

Carbon fibre Ferries for river transport Brazil project idea concept.

The Brazilian report by the Development Planning Commission can be found at <http://www.antaq.gov.br/portal/pdf/transportepassageiros.pdf> It illustrates the dangerous conditions associated with transporting over 9 million people per day in dangerous vessels in the central Amazon area alone. Our first goal is to demonstrate that savings on fuel are so significant as to convince owners of passenger transport to replace their existing wooden fleet with lightweight, carbon fibre hull catamarans.

The basic considerations regarding fuel consumption of heavy wooden hulled vessels versus fuel consumption and purchase cost of lightweight carbon fibre hull catamarans:

- A diesel engine consumes 200 g per hp and 1000 g of diesel costs approx. BRL 3.00=USD 1
- A 60-tonne wooden hull needs at least 600 hp to operate in river currents at safe speeds (approx. 10-12 miles per hour).
- A 30-tonne carbon fibre hull carries double the number of passengers, requires only 200 hp to reach safe speeds, and could reach a maximum performance of 30 miles per hour with additional hp.
- A 30-tonne carbon fibre hull estimated to cost BRL 800,000, with great savings on mass production.
- From operator in mono hulls in Alu and Swaths in carbon general difference in total weight incl. hull, equipment, aptation, isolations, etc.
- steel to alu = ca. 61 %
- steel to Grp = ca 57%
- steel to CRP = ca 50%

Roughly calculated, the saving per hour amounts to $(600-200) \times \text{BRL } 0.60$, equivalent to BRL 240.

Therefore, in 3,300 operational hours or 138 days of continuous operation you will have saved the BRL 800,000 you need for a new carbon fibre hull. Furthermore, you would have space for more passengers in an ABSOLUTELY safe hull.

Further benefits of the Tuco carbon fibre hull catamaran solution:

- Minimal port installation or terminal is required for light passenger catamarans due to deployment of their own gangplank, "weight shift" capacity for retrieval of boats from mud/bank, and anchoring making terminal costs hugely reduced. Here a list of public works intended in the area and related to embarkation <http://www.pac.gov.br/transportes/hidroviias>
- Reduced hull fabrication price due to high volumes (economy of scale)
- Reduced outfitting costs due to lower consumption and overall smaller propulsion machinery size.

Basic financial project plan

By direct marketing and web platform we will convince the already identified 60 local yards to start on a distance training and qualification programme. This to be produced with financial support from maritime exporters and the clients of ShipServ a [Danish trading platform](#). The educational programme content is on how to outfit carbon fibre hulls produced by [Capilano/Tuco](#) cooperation. When these local yards pass final exams, which includes accounting and import ordering of goods paperworks and others, they will be

candidates for financing from Danish funds (EKF and VF) *if* they partner with [Capilano/Tuco](#). This all together with their local passenger-transport-companies & captains, who will also be trained by distance learning. Within the distance training programme, we will promote Danish know-how and pre-sourced equipment manufacturers, to encourage the companies involved to “Buy Danish” in the future.

In short, we will begin by training local yards in the mechanical, electrical and electronic elements of outfitting carbon fibre catamarans through distance learning, preferably financed by the Danish segment of product seller's and the export incentives available. We will follow up by offering a financial package for carbon hull and outfitting equipment through export and import financing. Continuously control of progress and quality on outfitting/finishing of vessels. The final challenge is to encourage them to trade in the high-value wood from the wooden hulls for dismantling and scrap sales, which will go to wood furniture manufacturer.

Fuel supplier Petrobras may want to reduce the volume of fuel they supply to the Amazon area, where subsidies amount to a minimum of 25% of the price and the cost of transport of fuel to the area is very high. Moreover, the government will reduce its expenditure on subsidies and, thus, participate in implementation of project.

About Jan Nikolaj: Over 35 years of experience in Brazil in the yard, maritime and offshore business.

About Winnie Elsborg: Graphic designer and content creator for web and marketing.

About Jakob Toksvig, Teacher & consultant, Owner Brazil Advice

Other information sources:

[Danish education on boatbuilding](#)

[Danish companies on Shipserv database](#)

[Foreign ministry export support](#)