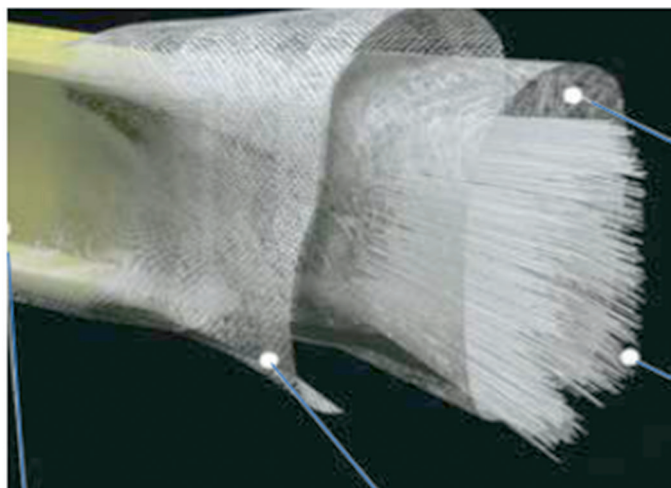
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woven FRP materials

FRP thread

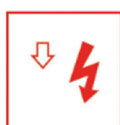
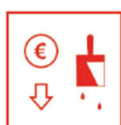
FRP resin

FRP surface coating

Properties	According	Remarks
Chemical resistance	ISO 175, 4892	
UV-radiation resistance	EN ISO 4892-3:2006	
Mechanical endurance	LVS EN ISO 527	Tension resistance border (LW) 226,9 MPa Tension resistance border (CW) 51,6 MPa Elastic modules 19,2 – 22,0 GPa
Fireproof and fire reaction	LVS 263-2000 EN 13501	A/B (fireproof/hardly conflagrant)
Density		1,66 – 1,93 g/cm ³
Glass amount in mass		65-75%
Polyester resin mixture mass		25-35%
Electrical properties		
Electrical resistance (LW)	IEC 60234	By 1.58 kV/mm
Electrical resistance (perpendicular)	IEC 60234	By 7.9 kV/mm
Resistance circle (indicates the size of transverse)		120 seconds
Dielectric constant 60Hz (perpendicular)		5.2
Storage time		Unlimited

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FIBERGLASS COMPOSITE



Calculation of bridge structures according to EN 1991 -2.

The standard bridge projects offered by **COMPOR** are divided into:

1. Girder bridge / Pedestrian — up to 3m; 6m; 12m; 15m; 24m
2. Shafts and cable bridges — up to 42 m; 72m; 100m
3. Pontoons, footbridges and berths.

The width of the bridges is according to the norm — from 1.2 m pedestrians and 2.5 m pedestrians/cyclists.

The design of the bridges is a typical design and, consequently, their installation and transportation costs are reduced. No design costs.

There is no negative impact on ecology in the construction process and in the process of operation.
Minimal operating expenses.

Cross-section of pedestrian and cycling bridge span.

It is possible to make a grid, a deck or a wood from a composite material. Composite cover can be covered with anti-slip coating.

Conditions: the distance between the support points is 1.25 m, the permissible deviation of L/150 (depending on the design purpose).

Based on the conditions, the maximum floor load is 1,020 kg/m².

Comparison of glass composite material with other materials

Mechanical properties	FRP composite	Concrete	Steel	Aluminium	Wood
Resistance to longitudinal tension, MPa	220	36*	235-480	180-210	80
Resistance to horizontal tension, MPa	240	36*	400	275	0.4
Flexibility module, GPa	21	40	210	70	9
Impact Resistance, kgs/cm ²	1.5	-	1.5	-	-
Thermal linear expansion coefficient 10 ⁻⁶ , °K ⁻¹	8	-	11-14	19-23	2-6
Thermal Conductivity, W/m°C	0.25-0.33	-	40-45	190-230	0.2

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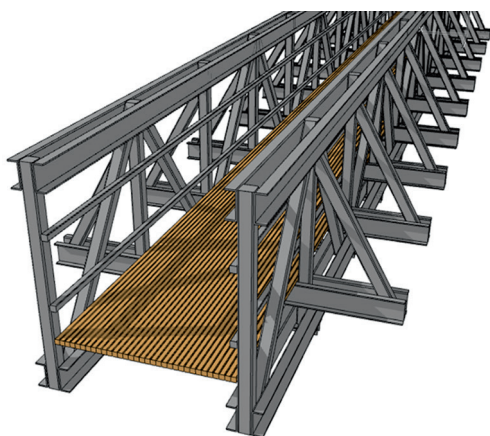
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FIBERGLASS COMPOSITE



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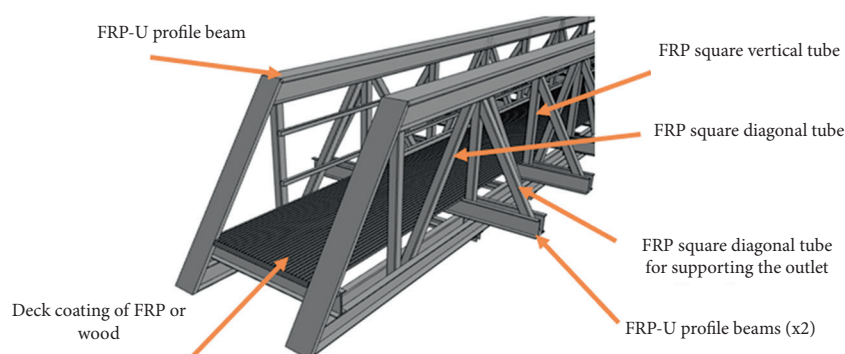


Lenght	Weight	Curvature	Load-bearing capacity	L / 250
12 m	1.84 t	0.05	1.53kN/m	
15 m	2.3 t	0.06	1.53kN/m	
18 m	2.76 t	0.07	1.53kN/m	

Self-weight: $p=23/15=1.53 \text{ kN/m}$
Wind load: according EN 1991-1-3 and EN 1991-1-4.
Pedestrian load according to EN 1991-2 (5 KN/m ²)
Horizontal force at the handrails on the one hand 0.1 kN/m (according to EN 1991-2 p.4.8.)
The support material is concrete C30/37

Cord between the suport axles	12 - 15 - 18 m
Total width	3.1 m
Pedestrian section	1.50 m
Handrail height above deck	1.30 m

The cost of bridge structures depends on the chosen design and customer preferences



Typical design of the bridge construction profile kit with a technical project without VAT, (10 m) — 9150 EUR, (15 m) — 13 700 EUR, (18 m) — 16 450 EUR

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Rope construction with a continuous or lattice deck.
The plaque is placed on the pontoon.
Pontoon selection according to customer's wishes.



Footbrige with a fence on one side

Width 2 m
Handrail height 0,96 m

Lenght (m)	Price Eur without PVN	Weight (kg)
4.00	1156.00	153

Footbrige with two side fencing

Width 1 m
Handrail height 1,10 m

Lenght (m)	Price Eur without PVN	Weight (kg)
7.8	3007.00	417

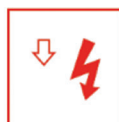


Mobile bridges up to 7 m in length



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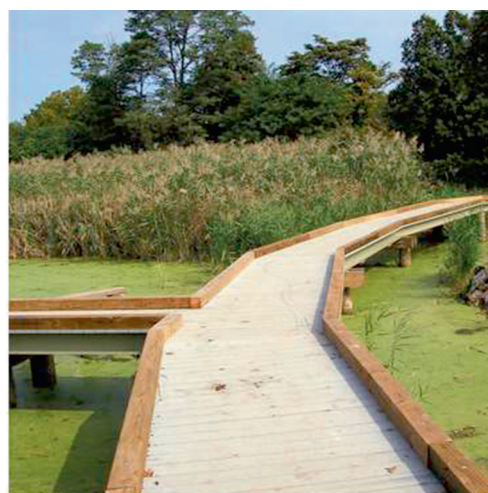
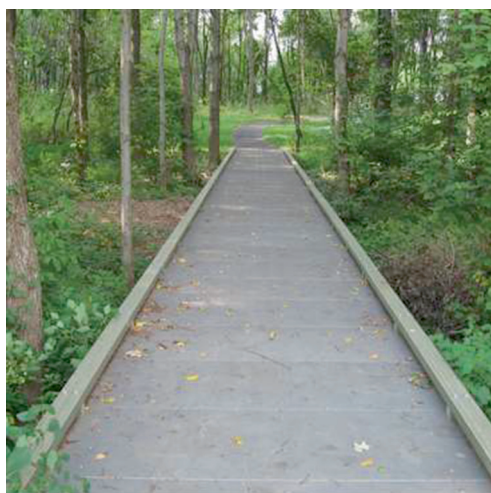
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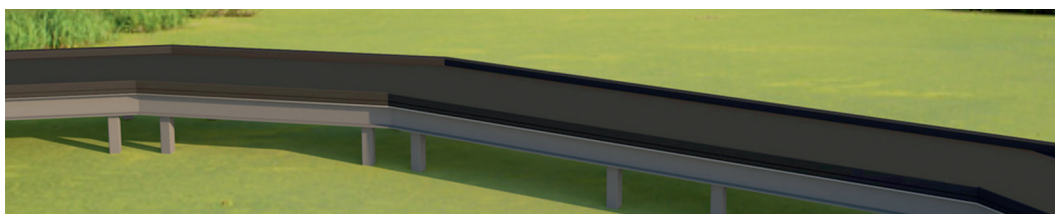
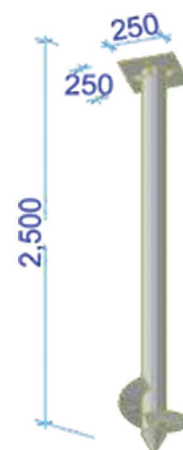
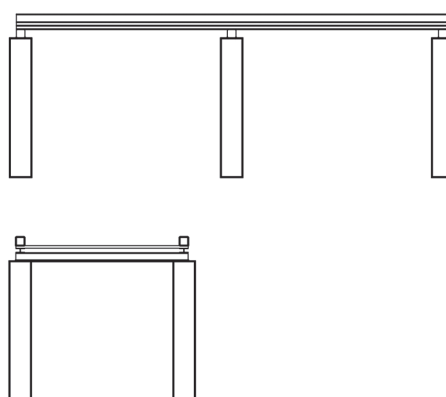
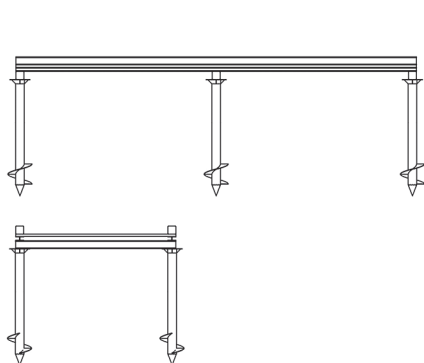
FIBERGLASS COMPOSITE



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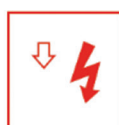


Pedestrian and cyclist footbridges in swampy areas. Fishing, boat moorings on lakes and rivers. You can also create footbridge with handrails. The steps are placed on screw piles or FRP piles. The choice of the required bases and screwdrivers and their length depends on the specifications of the bottom.



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Self-weight: $p=23/15=1.53 \text{ kN/m}$
Wind load: according EN 1991-1-3 and EN 1991-1-4.
Pedestrian load according to EN 1991-2 (5 kN/m ²)
Horizontal force at the handrails on the one hand 0.1 kN/m (according to EN 1991-2 p.4.8.)
The support material is concrete C30/37

Lenght	Weight	Curvature	Load-bearing capacity	L / 250
12 m	3.2 t	0.05	1.53kN/m	
15 m	4 t	0.06	1.53kN/m	
18 m	4.8 t	0.07	1.53kN/m	

Cord between the suport axles	12 - 15 - 18 m
Total width across the axles	4.1 m
Pedestrian section	1.20 m
Cyclist section	1.30 m
Handrail height above deck	1.30 m

Bridge width — 2.5 m pedestrians/cyclists.

Calculation of bridge structures according to EN 1991 -2



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FIBERGLASS COMPOSITE



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Bridge with concrete supports, joints and metal structures
Pedestrian section and fencing made of fiberglass composite.

Lenght	Weight	Loadbearing capacity	L / 600
50 m	2.1 – 3.3 t	1.53kN/m	
75 m	3.2 – 4.9 t	1.53kN/m	
100 m	4.2 – 6.5 t	1.53kN/m	

Wind load: according to EN 1991-1-3 and EN 1991-1-4.
Pedestrian load according to EN 1991-2 (5 kN / m ²)
Horizontal force at the handrails on the one hand 0.1 kN/m (according to EN 1991-2 p.4.8.)

Lenght	50 - 75 - 100 m
Width	1,3 – 2,0 m
Pedestrian section	0,95 – 1,65 m
Deck and railing width	1,0 – 1,75 m
Handle height	1,1 m

Package price of a glass fiber unit profiles for a typical project bridge construction (excluding VAT):

50 m
75 m
100 m

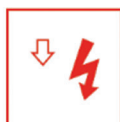
Calculation of bridge structures according to EN 1991 -2

The price of the bridge construction does not include concrete supports, fittings and assemblies.



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FIBERGLASS COMPOSITE



COMPOR



Fiberglass bridge with fiberglass supports and steel towers
Pedestrian section and fencing made of fiberglass composite.

Lenght	50 - 75 - 100 m
Width	1,3 - 2,0 m
Pedestrian section	1,45 m
Deck and railing width	1,52 m
Handle height	1,1 m

Wind load: according to EN 1991-1-3 and EN 1991-1-4.

Pedestrian load according to EN 1991-2 (5 kN / m²)

Horizontal force at the handrails on the one hand
0.1 kN/m (according to EN 1991-2 p.4.8.)

Lenght	Weight	Curvature	Loadbearing capacity	L / 600
50 m	1.84 t	0.05	1.53kN/m	
75 m	2.3 t	0.06	1.53kN/m	
100 m	2.76 t	0.07	1.53kN/m	

Typical design of a bridge construction fiber-optic profile set without VAT

50 m

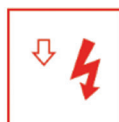
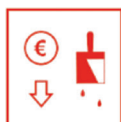
75 m

100 m



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COMPARISON



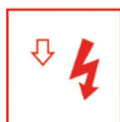
Conveyor service bridges (L = 338 m)

Characteristics	Steel	FRP
Material Properties	Rust	Does not rust
Weight, tons	27.8	7.6
Material costs: - Profiles - Treatment, color In total:	23 200 EUR 18 000 EUR (1500 m ²) 41 200 EUR	32 100 EUR Painted mass 32 100 EUR
Montage	Lifting mechanisms are required (2 weeks) 8 240 EUR	Lifting mechanisms are not required (5 days) 2 500 EUR
Service during operation	Coloring 1-3 years	Not required
Warranty period	10-20 years With service	50 years No service



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REFERENCES



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The pedestrian bridge is 50 m long



Ship service bridge, 24 m each stage



Walking bridge (frame, grid), 72 m



Service bridge in port



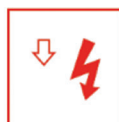
Pedestrian bridge (pedestrian section and railings)

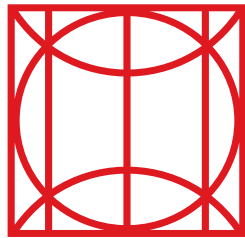


Pedestrian bridge

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