

## **Abstract of the Thesis:**

### **1. What form of public transport can be seen as the most optimal choice in the future?**

The population of the Earth in accordance with the forecast reached 7 billion at the beginning of the 21st century. The culmination of this growth can be expected in 2050. Generally it can be stated, that in consequence of migration the population of cities will swell, in some places this will reach critical measures. The question is whether the biocapacity of a given living space could stand the rising load. The need for solving several problems (including provisioning, water supply, economy, identity) will force a simultaneous response. Organizing public transport of big masses will be a major segment in duties of the future megapolises. Several investments active today confirm and predict that BRT (Bus Rapid Transit) as a form of transport will have priority in the future. This fact is supported by cost-efficiency calculations concerning the operation of this system. Every data proves the positive financial balance of such investments till now.

### **2. What bus construction and type is the optimal choice for a given BRT destination?**

On the lines of Los Angeles Metro vehicles made of welded carbon steel frame as well as composite material run. As for production costs, carbon steel framed buses can be manufactured more cost-efficiently. On the other hand composite buses have several features, which have an influence on decision makers settling a certain line, that they rather prefer buying composite vehicles. The structural elements of plastic buses are able to endure one and a half times as much load as the bodywork of welded vehicles. According to transport safety composite vehicles have more preferable mechanical parameters. In consequence of the low weight empty of plastic buses their environmental harm is less. Shorter braking distance and better fuel consumption are the result of weight decrease. Deriving from the constructional structure of the plastic vehicle in the case of a possible accident the maintainer can count on a specific lower repairs costs of the wreckage than in the case of a welded bus.

### **3. What type of bus can be considered to be the safest?**

Both welded carbon steel frame and plastic vehicles can be said to be safe. ( NABI 65 BRT, NABI 45 CLFV CompoBus) The test of side collision of both vehicles and the test of roof load of composite vehicle prove the the above mentioned statement. At the same time NABI 45 CLFV CompoBus outrivals the NABI 60 BRT regarding durability. On the basis of the measurings performed in Anniston these findings are reliable because the composite vehicle made by NABI Inc. is the only bus in the world, which performed the 24-hour-loading test with drivers in shifts without any fault.

### **4. What type of vehicle can be the new alternative of future BRT?**

My doctoral thesis is the design of a 65 feet long composite articulate bus. This vehicle can be incorporated into the Los Angeles Metro Orange Line vehicle fleet. Concerning its parameters it meets all the required specifications set towards all the LA Metro vehicles. The modular tools used for manufacturing the vehicle make the production of different types of bodyworks possible. With its technological shaping it adjusts to the SCRIMP composite manufacturing technology of NABI plant in Kaposvár, Hungary. With its shape forming the world's first composite articulated bus came into being, which concerning the rating of vehicle category forms is a transition from an articulated bus to a light-rail vehicle. Taking driver's and passangers' safety into consideration it owns unique qualities. Operating it on separated lane, that is on a priority privileged route, the above mentioned advantages are stressed at a highly increased rate. The composite articulated bus is suitable to run in any BRT related vehicle fleet of the world.