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Illustrations of double-rail STU

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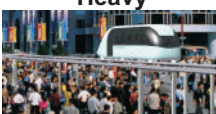

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Key technical and cost characteristics of various types of a double-rail STU implemented in the territory of any country (except Russia)

(double-track flat routes with the length of more than 10 km built beyond the boundaries of urban built-up area*)

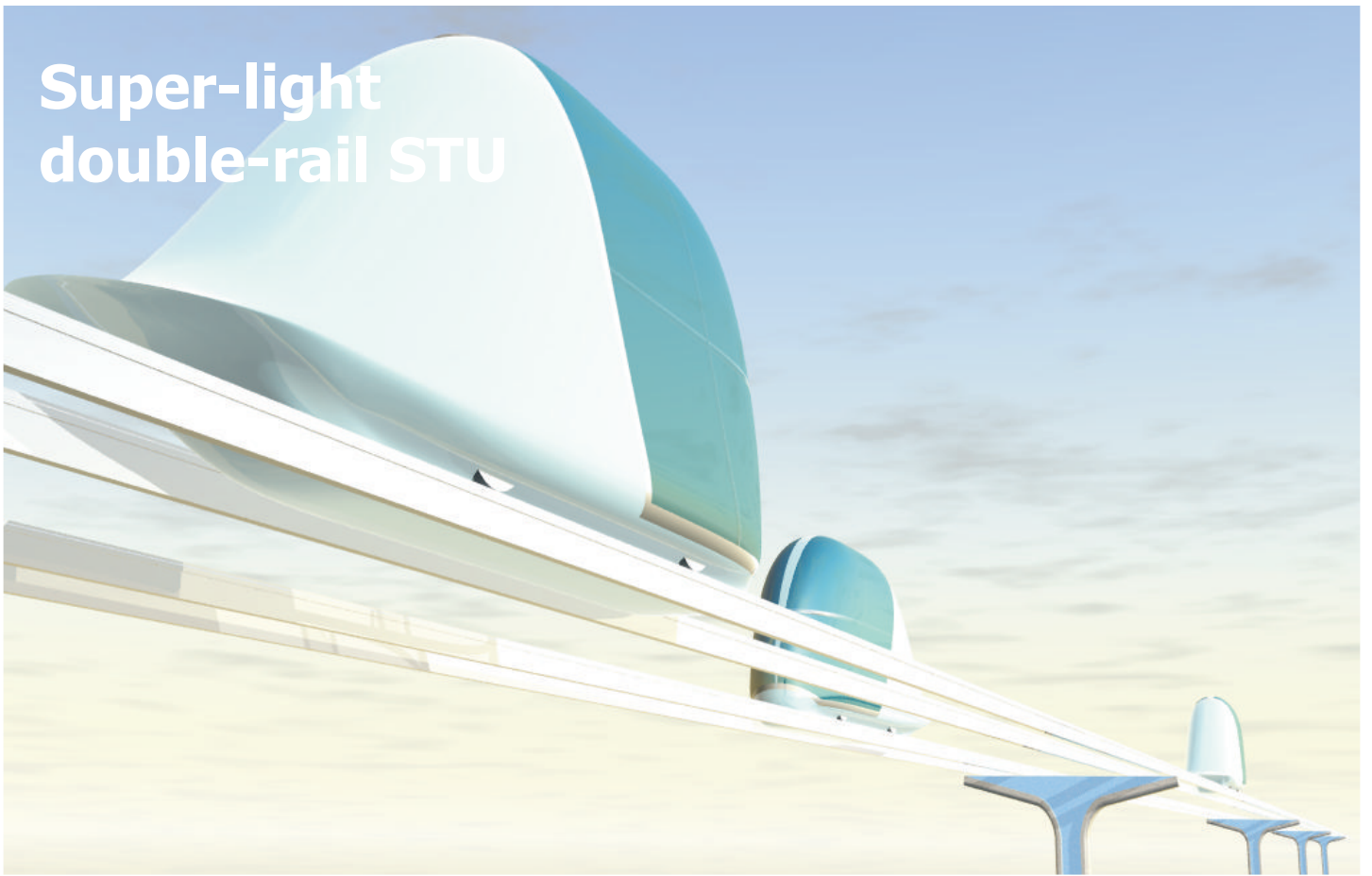
Types of a double-rail STU	Key technical characteristics of passenger / freight STU	Approximate construction cost** of passenger STU routes by the operational speed regimes, mln. €/km					
		STU component	up to 100 km/hour	up to 200 km/hour	up to 300 km/hour	up to 400 km/hour	up to 500 km/hour
 <p>Super-light</p>	Gage width, m 0.5 Unibus carrying capacity: pass. / ton up to 2 / 0.2 Volume of transportation*** (24 h.): thous. pass. / thous. t up to 20 / 2	Track, supports Stations, depot Unibuses Total:	0.6—0.8 0.1—0.2 0.1—0.2 0.8—1.2	0.8—1.2 0.2—0.3 0.2—0.3 1.2—1.8	— — — —	— — — —	— — — —
 <p>Light</p>	Gage width, m 1.0 Unibus carrying capacity: pass. / ton up to 5 / 0.5 Volume of transportation*** (24 h.): thous. pass. / thous. t up to 50 / 5	Track, supports Stations, depot Unibuses Total:	0.8—1.2 0.2—0.3 0.2—0.3 1.2—1.8	1.2—1.8 0.2—0.4 0.2—0.4 1.6—2.6	1.8—2.4 0.4—0.6 0.4—0.6 2.6—3.6	2.4—3.0 0.6—0.8 0.6—0.8 3.6—4.6	— — — —
 <p>Medium</p>	Gage width, m 1.5 Unibus carrying capacity: pass. / ton up to 10 / 1 Volume of transportation*** (24 h.): thous. pass. / thous. t up to 100 / 10	Track, supports Stations, depot Unibuses Total:	1.2—1.8 0.3—0.4 0.3—0.4 1.8—2.6	1.8—2.4 0.4—0.6 0.4—0.6 2.6—3.6	2.4—3.0 0.6—0.8 0.6—0.8 3.6—4.6	3.0—3.6 0.8—1.0 0.8—1.0 4.6—5.6	3.6—4.2 1.0—1.2 1.0—1.2 5.6—6.6
 <p>Heavy</p>	Gage width, m 2.0 Unibus carrying capacity: pass. / ton up to 20 / 2 Volume of transportation*** (24 h.): thous. pass. / thous. t up to 200 / 20	Track, supports Stations, depot Unibuses Total:	1.8—2.6 0.4—0.6 0.4—0.6 2.6—3.8	2.6—3.2 0.6—0.8 0.6—0.8 3.8—4.8	3.2—3.8 1.0—1.2 1.0—1.2 5.2—6.2	3.8—4.4 1.2—1.4 1.2—1.4 6.2—7.2	4.4—5.2 1.4—1.8 1.4—1.8 7.2—8.8
 <p>Super-heavy</p>	Gage width, m 2.5 Unibus carrying capacity: pass. / ton up to 50 / 5 Volume of transportation*** (24 h.): thous. pass. / thous. t up to 500 / 50	Track, supports Stations, depot Unibuses Total:	2.8—3.6 0.6—0.8 0.8—1.0 4.2—5.4	3.6—4.4 0.8—1.0 1.0—1.2 5.4—6.6	4.4—5.2 1.0—1.2 1.2—1.4 6.6—7.8	5.2—6.0 1.4—1.6 1.4—1.6 8.0—9.2	6.0—7.0 1.6—2.0 1.6—2.0 9.2—11.0

* the total cost will be 20—50% higher for STU routes built under conditions of rugged terrain or urban built-up environment or for shorter STU routes. The cost of freight routes will be 10—20% lower and the cost of electrified (with a contact network) routes will be 15—30% higher

** the given cost (in prices as of January 1, 2007) refers to STU routes with single unibuses (not more than one module per 1 span) circulating along the track. The cost of STU with unibuses combined into a train (more than one module per 1 span) will be 30—60% higher; in this case the total STU productivity will not be increased as in order to ensure higher safety the travel intervals of such trains are to be increased as compared with single unibuses

*** the volume of transportation (passenger and freight) given in the table corresponds to about 10% of the maximal design (carrying) capacity of STU (for not more than 1 unibus per one span). In future with the development of a relevant automatic system to control a high-speed transportation flow it will be possible to considerably increase the indicated volume of transportation in the already-built STU routes

Super-light double-rail STU



Lowest-cost transportation system of the "second level"

Double-track route, gage width 0.5 m (without infrastructure and unibuses):

- from 0.6—0.8 mln. €/km on a plain;
- from 0.8—1.2 mln. €/km in a city or in the mountains.

Most economically efficient transportation system of the "second level"

Energy consumption by a unibus at the travel speed of 100 km/hour:

- 0.6—0.8 kWt·hour/100 pass.·km;
- 0.15—0.2 litre of fuel/100 pass.·km.

Most environmentally friendly transportation system of the "second level"

Land allocations for STU route (without infrastructure):

- 40—60 sq. m/km;
- 0.004—0.006 ha/km.

Most affordable transportation system of the "second level"

Net cost of passenger travel:

- 0.4—0.5 €/100 pass.·km with the costs paid back during 1—3 years.

Lowest-cost high-speed rail car

The cost of a 2-seat passenger unibus (speed up to 200 km/hour):

- 15,000—20,000 € — serial production;
- 30,000—50,000 € — small-scale production;
- 60,000—80,000 € — individual order.



Light double-rail STU



Lowest-cost transportation system of the "second level"

Double-track route, gage width 1 m (without infrastructure and unibuses):

- from 0.8—1.2 mln. €/km on a plain;
- from 1.2—1.6 mln. €/km in a city or in the mountains.

Most economically efficient transportation system of the "second level"

Energy consumption by a unibus at the travel speed of 100 km/hour:

- 0.6—0.8 kWt·hour/100 pass.·km;
- 0.15—0.2 litre of fuel/100 pass.·km.

Most environmentally friendly transportation system of the "second level"

Land allocations for STU route (without infrastructure):

- 60—80 sq. m/km;
- 0.006—0.008 ha/km.

Most affordable transportation system of the "second level"

Net cost of passenger travel:

- 0.5—0.6 €/100 pass.·km with the costs paid back during 2—3 years.

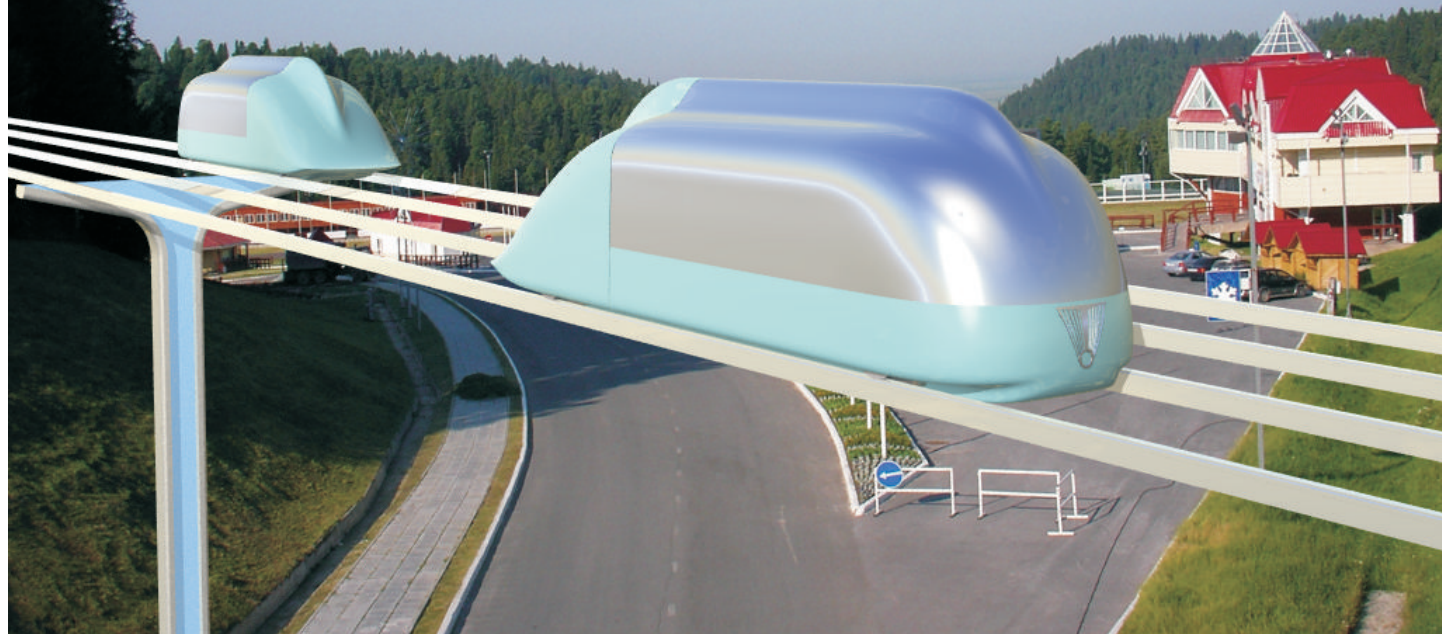
Lowest-cost high-speed rail car

The cost of a 5-seat passenger unibus (speed up to 350 km/hour):

- 30,000—40,000 € — serial production;
- 60,000—80,000 € — small-scale production;
- 90,000—120,000 € — individual order.



Medium double-rail STU



Lowest-cost transportation system of the "second level"

Double-track route, gage width 1.5 m (without infrastructure and unibuses):

- from 1.2—1.8 mln. €/km on a plain;
- from 1.8—2.4 mln. €/km in a city or in the mountains.

Most economically efficient transportation system of the "second level"

Energy consumption by a unibus at the travel speed of 100 km/hour:

- 0.6—0.8 kWt·hour/100 pass.·km;
- 0.15—0.2 litre of fuel/100 pass.·km.

Most environmentally friendly transportation system of the "second level"

Land allocations for STU route (without infrastructure):

- 80—100 sq. m/km;
- 0.008—0.01 ha/km.

Most affordable transportation system of the "second level"

Net cost of passenger travel:

- 0.6—0.7 €/100 pass.·km with the costs paid back during 2—3 years.

Lowest-cost high-speed rail car

The cost of a 10-seat passenger unibus (speed up to 500 km/hour):

- 40,000—60,000 € — serial production;
- 80,000—100,000 € — small-scale production;
- 150,000—200,000 € — individual order.



Heavy double-rail STU



Lowest-cost transportation system of the "second level"

Double-track route, gage width 2 m (without infrastructure and unibuses):

- from 1.8—2.6 mln. €/km on a plain;
- from 2.6—3.6 mln. €/km in a city or in the mountains.

Most economically efficient transportation system of the "second level"

Energy consumption by a unibus at the travel speed of 100 km/hour:

- 0.6—0.8 kWt·hour/100 pass.·km;
- 0.15—0.2 litre of fuel/100 pass.·km.

Most environmentally friendly transportation system of the "second level"

Land allocations for STU route (without infrastructure):

- 100—150 sq. m/km;
- 0.01—0.015 ha/km.

Most affordable transportation system of the "second level"

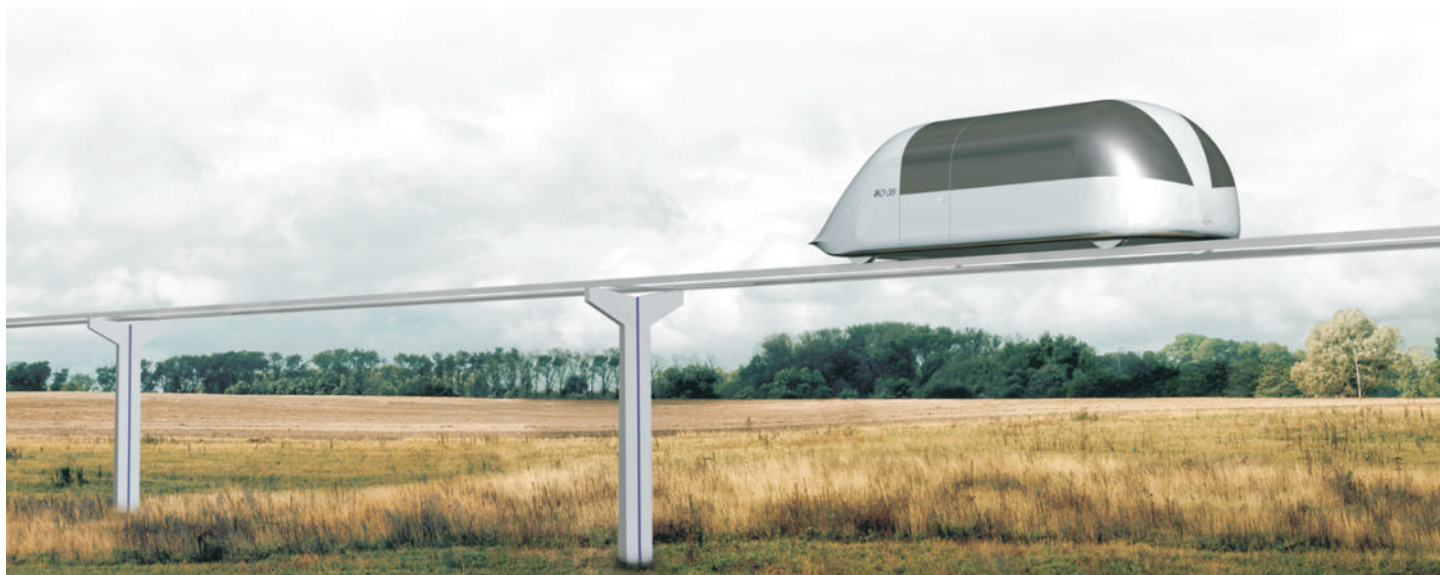
Net cost of passenger travel:

- 0.7—0.8 €/100 pass.·km with the costs paid back during 2—3 years.

Lowest-cost high-speed rail car

The cost of a 20-seat passenger unibus (speed up to 500 km/hour):

- 60,000—90,000 € — serial production;
- 120,000—150,000 € — small-scale production;
- 250,000—300,000 € — individual order.



Super-heavy double-rail STU



Lowest-cost transportation system of the "second level"

Double-track route, gage width 2.5 m (without infrastructure and unibuses):

- from 2.8—3.6 mln. €/km on a plain;
- from 3.6—5.0 mln. €/km in a city or in the mountains.

Most economically efficient transportation system of the "second level"

Energy consumption by a unibus at the travel speed of 100 km/hour:

- 0.6—0.8 kWt·hour/100 pass.·km;
- 0.15—0.2 litre of fuel/100 pass.·km.

Most environmentally friendly transportation system of the "second level"

Land allocations for STU route (without infrastructure):

- 150—200 sq. m/km;
- 0.015—0.02 ha/km.

Most affordable transportation system of the "second level"

Net cost of passenger travel:

- 0.8—1.0 €/100 pass.·km with the costs paid back during 3—5 years.

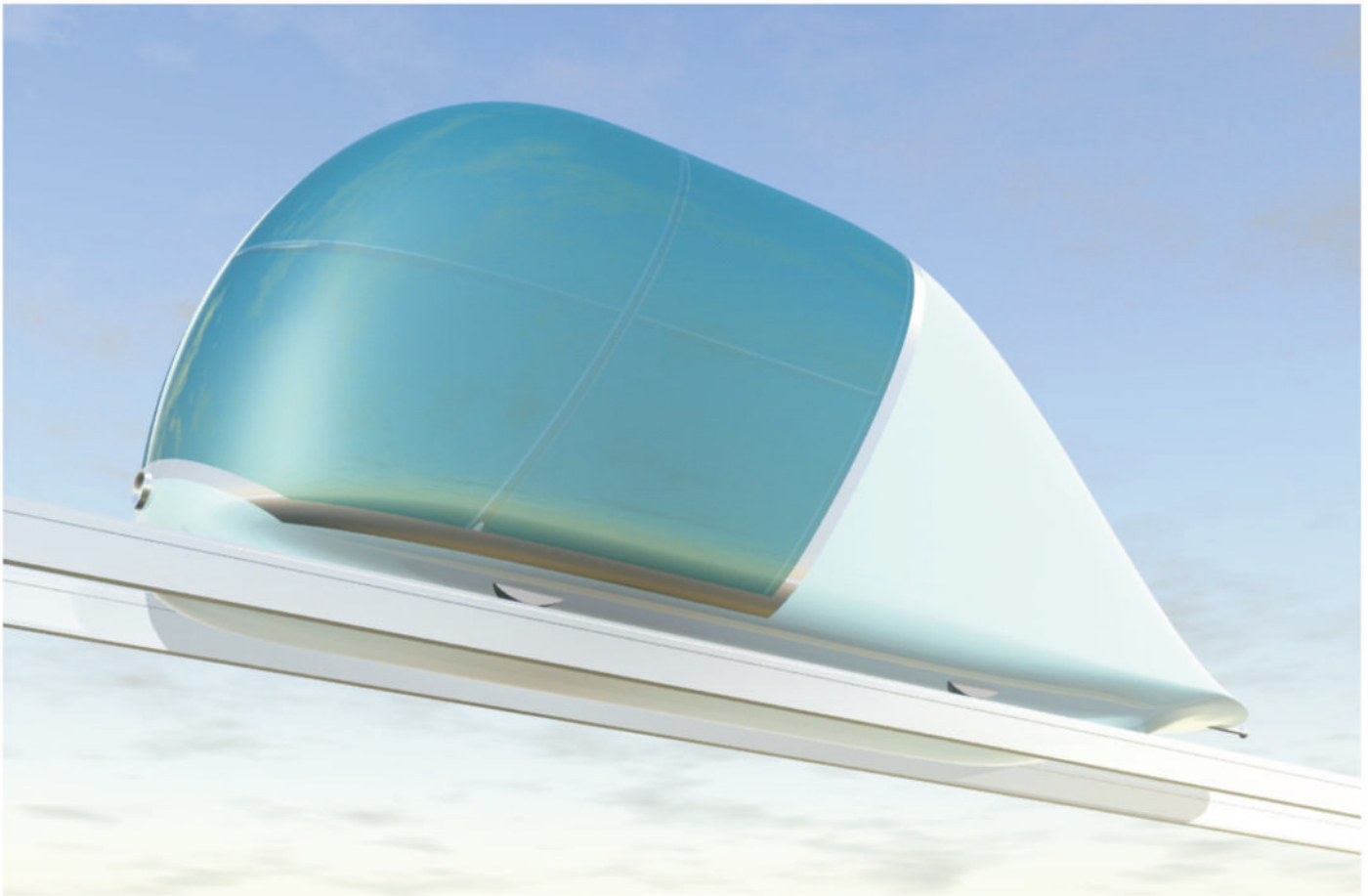
Lowest-cost high-speed rail car

The cost of a 50-seat passenger unibus (speed up to 500 km/hour):

- 120,000—150,000 € — serial production;
- 200,000—250,000 € — small-scale production;
- 300,000—350,000 € — individual order.



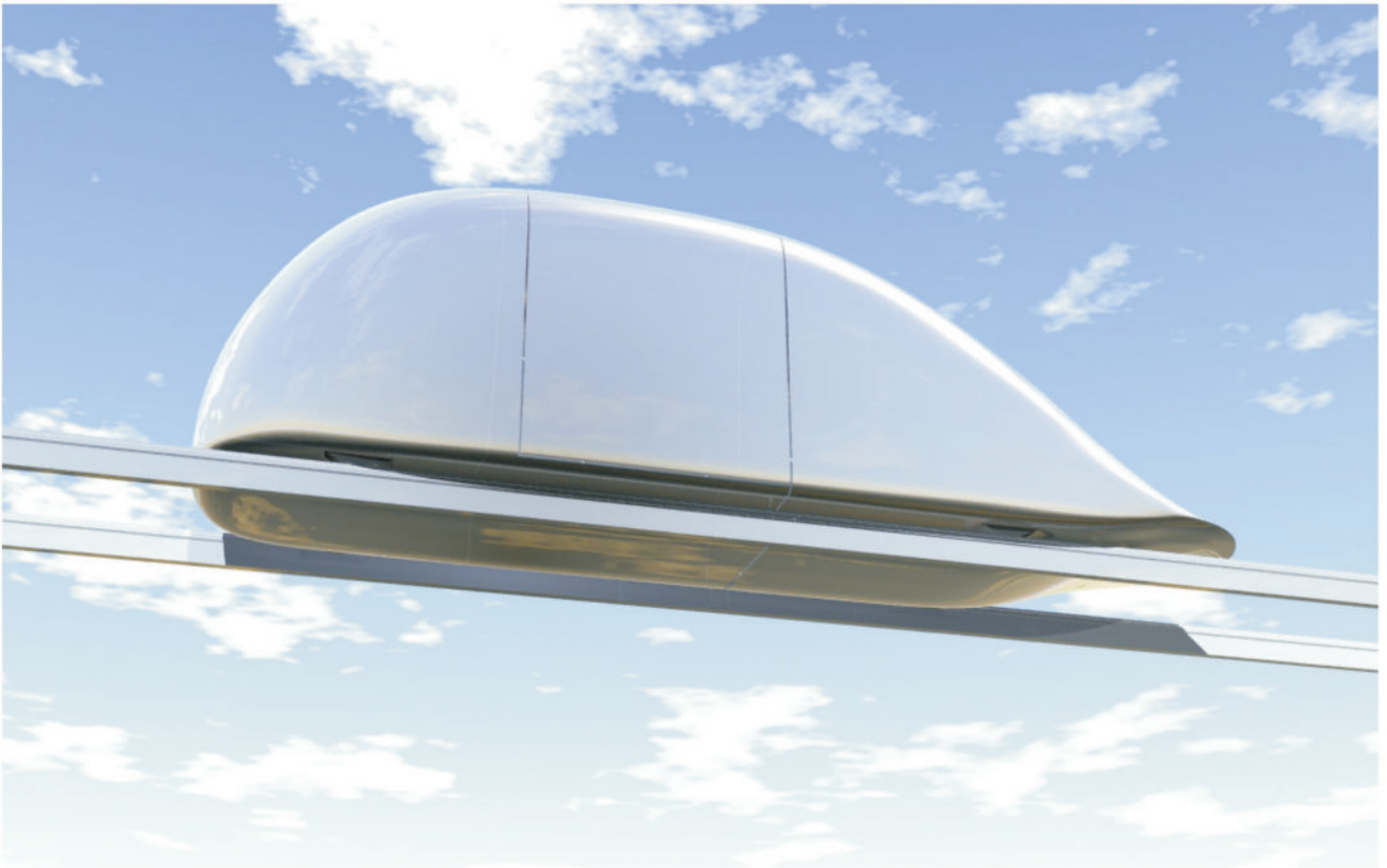
Unibus U-301PE



Key technical characteristics

Purpose	inter-city passenger
Wheel formula	4×2
Overall dimensions, mm:	
- length (with butt-joint connections)	4000
- width	800
- height	1620
Gage, mm	500
Base, mm	1900
Mass, kg:	
- equipped	450
- full (2 passengers)	600
Passenger carrying capacity, passengers	2
Maximal travel speed, km/hour	150
Sanitary and hygienic block	no
Climate control inside the unibus	yes
Electric drive power (at speed of 150 km/hour), kWt	5.4
Average fuel consumption at the travel speed of 150 km/hour (on conversion of electric energy on gasoline and taking into account energy consumption for conditioning and lighting of a saloon), kg:	
- per 1 hour	1.9
- per 100 km of running	1.3
- per 100 pass.×km	0.65

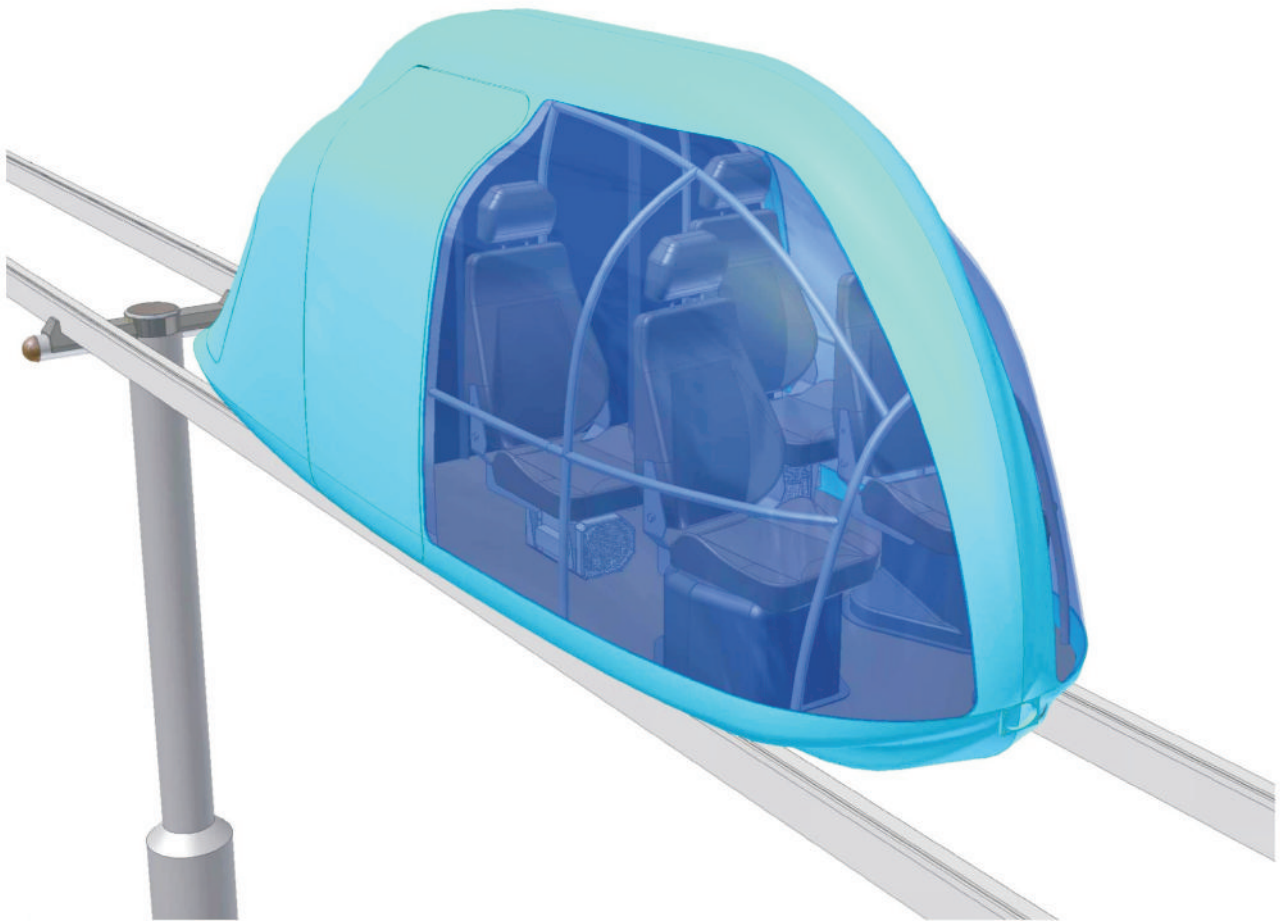
Unibus U-312ME



Key technical characteristics

Purpose	inter-city freight/passenger
Wheel formula	4×2
Overall dimensions, mm:	
- length (with butt-joint connections)	5700
- width	1300
- height	1700
Gage, mm	1000
Base, mm	3000
Mass, kg:	
- equipped	800
- full (4 passengers + 250 kg freight)	1350
Passenger carrying capacity, passengers	4
Load carrying capacity, kg	250
Maximal travel speed, km/hour	180
Sanitary and hygienic block	no
Climate control inside the unibus	yes
Electric drive power (at speed of 180 km/hour), kWt	14
Average fuel consumption at the travel speed of 180 km/hour (on conversion of electric energy on gasoline and taking into account energy consumption for conditioning and lighting of a saloon), kg:	
- per 1 hour	4.4
- per 100 km of running	2.4
- per 100 pass.×km	0.6

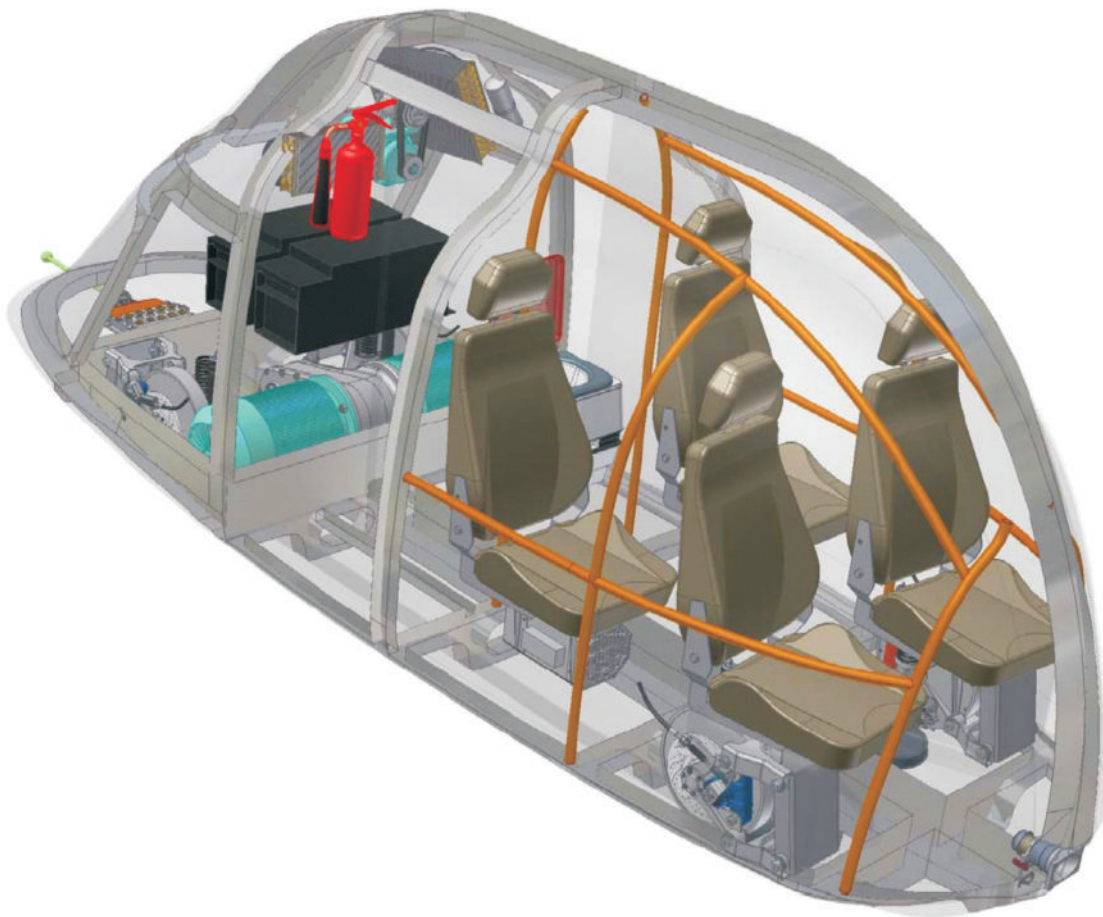
Unibus U-314PT



Key technical characteristics

Purpose	inter-city passenger
Wheel formula	4×2
Overall dimensions, mm:	
- length (with butt-joint connections)	5280
- width	1600
- height	1935
Gage, mm	1000
Base, mm	2750
Mass, kg:	
- equipped	900
- full (4 passengers)	1300
Passenger carrying capacity, passengers	4
Maximal travel speed, km/hour	306
Sanitary and hygienic block	yes
Climate control inside the unibus	yes
Drive power (diesel engine with an automatic gear box)	
at the speed of 306 km/hour, kWt	115
Average fuel consumption at the travel speed of 306 km/hour (including energy consumption for conditioning and lighting of the salon), kg:	
- per 1 hour	29
- per 100 km of running	9.5
- per 100 pass.×km	2.4

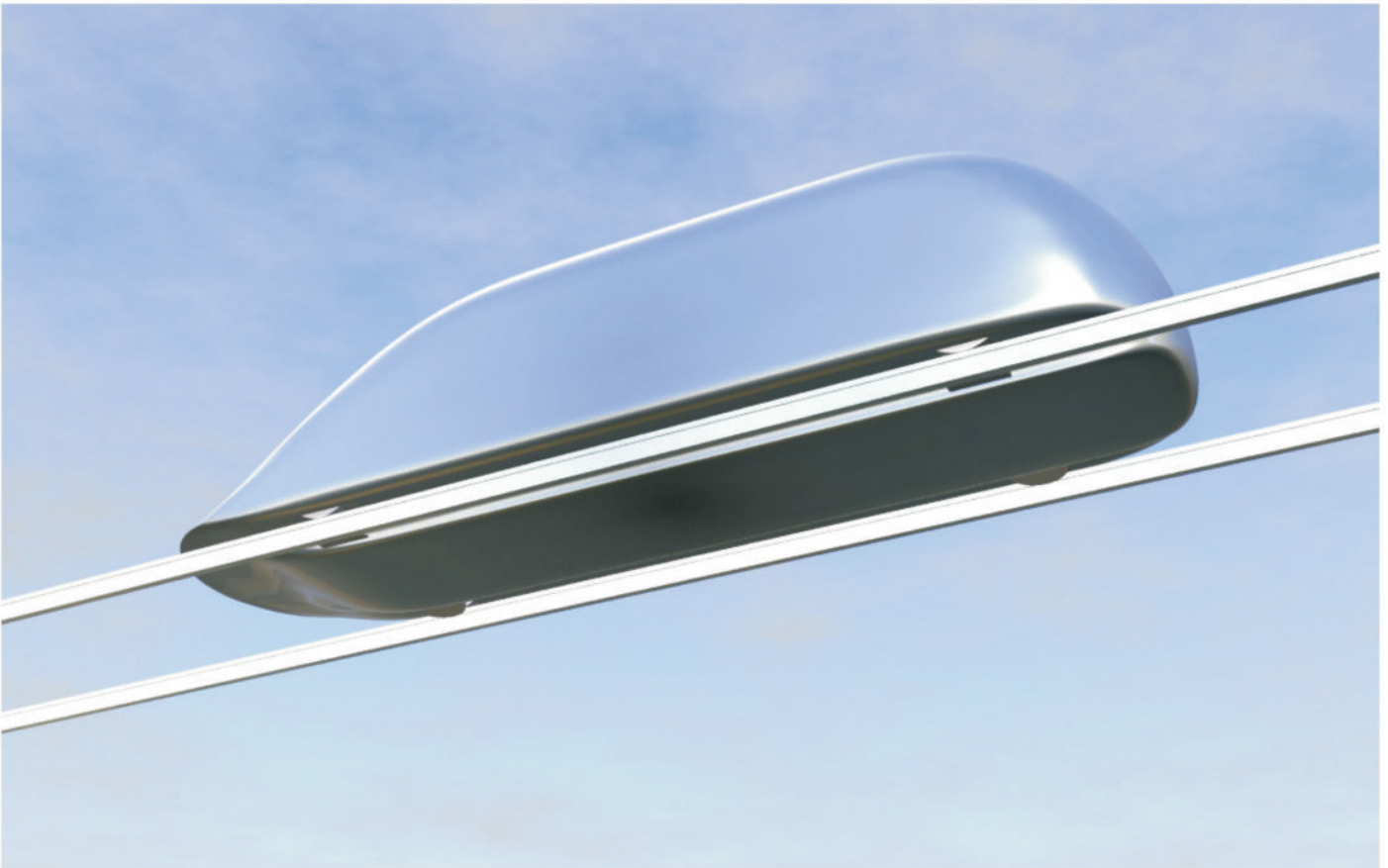
Unibus U-315PE



Key technical characteristics

Purpose	inter-city passenger
Wheel formula	4×2
Overall dimensions, mm:	
- length (with butt-joint connections)	5280
- width	1600
- height	1935
Gage, mm	1000
Base, mm	2750
Mass, kg:	
- equipped	840
- full (4 passengers)	1300
Passenger carrying capacity, passengers	4
Maximal travel speed, km/hour	200
Sanitary and hygienic block	yes
Climate control inside the unibus	yes
Electric drive power (at speed of 200 km/hour), kWt	27
Average fuel consumption at the travel speed of 200 km/hour (on conversion of electric energy on gasoline and taking into account energy consumption for conditioning and lighting of a saloon), kg:	
- per 1 hour	7.6
- per 100 km of running	3.8
- per 100 pass.×km	0.95

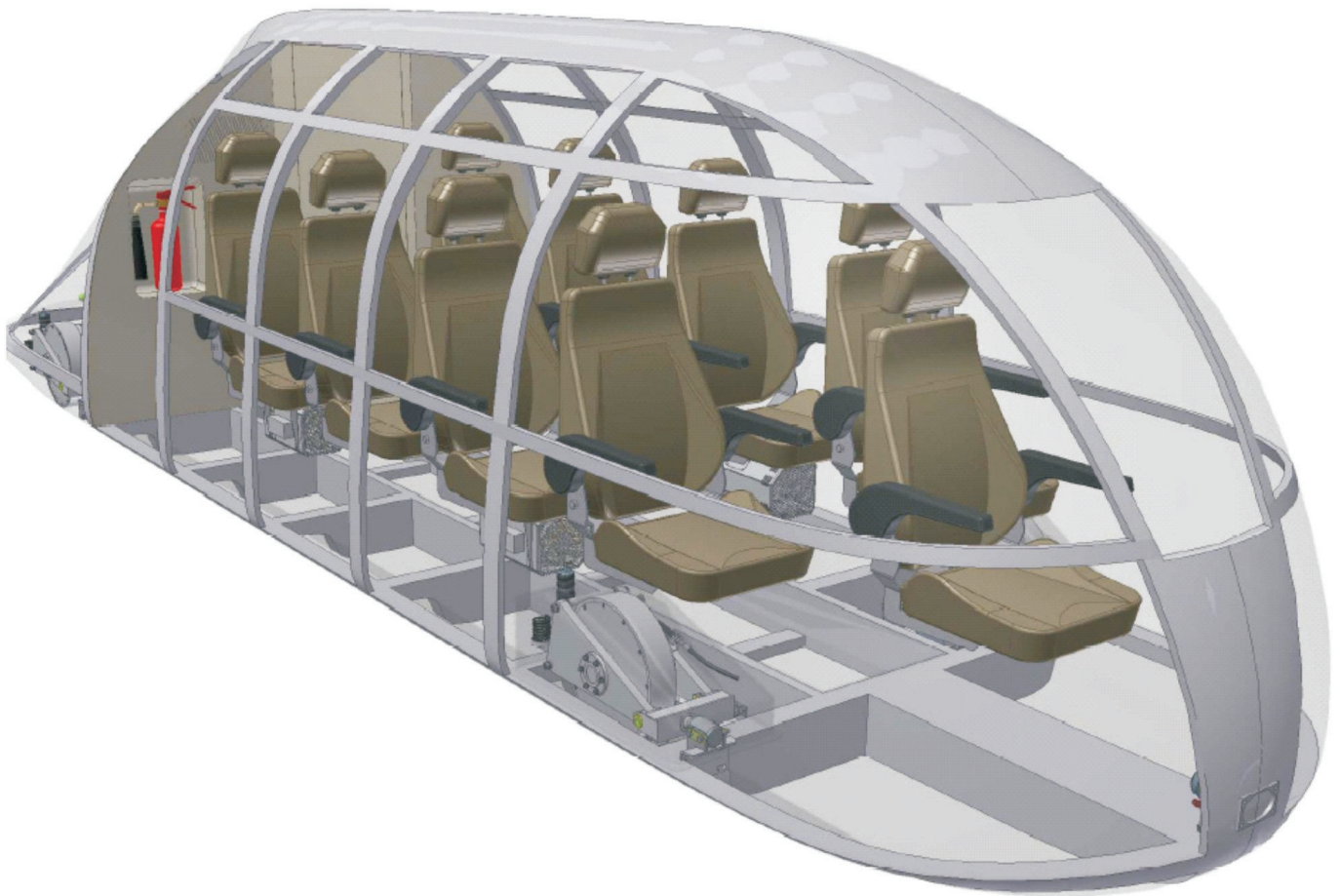
Unibus U-321ME



Key technical characteristics

Purpose	inter-city freight/passenger
Wheel formula	4×2
Overall dimensions, mm:	
- length (with butt-joint connections)	7750
- width	1850
- height	1980
Gage, mm	1500
Base, mm	4500
Mass, kg:	
- equipped	1400
- full (8 passengers + 500 kg freight)	2500
Passenger carrying capacity, passengers	8
Load carrying capacity, kg	500
Maximal travel speed, km/hour	180
Sanitary and hygienic block	yes
Climate control inside the unibus	yes
Electric drive power (at speed of 180 km/hour), kWt	22.5
Average fuel consumption at the travel speed of 180 km/hour (on conversion of electric energy on gasoline and taking into account energy consumption for conditioning and lighting of a saloon), kg:	
- per 1 hour	6.6
- per 100 km of running	3.67
- per 100 pass.×km	0.46

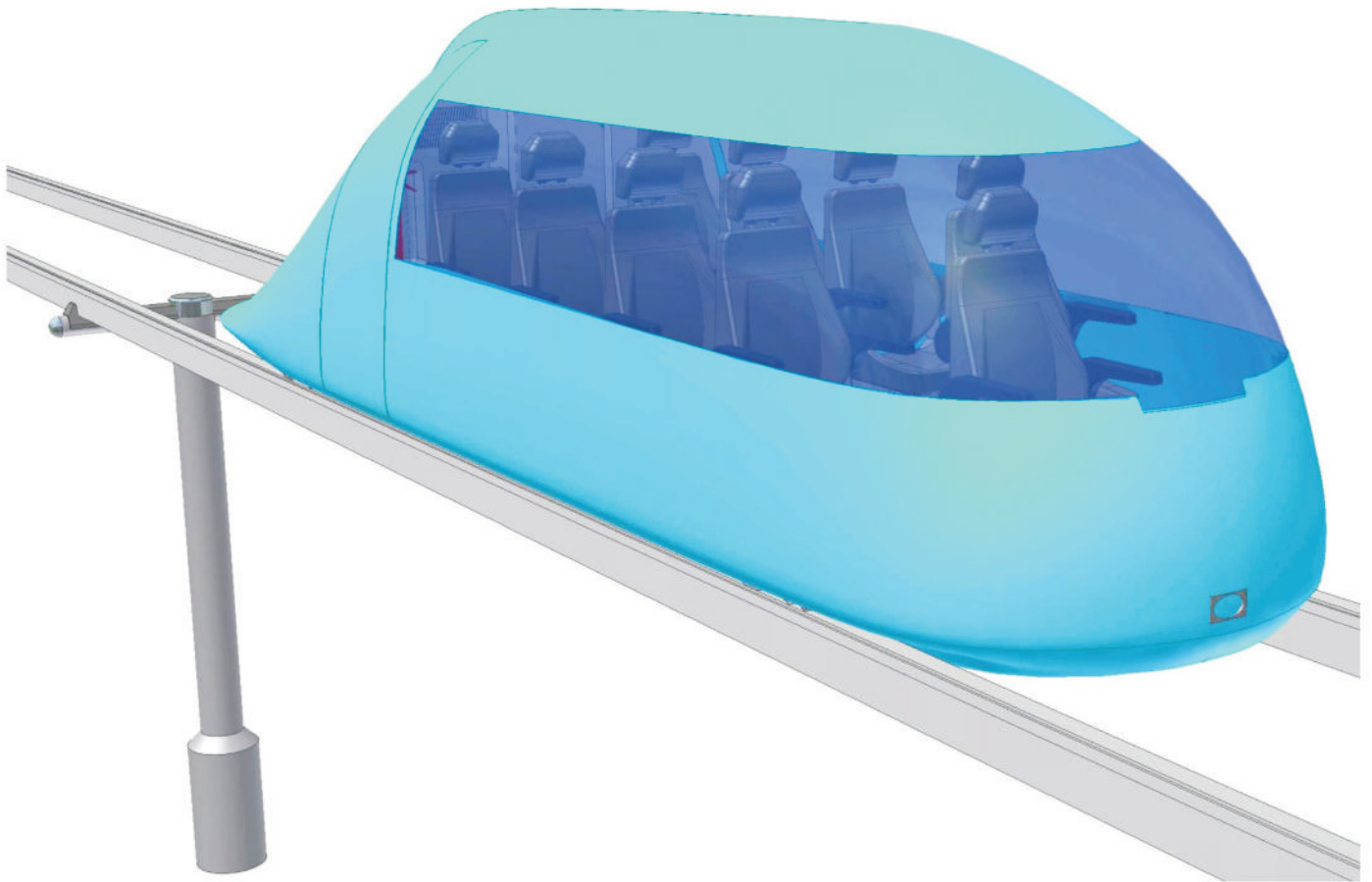
Unibus U-321PE



Key technical characteristics

Purpose	inter-city passenger
Wheel formula	4×2
Overall dimensions, mm:	
- length (with butt-joint connections)	7750
- width	1850
- height	1980
Gage, mm	1500
Base, mm	4500
Mass, kg:	
- equipped	1600
- full (9 passengers)	2300
Passenger carrying capacity, passengers	9
Maximal travel speed, km/hour	200
Sanitary and hygienic block	yes
Climate control inside the unibus	yes
Electric drive power (at speed of 200 km/hour), kWt	37
Average fuel consumption at the travel speed of 200 km/hour (on conversion of electric energy on gasoline and taking into account energy consumption for conditioning and lighting of a saloon), kg:	
- per 1 hour	9.6
- per 100 km of running	4.8
- per 100 pass.×km	0.53

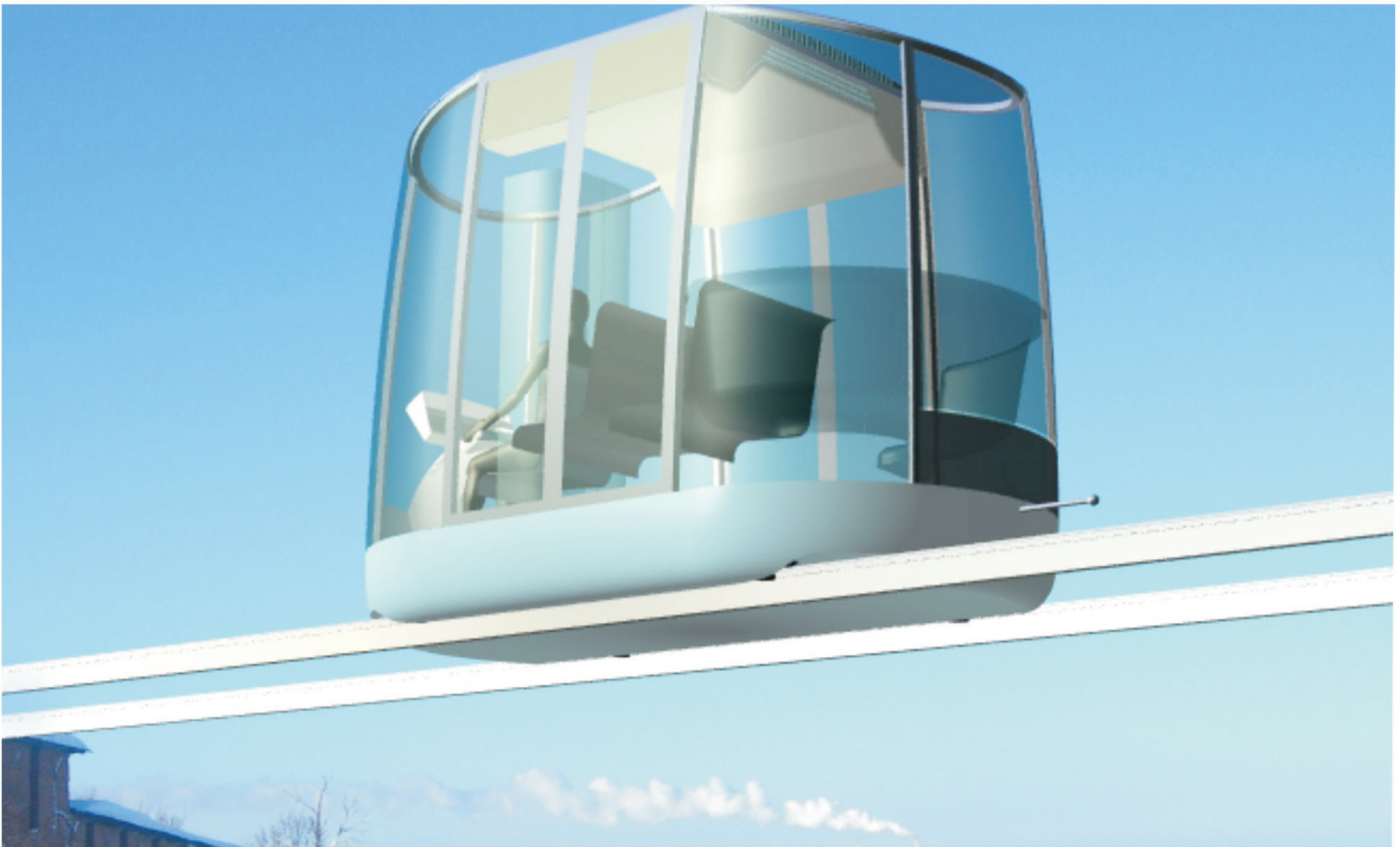
Unibus U-321PT



Key technical characteristics

Purpose	inter-city passenger
Wheel formula	4×2
Overall dimensions, mm:	
- length (with butt-joint connections)	7750
- width	1850
- height	1980
Gage, mm	1500
Base, mm	4500
Mass, kg:	
- equipped	1600
- full (9 passengers)	2300
Passenger carrying capacity, passengers	9
Maximal travel speed, km/hour	300
Sanitary and hygienic block	yes
Climate control inside the unibus	yes
Drive power (diesel engine with an automatic gear box) at the speed of 300 km/hour, kWt	145
Average fuel consumption at the travel speed of 306 km/hour (including energy consumption for conditioning and lighting of the salon), kg:	
- per 1 hour	46.2
- per 100 km of running	15.4
- per 100 pass.×km	1.71

Unibus U-322PE



Key technical characteristics

Purpose	city passenger
Wheel formula	4×4
Overall dimensions, mm:	
- length (with butt-joint connections)	4200
- width	2100
- height	2800
Gage, mm	1500
Base, mm	2200
Mass, kg:	
- equipped	1300
- full (9 passengers)	1975
Passenger carrying capacity, passengers:	
- comfortable	9
- maximal	18
Maximal travel speed, km/hour	105
Sanitary and hygienic block	no
Climate control inside the unibus	yes
Electric drive power (at speed of 65 km/hour), kWt	12.5
Average fuel consumption at the travel speed of 65 km/hour (on conversion of electric energy on gasoline and taking into account energy consumption for conditioning and lighting of a saloon), kg:	
- per 1 hour	3.9
- per 100 km of running	6.0
- per 100 pass.×km	0.4

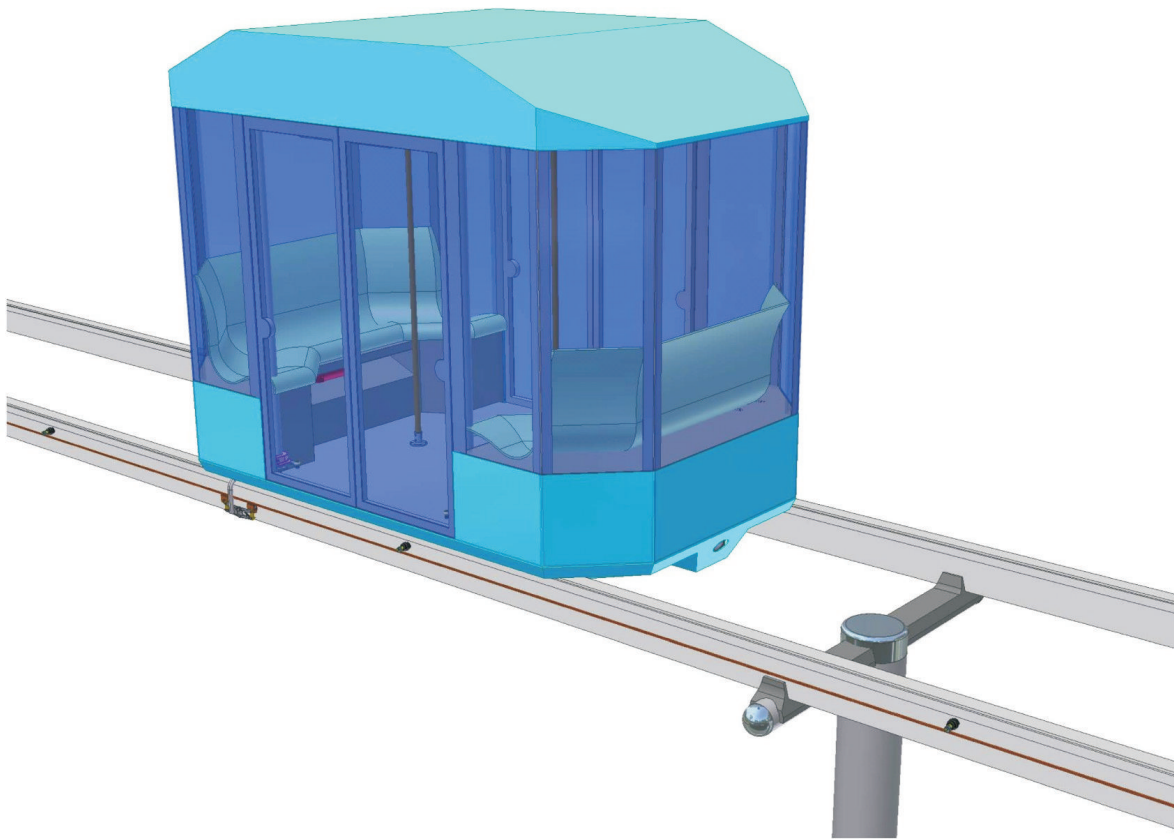
Unibus U-324PE



Key technical characteristics

Purpose	city passenger
Wheel formula	4×4
Overall dimensions, mm:	
- length (with butt-joint connections)	5340
- width	1850
- height	2450
Gage, mm	1500
Base, mm	2000
Mass, kg:	
- equipped	1500
- full (12 passengers)	2400
Passenger carrying capacity, passengers:	
- comfortable	12
- maximal	15
Maximal travel speed, km/hour	100
Sanitary and hygienic block	no
Climate control inside the unibus	yes
Electric drive power (at speed of 60 km/hour), kWt	2.2
Average fuel consumption at the travel speed of 60 km/hour (on conversion of electric energy on gasoline and taking into account energy consumption for conditioning and lighting of a saloon), kg:	
- per 1 hour	1.9
- per 100 km of running	3.1
- per 100 pass.×km	0.26

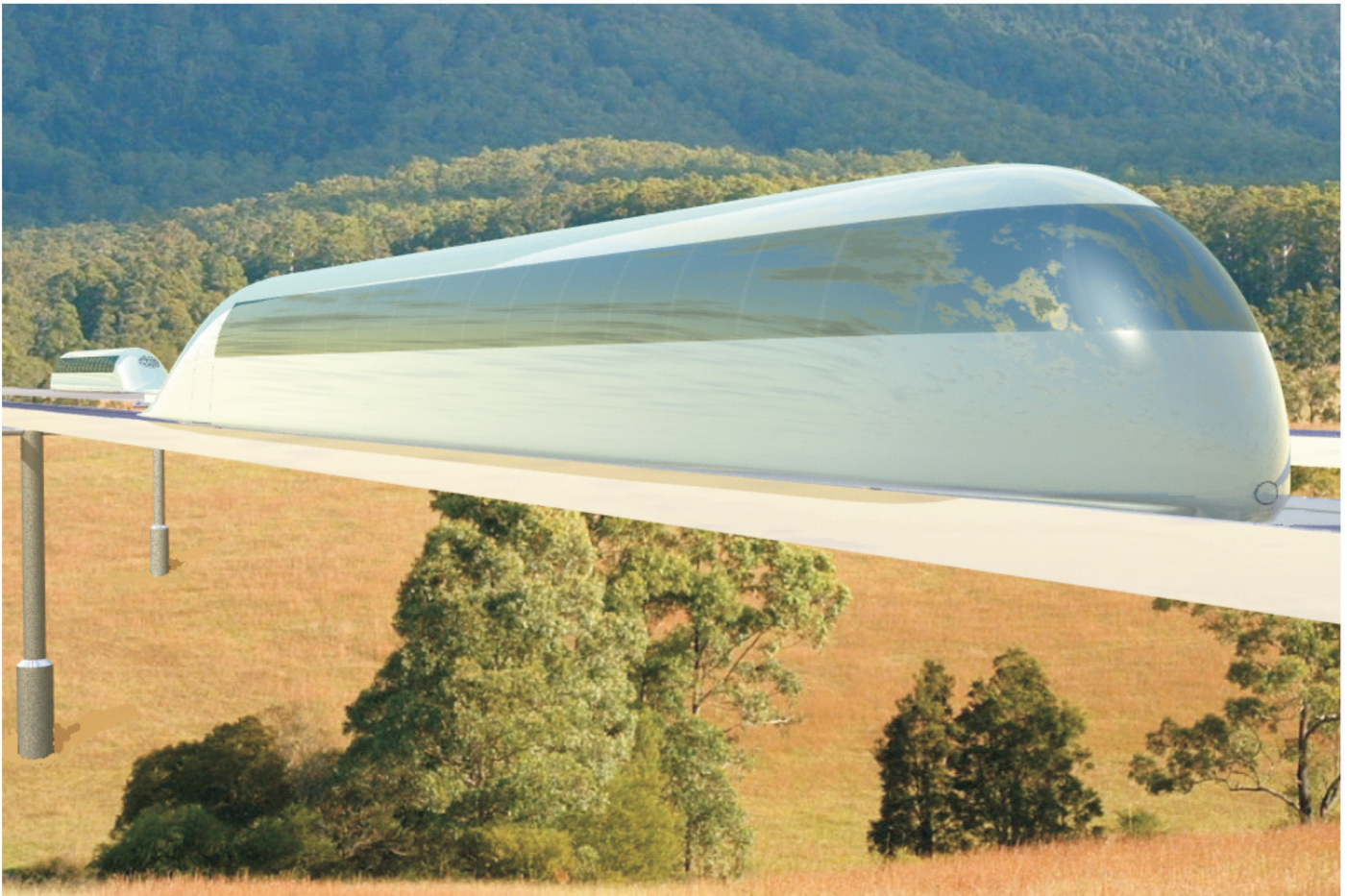
Unibus U-325PE



Key technical characteristics

Purpose	city passenger
Wheel formula	4×4
Overall dimensions, mm:	
- length (with butt-joint connections)	3640
- width	1850
- height	2450
Gage, mm	1500
Base, mm	2000
Mass, kg:	
- equipped	1500
- full (12 passengers)	2400
Passenger carrying capacity, passengers:	
- comfortable	12
- maximal	15
Maximal travel speed, km/hour	80
Sanitary and hygienic block	no
Climate control inside the unibus	yes
Electric drive power (at speed of 60 km/hour), kWt	6.5
Average fuel consumption at the travel speed of 60 km/hour (on conversion of electric energy on gasoline and taking into account energy consumption for conditioning and lighting of a saloon), kg:	
- per 1 hour	2.8
- per 100 km of running	4.7
- per 100 pass.×km	0.4

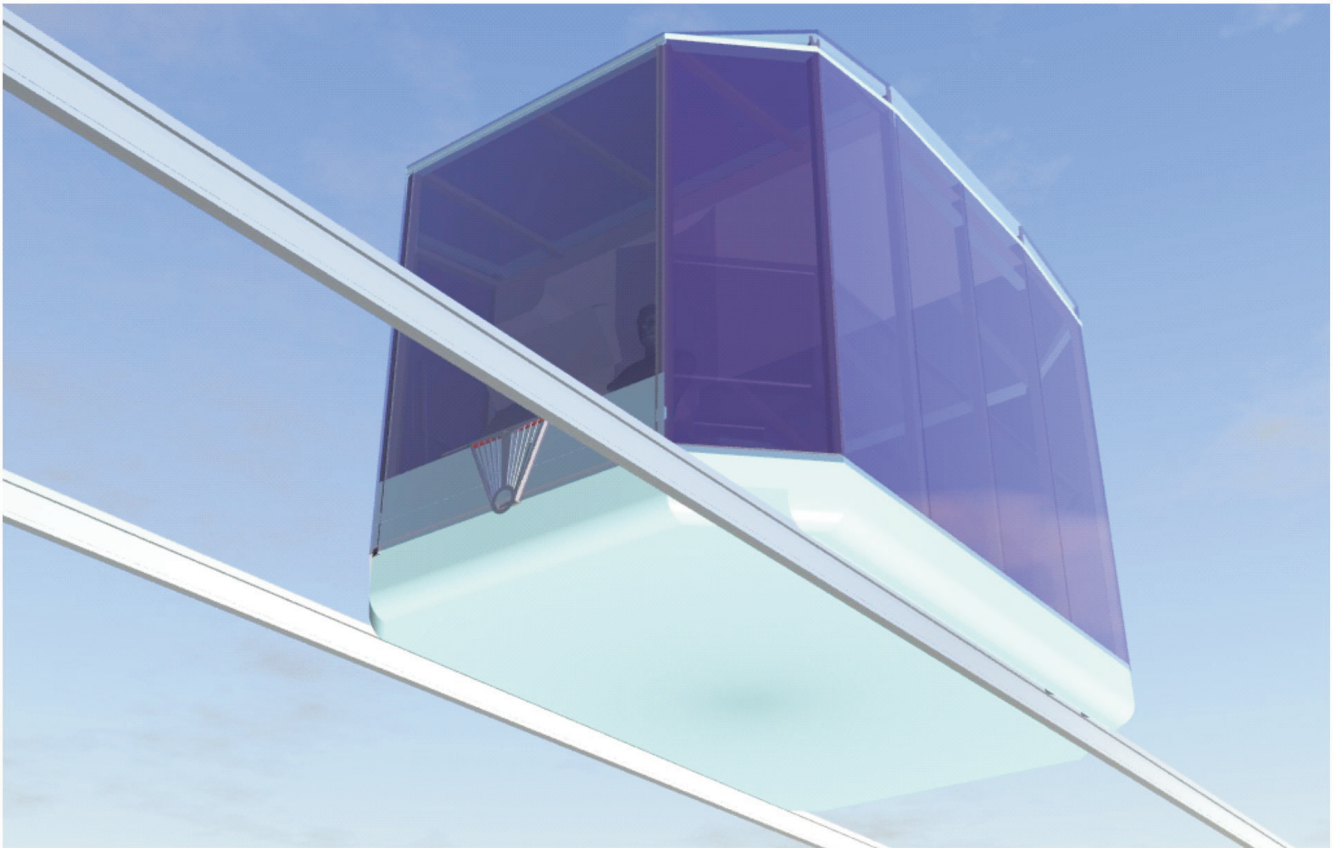
Unibus U-326PA



Key technical characteristics

Purpose	inter-city passenger
Wheel formula	4×2
Overall dimensions, mm:	
- length (with butt-joint connections)	20000
- width	1850
- height	2200
Gage, mm	1500
Base, mm	12450
Mass, kg:	
- equipped	5100
- full (30 passengers)	7700
Passenger carrying capacity, passengers	30
Maximal travel speed, km/hour	340
Sanitary and hygienic block	yes
Climate control inside the unibus	yes
Drive power (gas-engine with an automatic gear box)	
at the speed of 340 km/hour, kWt	240
Average fuel consumption at the travel speed of 340 km/hour (including energy consumption for conditioning and lighting of the salon), liter:	
- per 1 hour	84.0
- per 100 km of running	24.7
- per 100 pass.×km	0.82

Unibus U-331PE



Key technical characteristics

Purpose	city passenger
Wheel formula	4×4
Overall dimensions, mm:	
- length (with butt-joint connections)	4200
- width	2500
- height	2800
Gage, mm	2000
Base, mm	2200
Mass, kg:	
- equipped	2500
- full (20 passengers)	4000
Passenger carrying capacity, passengers:	
- comfortable	20
- maximal	30
Maximal travel speed, km/hour	105
Sanitary and hygienic block	no
Climate control inside the unibus	yes
Electric drive power (at speed of 65 km/hour), kWt	16
Average fuel consumption at the travel speed of 65 km/hour (on conversion of electric energy on gasoline and taking into account energy consumption for conditioning and lighting of a saloon), kg:	
- per 1 hour	5.3
- per 100 km of running	8.2
- per 100 pass.×km	0.33

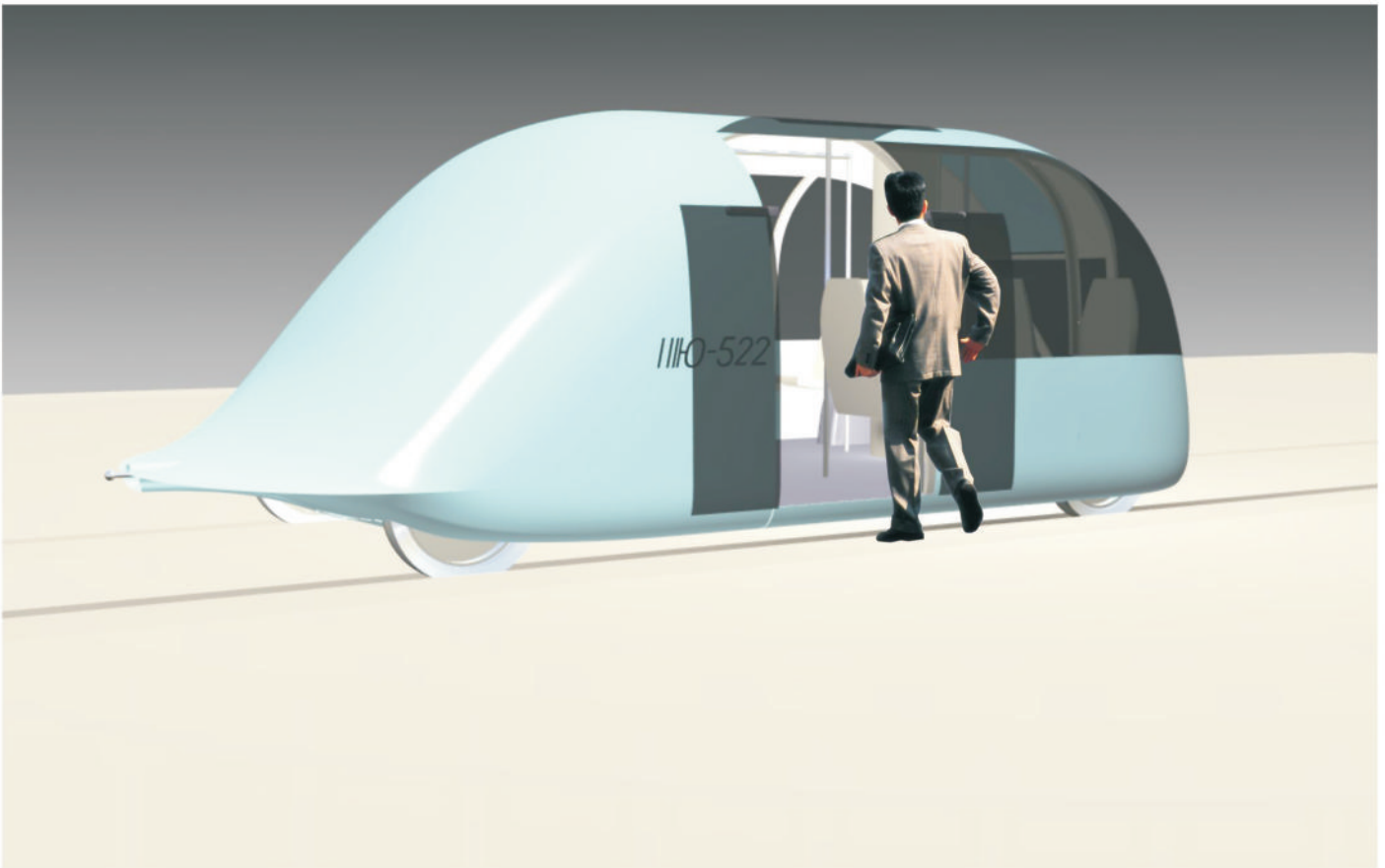
Unibus U-341PE



Key technical characteristics

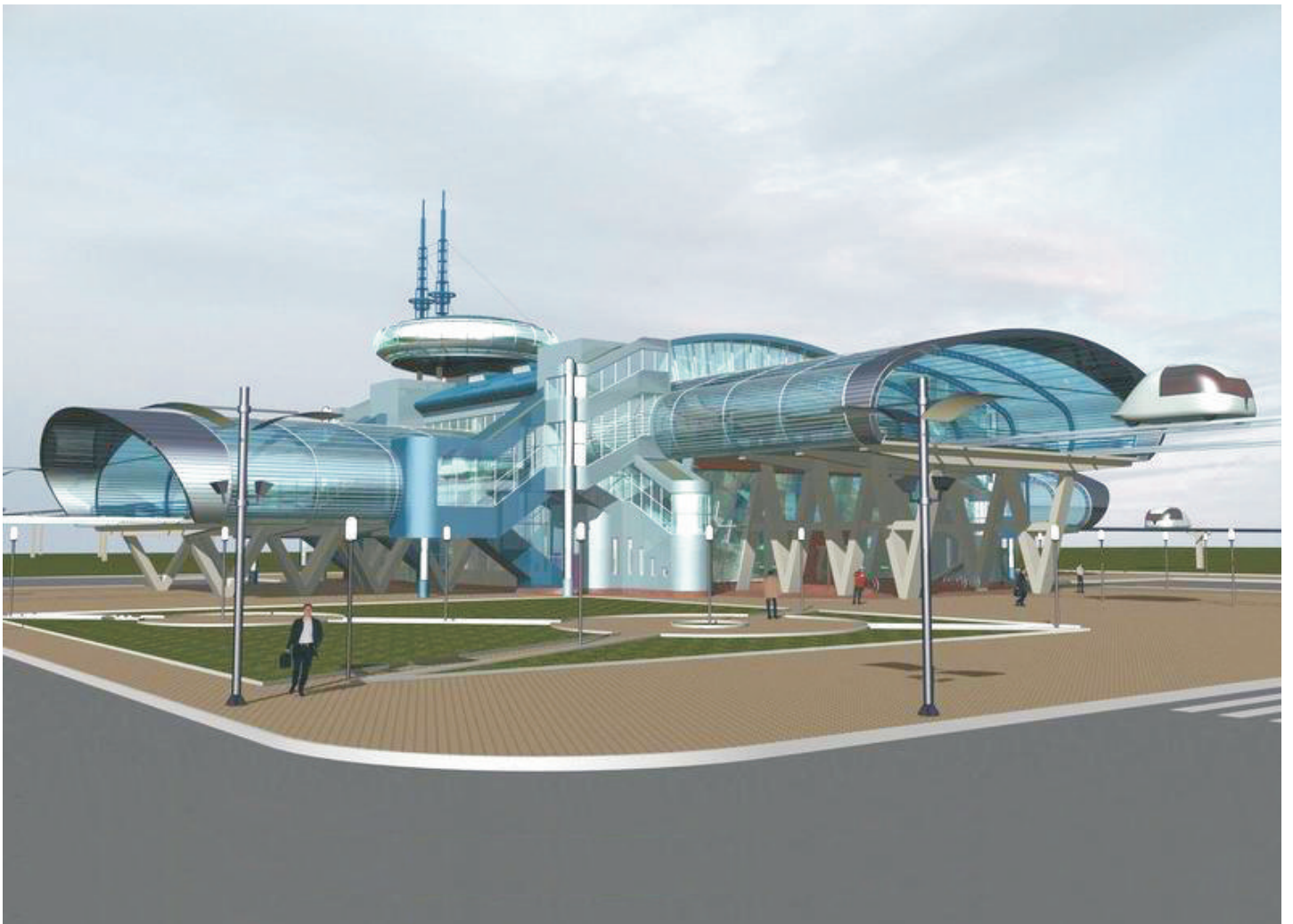
Purpose	city passenger
Wheel formula	4×4
Overall dimensions, mm:	
- length (with butt-joint connections)	6500
- width	3100
- height	2555
Gage, mm	2500
Base, mm	3400
Mass, kg:	
- equipped	3000
- full (40 passengers)	6000
Passenger carrying capacity, passengers:	
- comfortable	40
- maximal	90
Maximal travel speed, km/hour	105
Sanitary and hygienic block	no
Climate control inside the unibus	yes
Electric drive power (at speed of 65 km/hour), kWt	18
Average fuel consumption at the travel speed of 65 km/hour (on conversion of electric energy on gasoline and taking into account energy consumption for conditioning and lighting of a saloon), kg:	
- per 1 hour	6.2
- per 100 km of running	9.5
- per 100 pass.×km	0.16

Unibus U-342MT

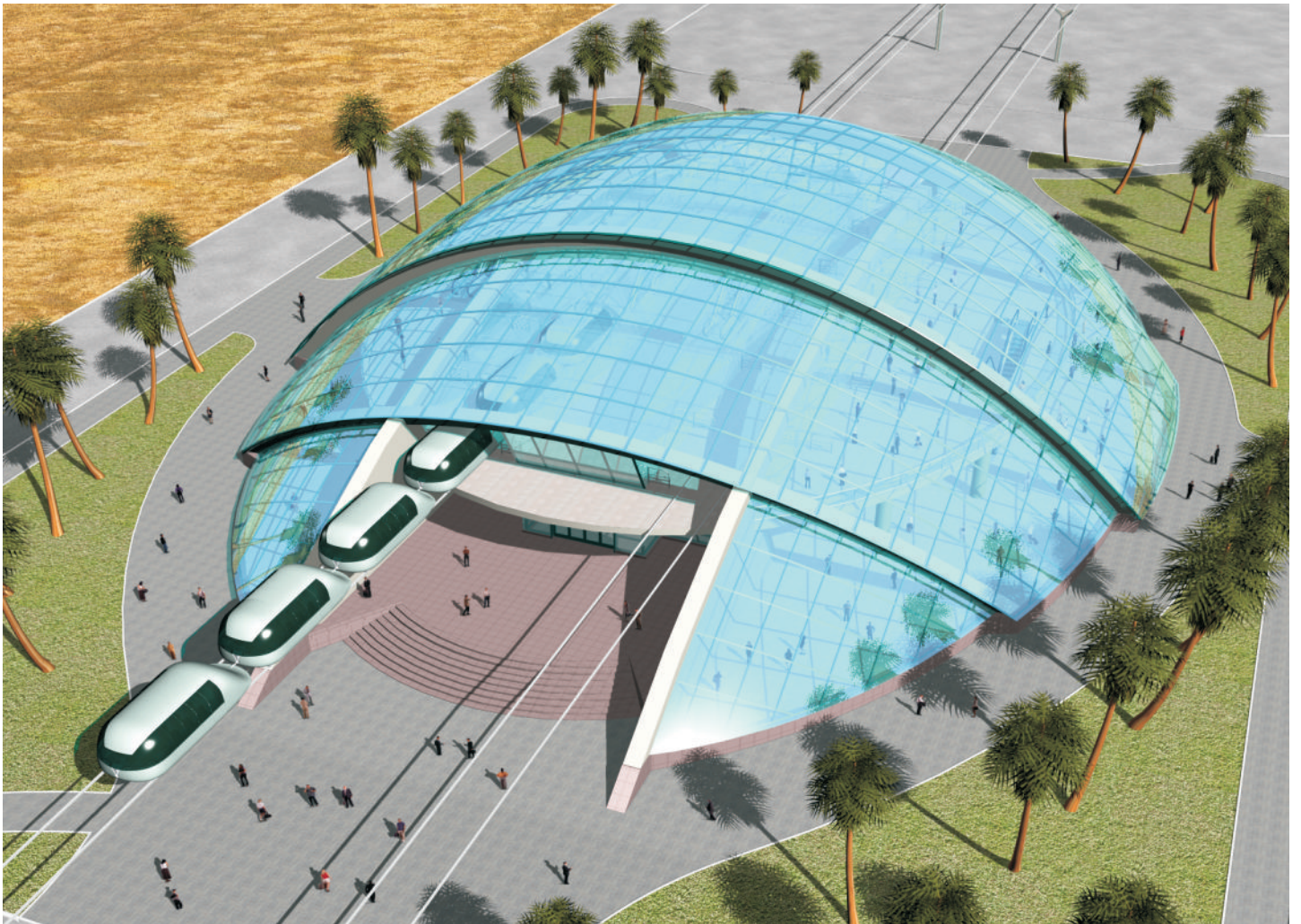


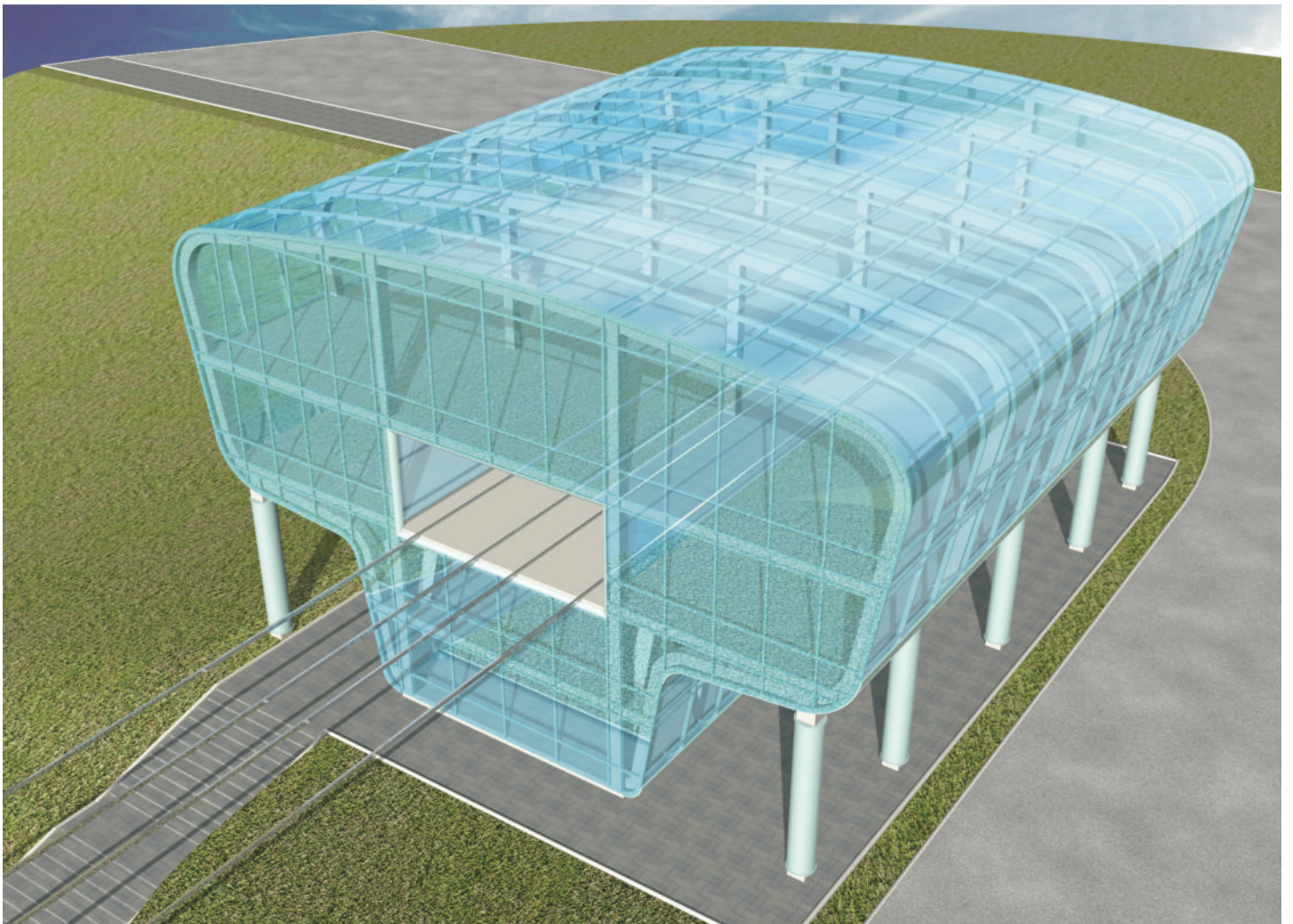
Key technical characteristics

Purpose	inter-city freight/passenger
Wheel formula	4×2
Overall dimensions, mm:	
- length (with butt-joint connections)	6750
- width	3100
- height	2200
Gage, mm	2500
Base, mm	4100
Mass, kg:	
- equipped	3500
- full (20 passengers + 500 kg freight)	5500
Passenger carrying capacity, passengers	20
Load carrying capacity, kg	500
Maximal travel speed, km/hour	360
Sanitary and hygienic block	yes
Climate control inside the unibus	yes
Drive power (diesel engine with an automatic gear box)	
at the speed of 360 km/hour, kWt	314
Average fuel consumption at the travel speed of 360 km/hour (including energy consumption for conditioning and lighting of the salon), kg:	
- per 1 hour	80
- per 100 km of running	22.2
- per 100 pass.×km	1.11

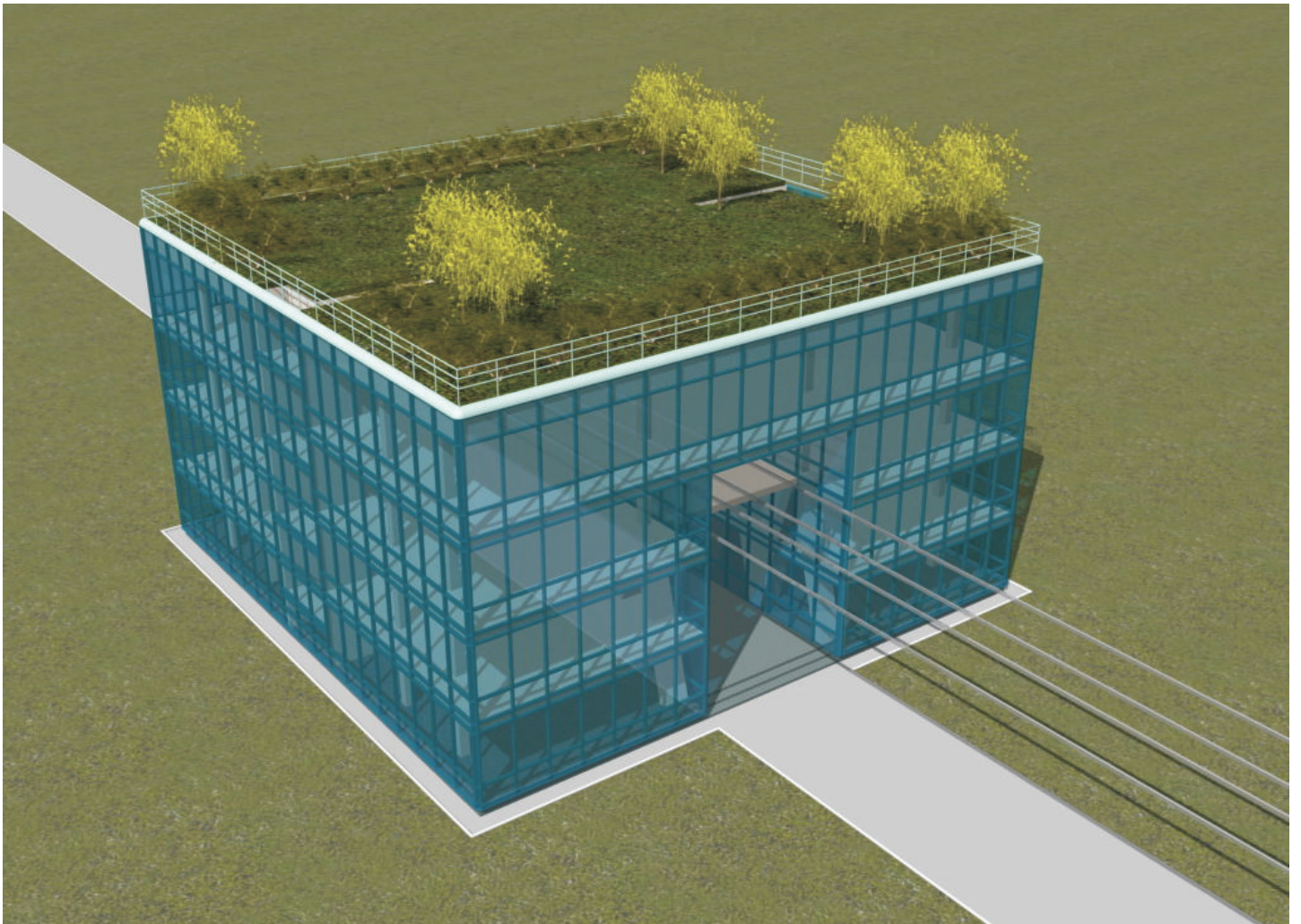


Stations of a double-rail STU



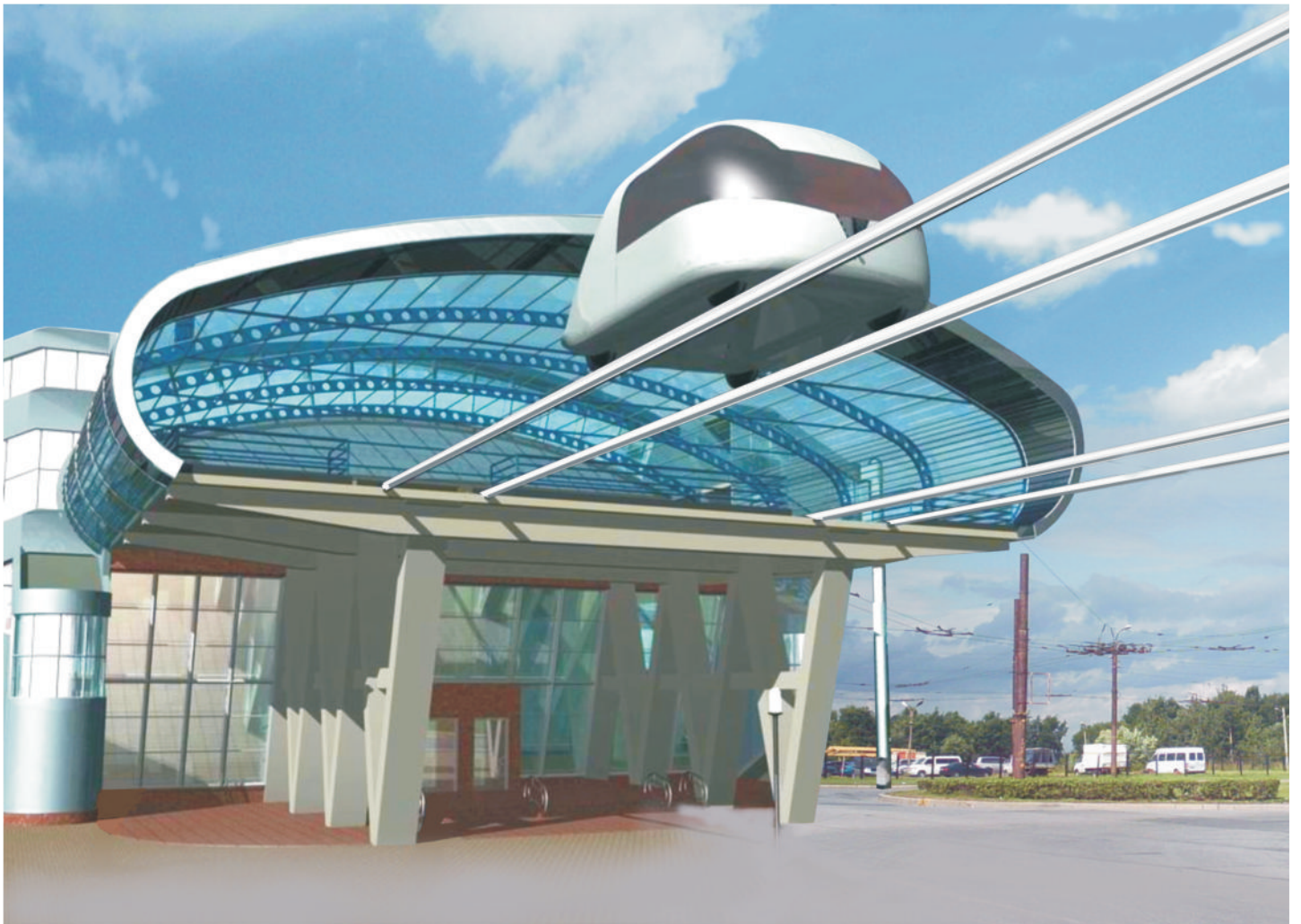


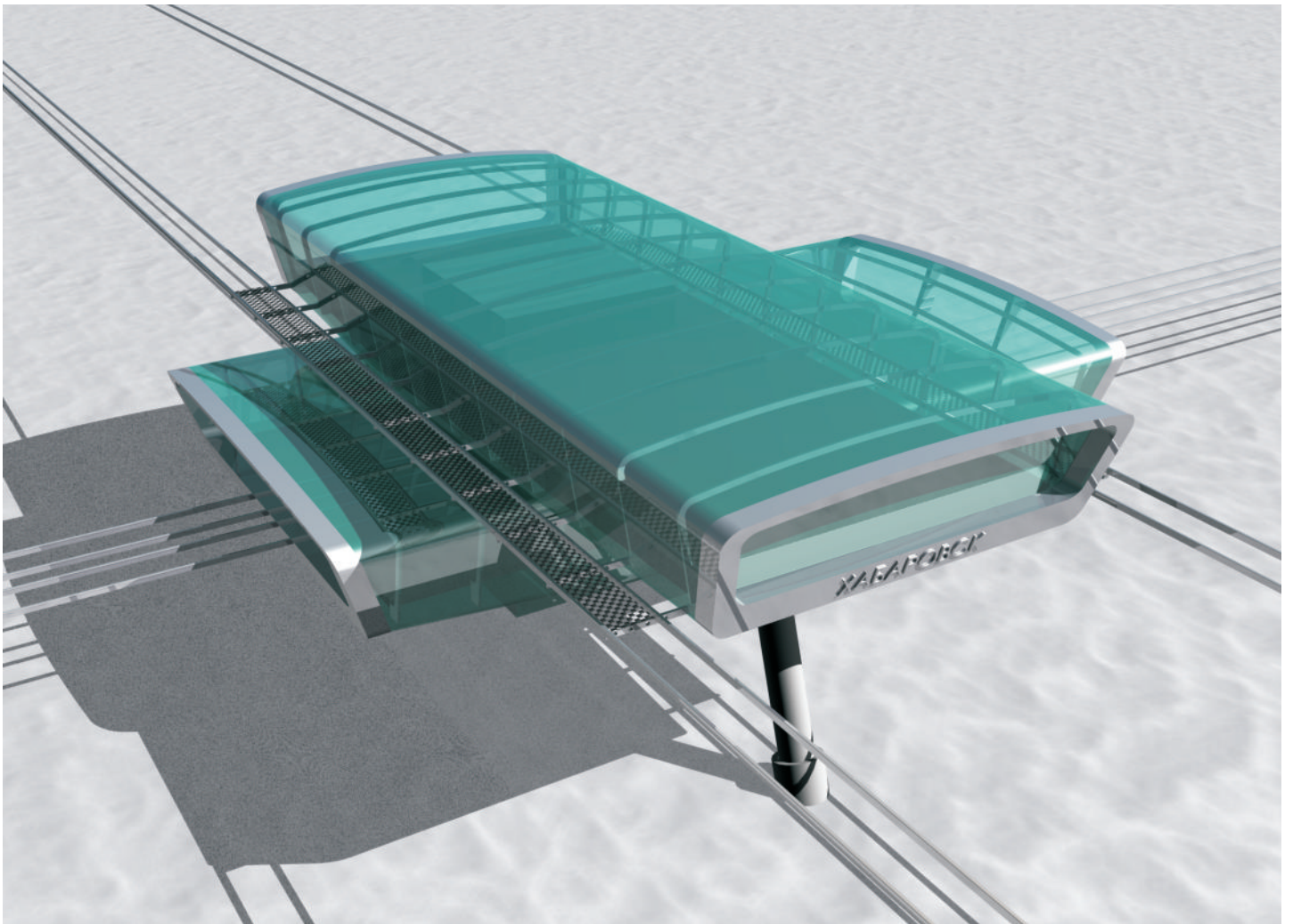
Stations of a double-rail STU



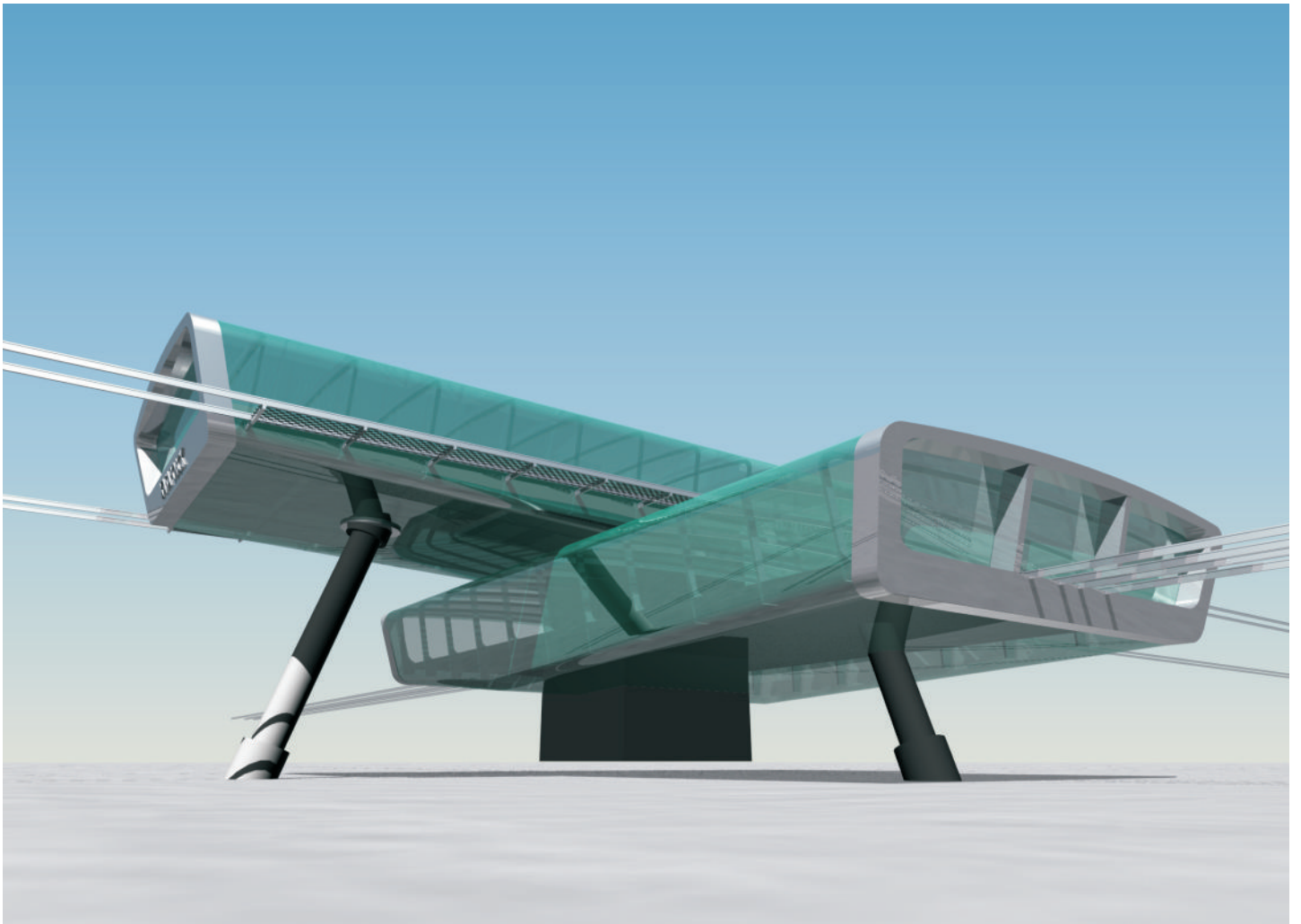


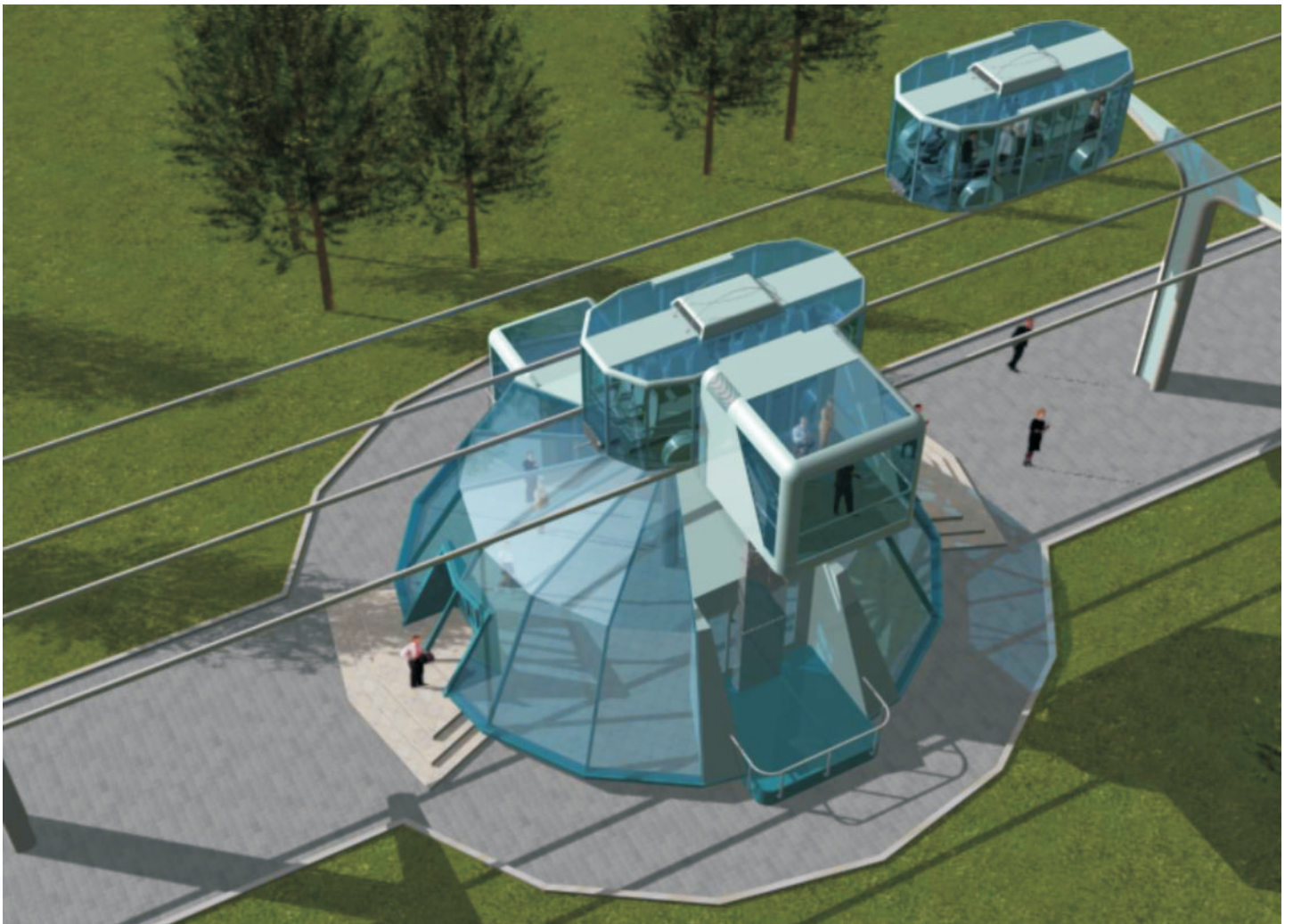
Stations of a double-rail STU



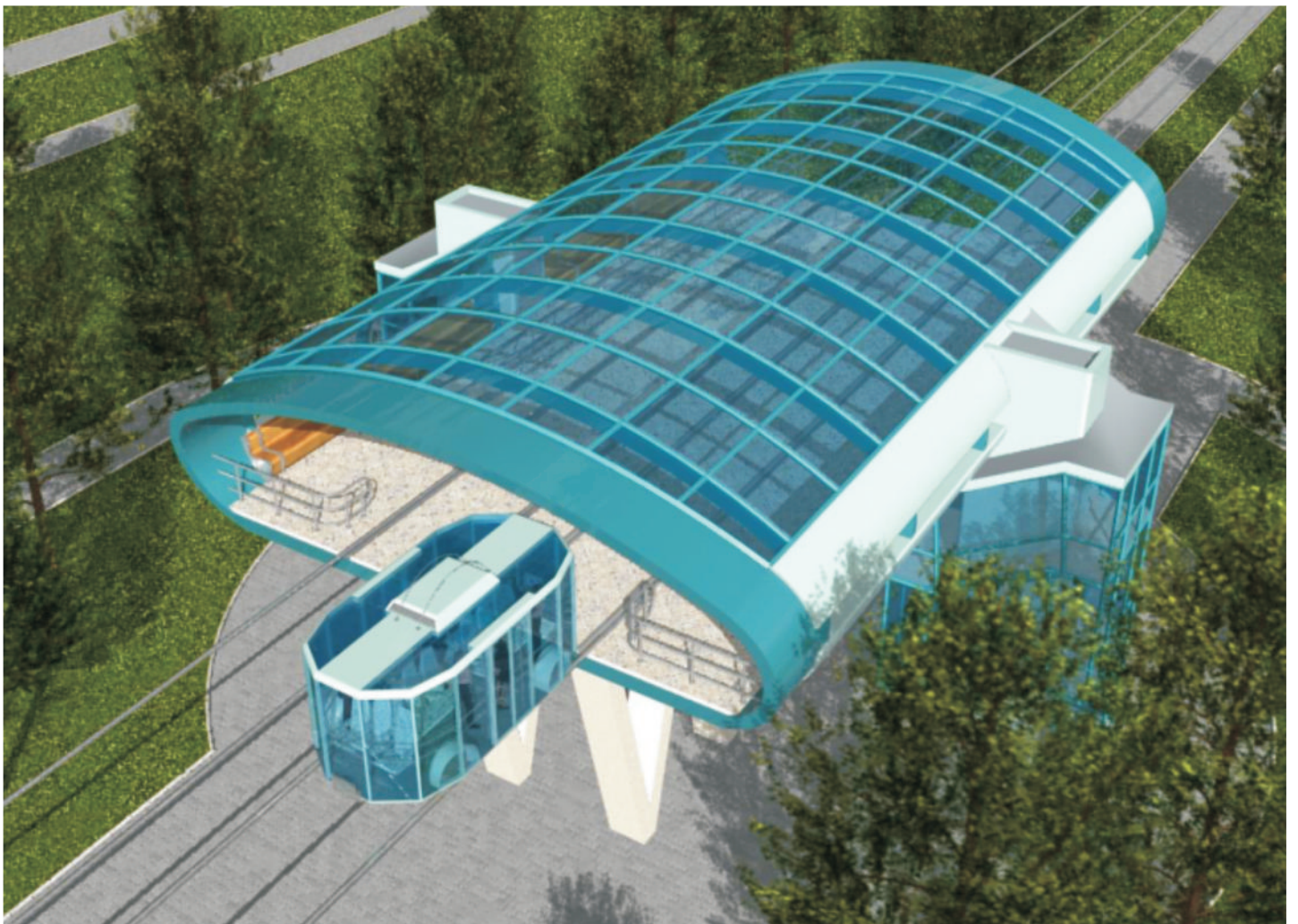


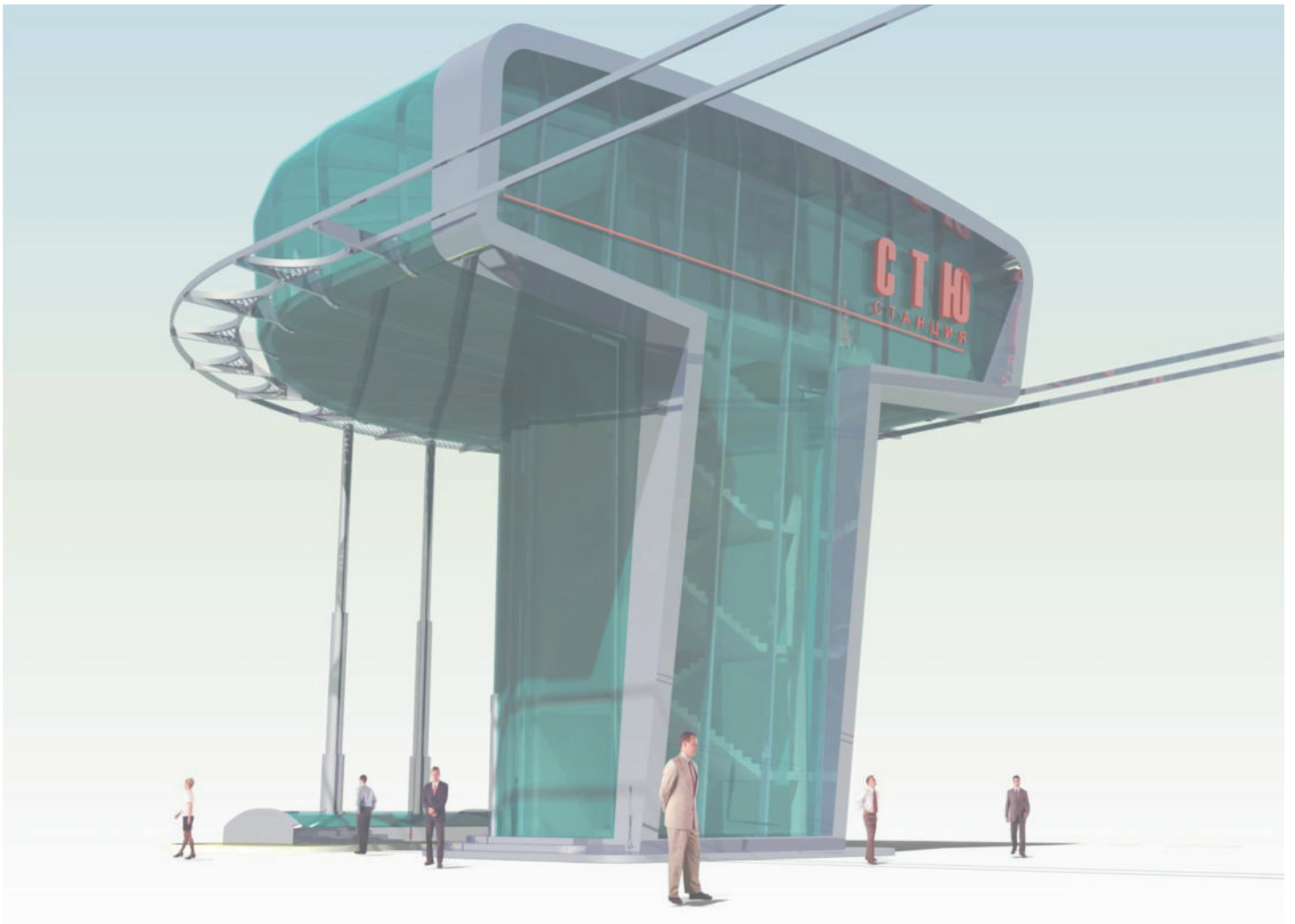
Two-level station of a double-rail STU



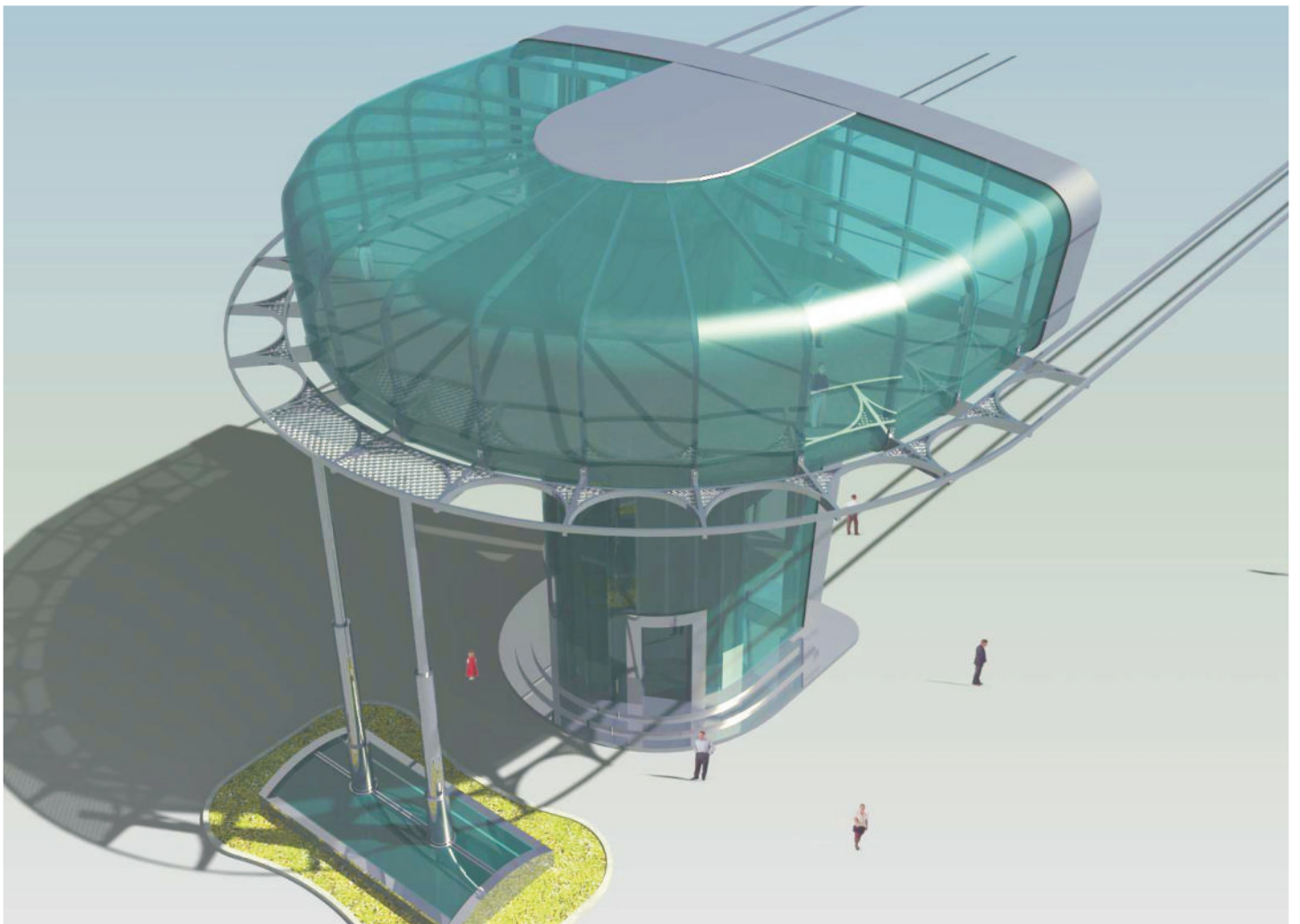


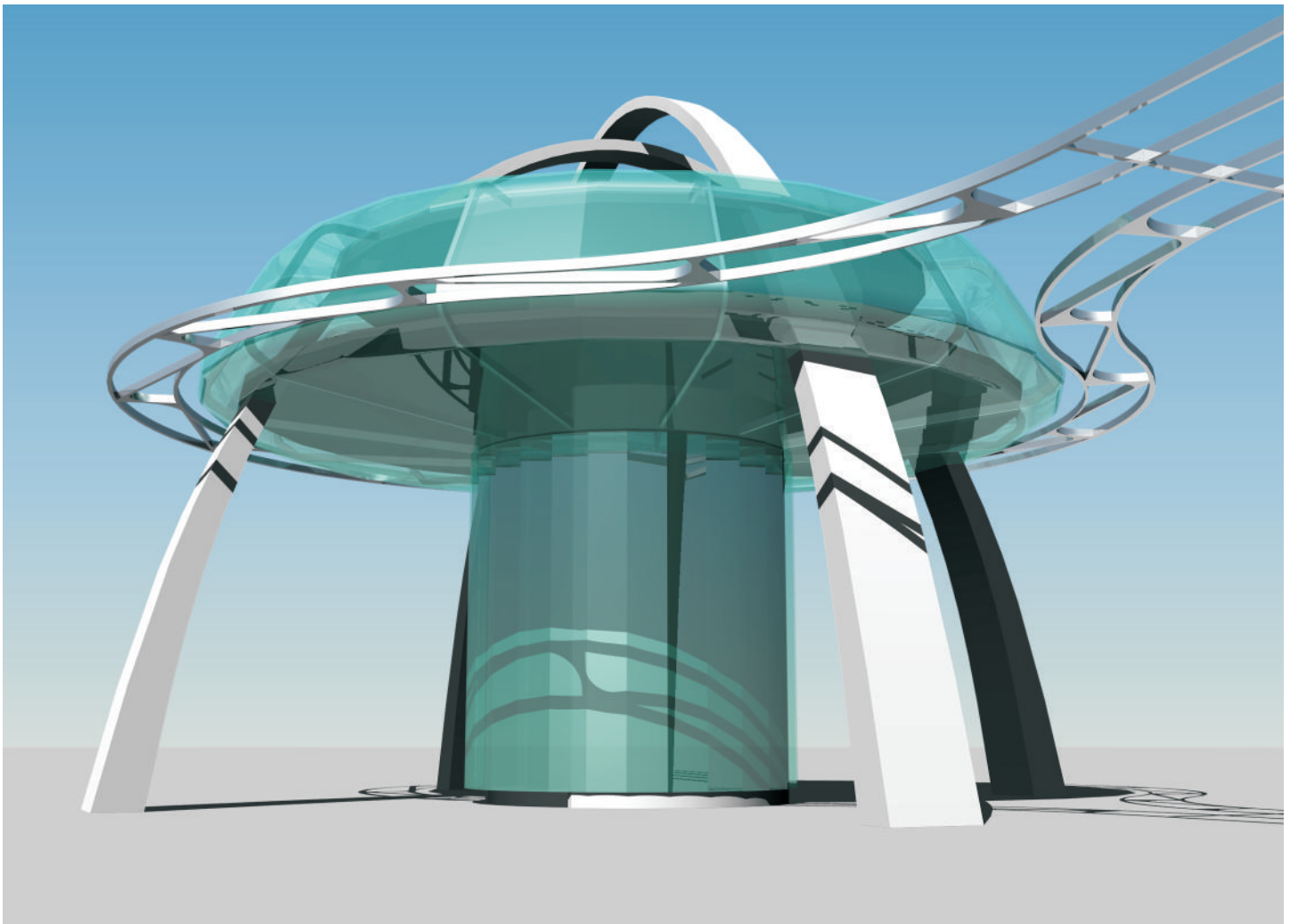
Stops of a double-rail STU



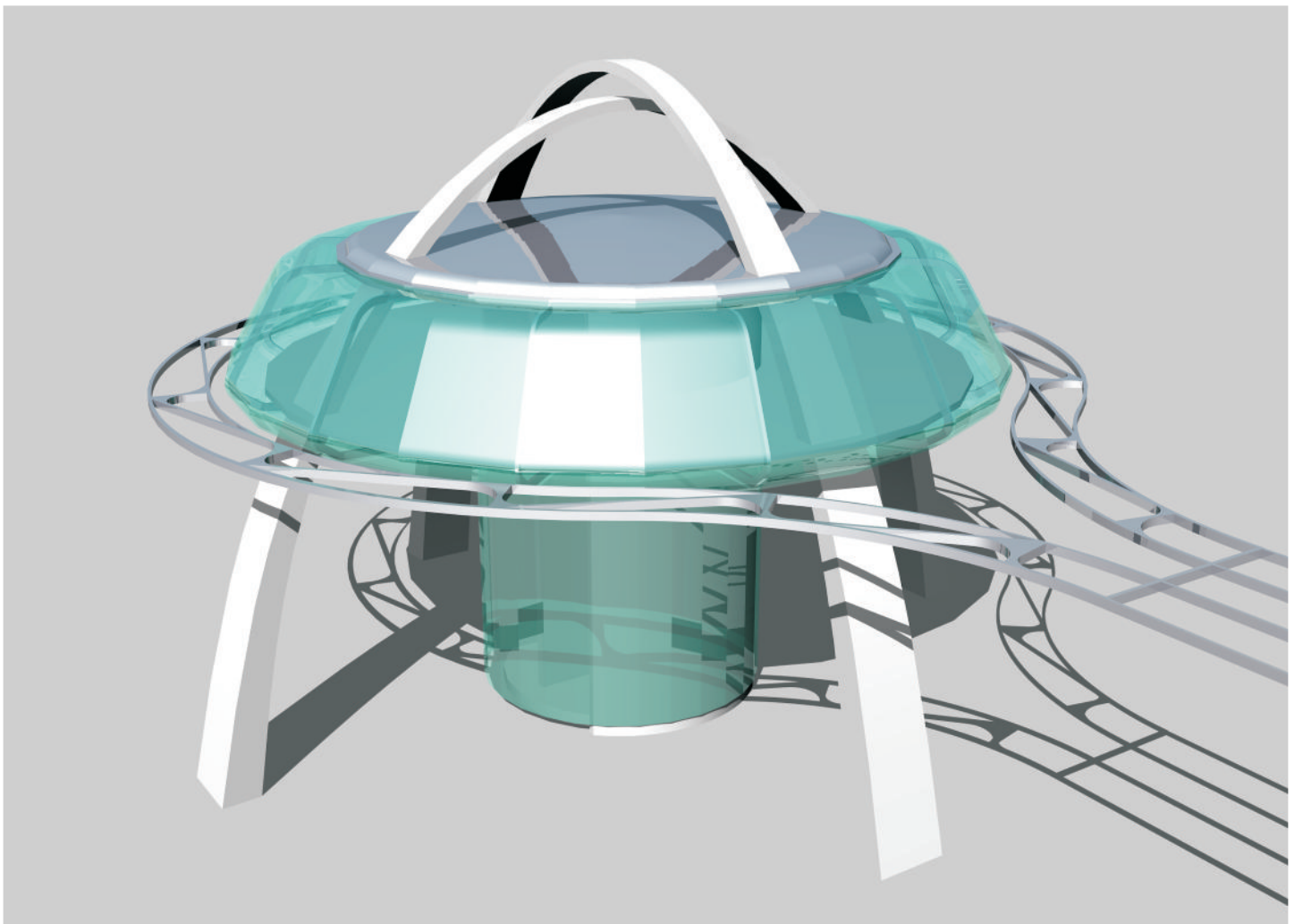


Terminal station of a double-rail STU





Terminal station of a double-rail STU





Operational STU models





Operational STU models





Operational STU models

