



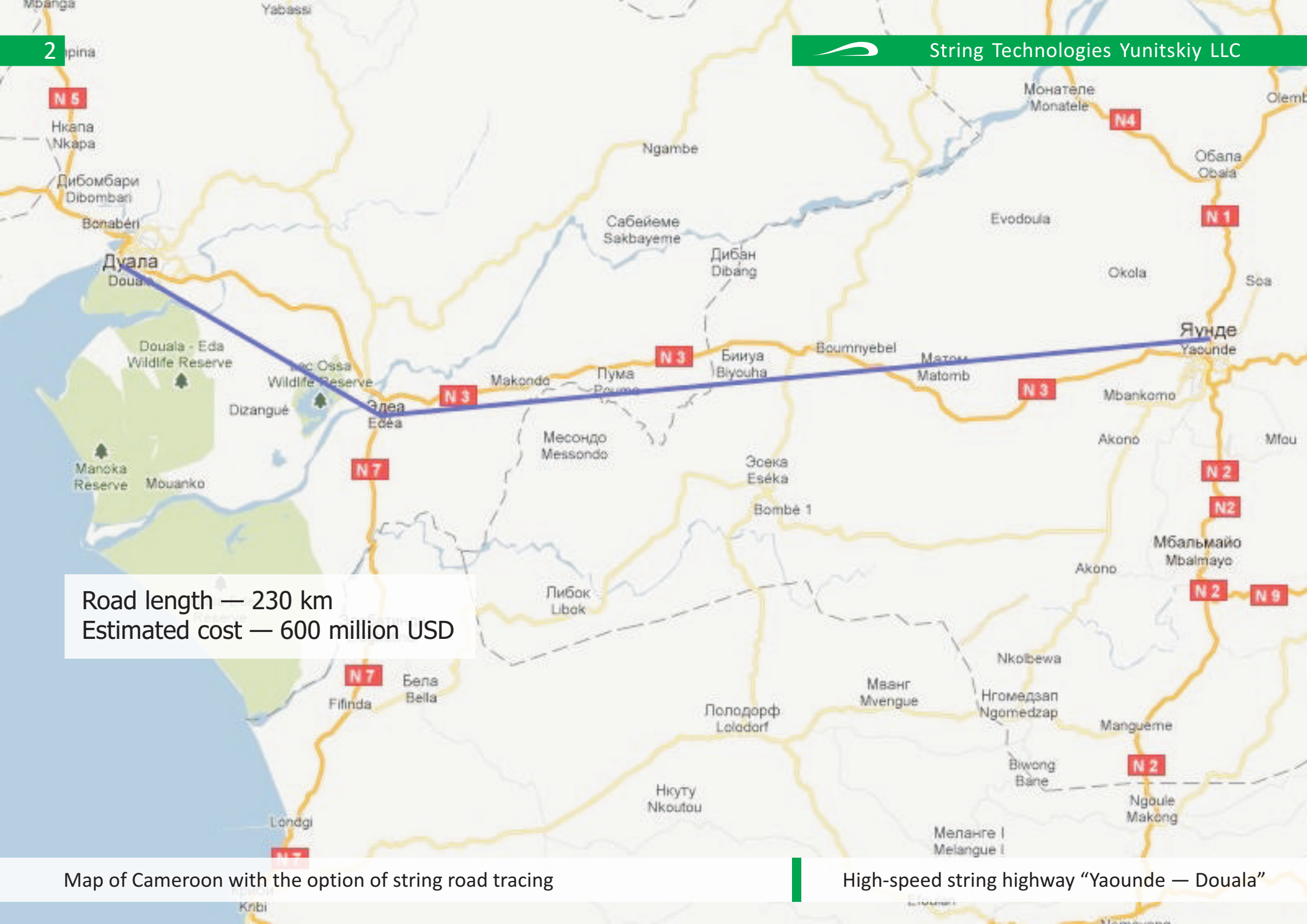
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High-speed string highway “Yaoundé — Douala”



Moscow, 2011



Road length — 230 km
Estimated cost — 600 million USD

Map of Cameroon with the option of string road tracing

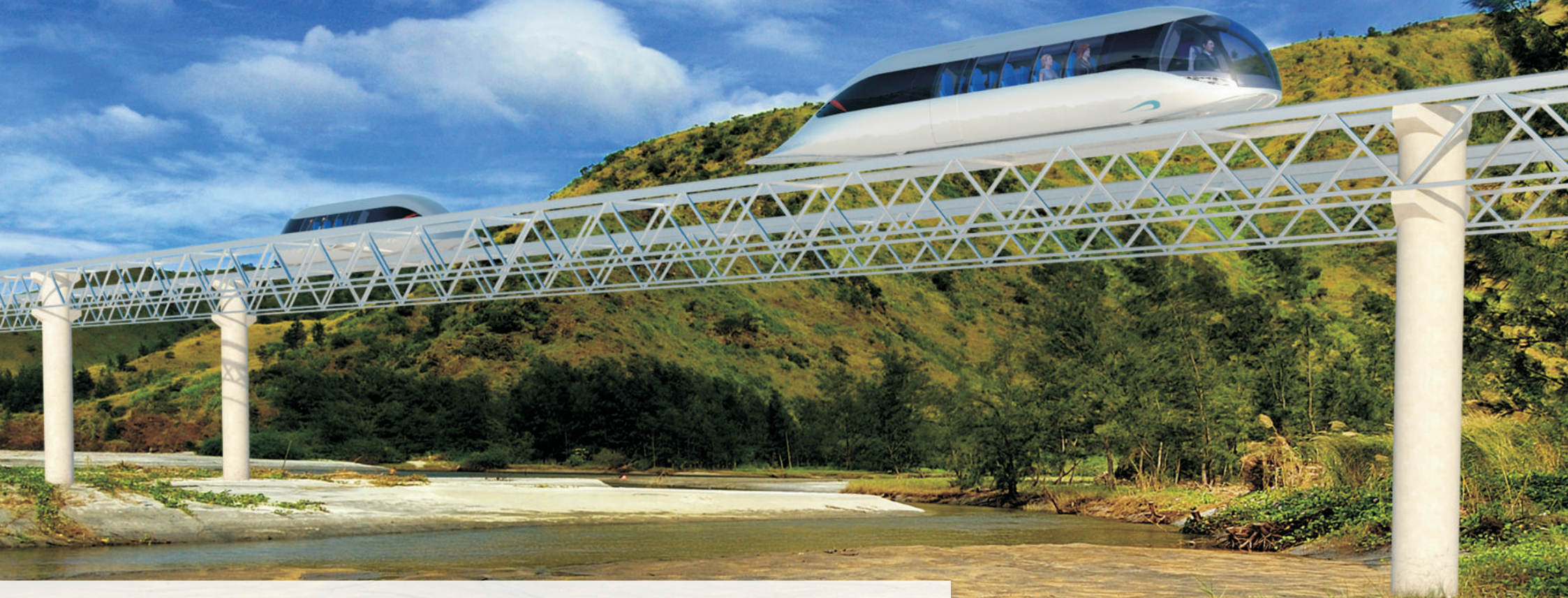
High-speed string highway “Yaounde — Douala”

Specific power of a drive at a speed of 360 km/hour: 8-12 kW/pass.
Specific fuel consumption at 360 km/hour: 0.6-0.9 liter/100 pass.-km



High-speed unibus (eventually up to 500 km/hour)

High-speed string highway "Yaounde — Douala"

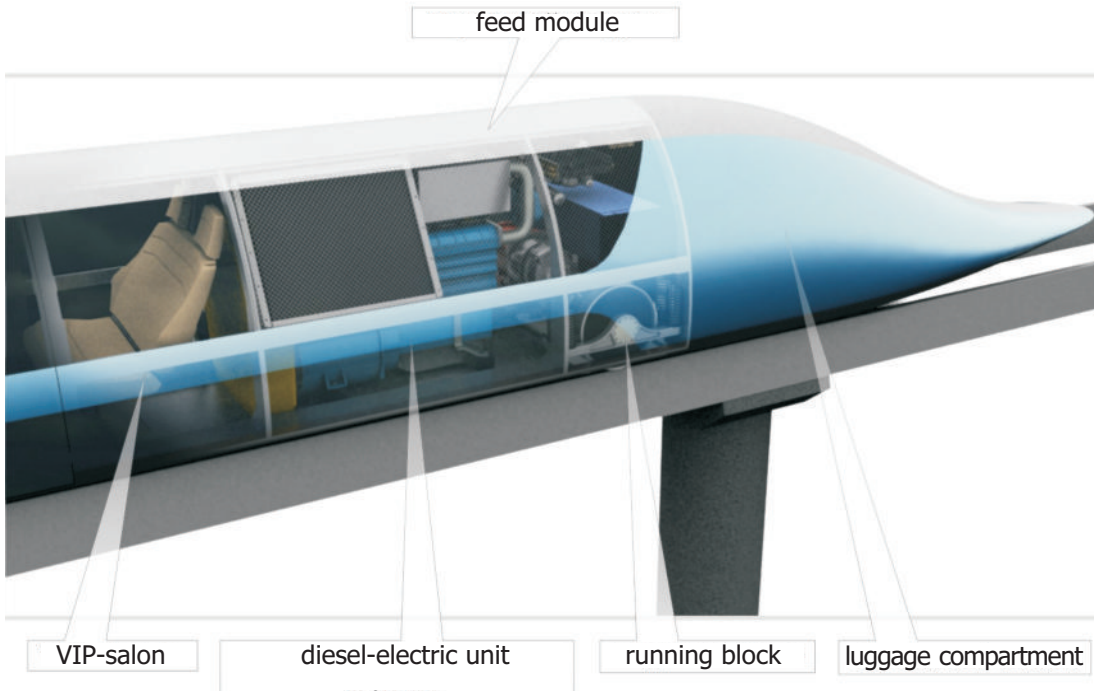
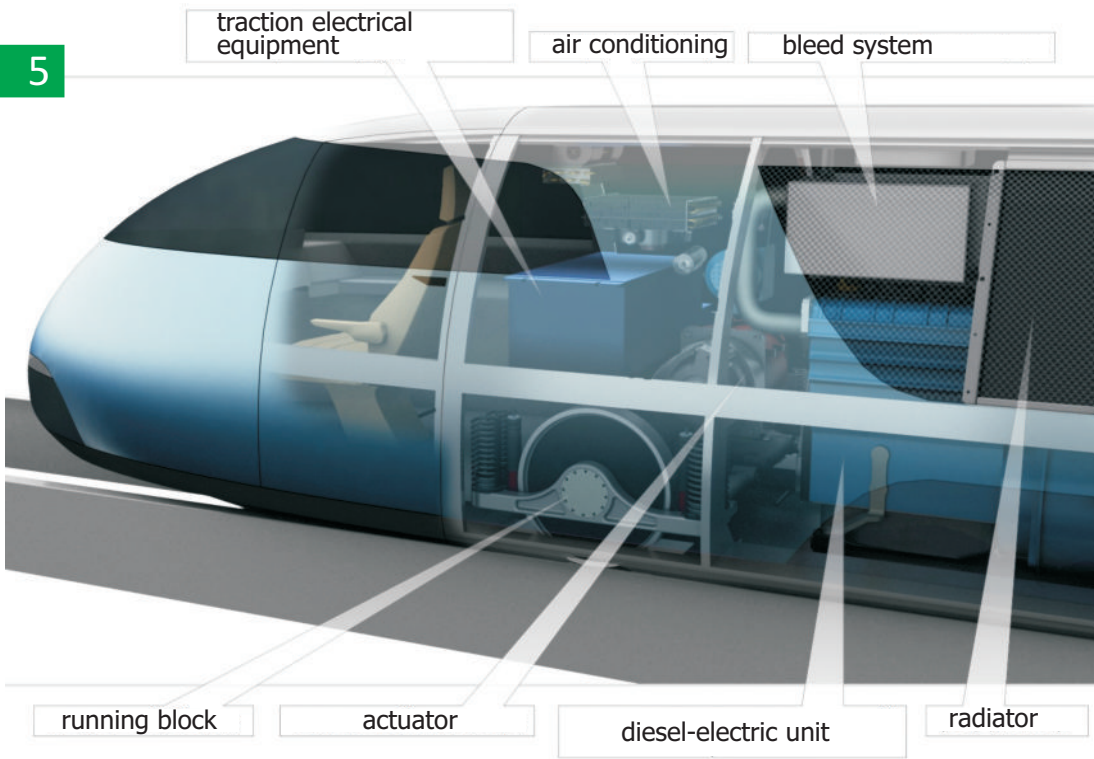


The averaged value of speed STY double-track trails in Cameroon:

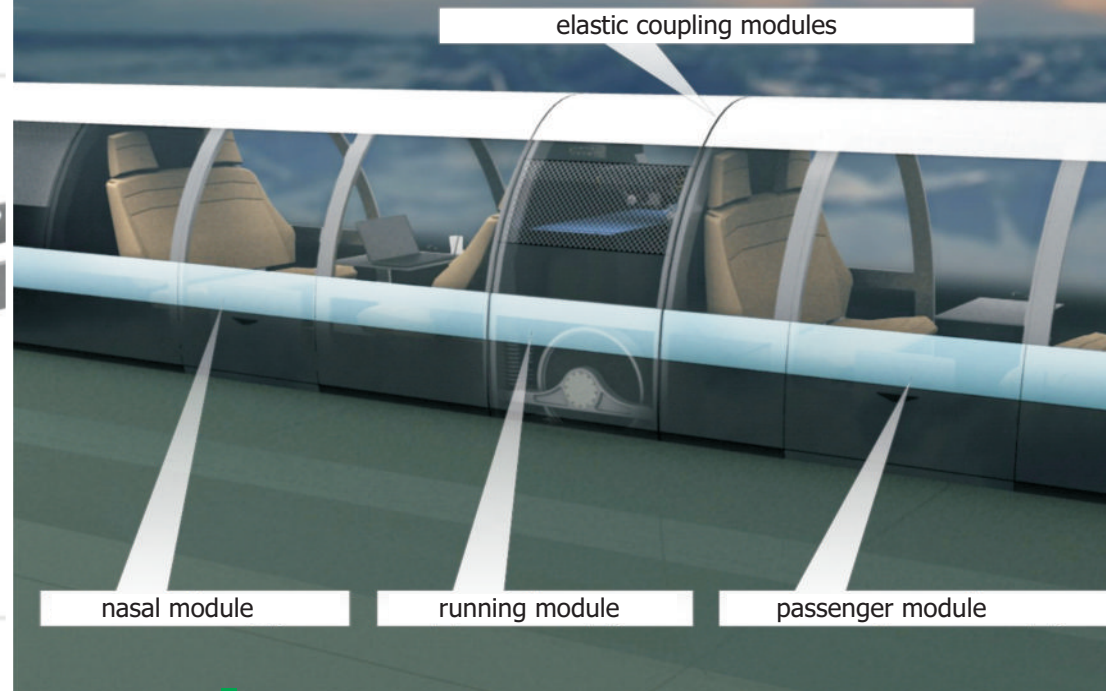
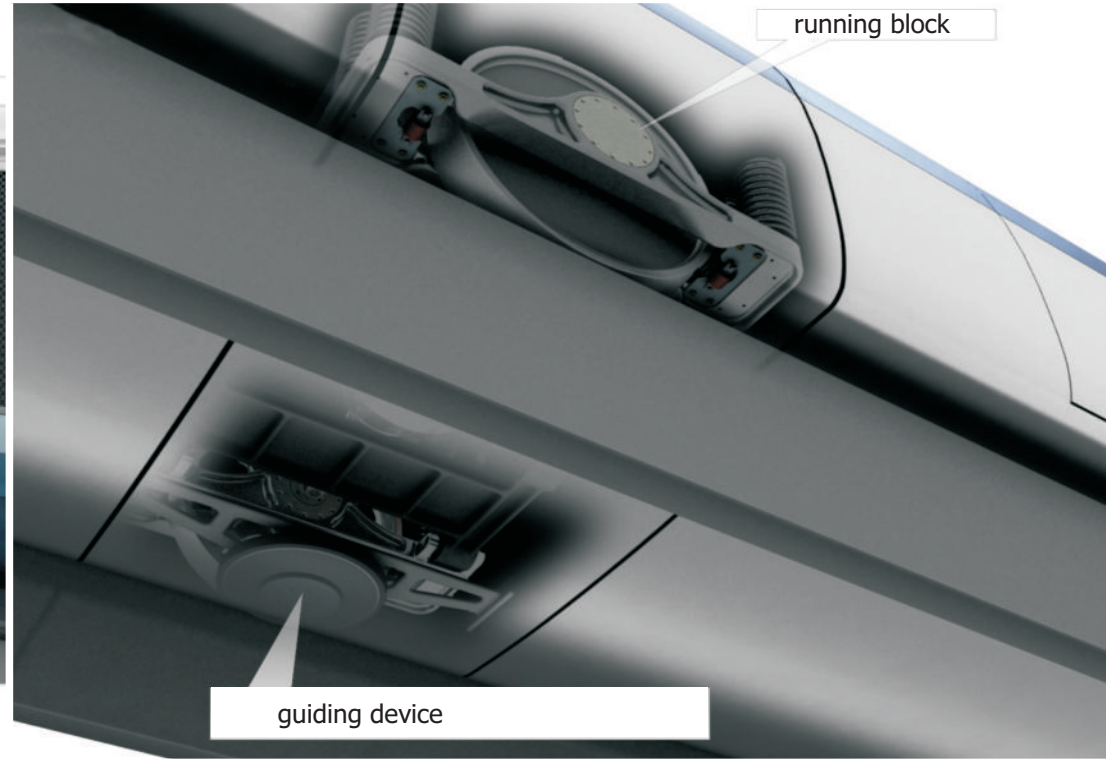
2.1—2.8 million USD/km

including:

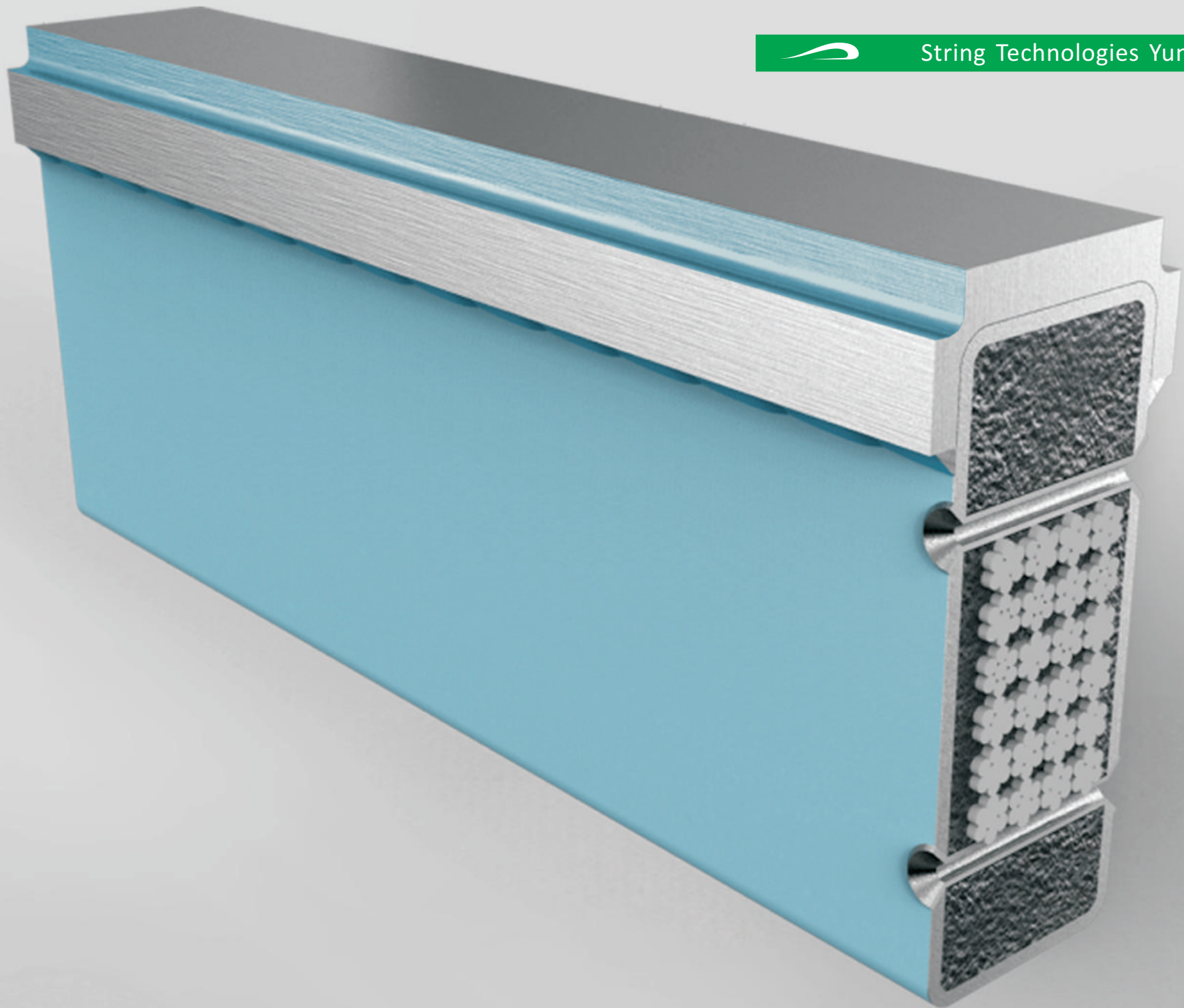
- | | |
|-------------------------------------------|------------------------|
| • track structure and supports | 1.7—2.0 million USD/km |
| • stations, terminals, depots, terminals | 0.1—0.2 million USD/km |
| • high-speed unit (unibus) | 0.1—0.2 million USD/km |
| • security, management and energy systems | 0.1—0.2 million USD/km |
| • other | 0.1—0.2 million USD/km |



Design features of high-speed unibus



High-speed string highway "Yaounde — Douala"



String Transport Yunitskiy (STY) — "second tier" rail transport in which the elevated track structure is supported on the height of 4—5 meters forming spans of 40—50 meters or more. The basis of STY track structure are specially constructed string rails (or farm-string), which pre-tension — string — provides the necessary strength, smoothness and durability. The design of STY track structure is a type of vehicle overpass, hanging and cable-stayed bridges with minimized material consumption and thus — value.

In Cameroon, with the given low passenger and freight flows, STY can be built in light and simplified embodiment. This will minimize capital and operating costs in the project, which will make it profitable and attractive not only to State but also for investors. This optimization of a project will not affect basic consumer qualities of the transport system: reliability, safety and durability.

STY rolling stock is a rail car with steel wheels. This unit (unibus) — is the most effective vehicle of all currently known (car, airplane, helicopter, high-speed railway train, Maglev).

Specific high-capacity drive of a high-speed unit at a speed of 360 km/hour (or 100 m/sec): 8—12 kW/pass. For comparison, a similar rate in high-speed railway — 50—70 kW/pass., a sport car has a top speed of 360 km/hour — over 300 kW/pass.

Specific fuel consumption (calculation of electrical energy into fuel) of high-speed unibus at 360 km/hour (or 100 m/sec): 0.6—0.9 litres/100 pass.-km. For comparison, a similar rate in high-speed railway — 3.9—5.5 litres/100 pass.-km.

STY tracks are clean, all-weather and natural disasters resistant (floods, earthquakes, hurricanes, tsunamis, extreme cold and heat, etc.) and also for the cases of vandalism and terrorism.

The length of STY high-speed ring road "Yaounde — Douala" (depending on the trace): 220—240 km. STY highway estimated cost is — 600 mln USD. After optimization and industrial development of STY highway, certification of road section in, the project cost can be reduced to 500 million USD. For comparison, a trail made by the best world technologies and traditional high-speed railroad (overpass execution), would cost to the customer — 15—20 billion USD.

The track can be built in two phases:

- 1) a single-track performance, which will provide passenger traffic of 10 mln. pass./year and cargo traffic — up to 1 million tons/year;
- 2) a few years later, when the single-track trail will cease to cope with the increased passenger and freight traffic, second path will be built. Double-track trail STY provides passenger traffic up to 100 mln. pass./year and cargo traffic — up to 10 million tons/year.

This will reduce the initial capital construction costs by 30—40%. The second stage can be implemented by the profits derived from the operation of single-track trails, built in the first phase.

The averaged value of speed (in the long term — up to 500 km/hour) of STY double-track trails in Cameroon (in the light version): 2.1—2.8 million USD/km, including:

- track structure and supports: 1.7—2.0 million USD/km
- stations, terminals, depots, terminals: 0.1—0.2 million USD/km
- high-speed unit (unibus): 0.1—0.2 million USD/km
- security, management, energy and communication systems: 0.1—0.2 million USD/km
- other: 0.1—0.2 million USD/km



The cost of STY high-speed highway depends on:

- terrain (supports height and length of spans depends on it);
- climatic factors (seasonal temperature variations, calculated wind speed, strength of underlying soil, likelihood of frost, floods, earthquakes, etc.);
- taken from STY draft (rated speed, capacity of units, estimated passenger and cargo traffic, slopes and radii of curvature of track structures, etc.);
- the optimization of design decisions at the design stage (bench tests and certification testing of site in real climatic conditions of the Project). Optimization will save up to 0.5 mln USD/km, which provide the economic effect of 120 mln USD with the length of road — 240 km.

STY high-speed roads in Cameroon will be built with the same standards as an urban STY. Therefore, Cameroon and other African countries (there an experience of 21 century transport creation may be transferred) will have a single communication network designed for movement, not only multi-passenger (20—50 pass. and more), but also in the future — personal (1—2 pers.) and "family" (4—8 pers.) high-speed units developing speed to 500 km/hour on the main roads. In urban areas this rate can be limited to 120 km/hour. This infrastructure will make a revolution of the 21st century in any economy, comparable in scale (and even exceeding) revolution, which made the car in the 20th century.

STY track structure will be combined with communication lines and power lines (they will be "protected" in string rail), supports — with wind and solar power stations. Therefore, with the construction of "second tier" roads in string technology, a communication network will be established for the movement not only of passengers and cargo, but also electronic information and power. Such a communication system, combined with infrastructure projects — new towns, resorts, recreation and entertainment — can return investments in 3—5 years.



High-speed string highway "Yaounde — Douala"