

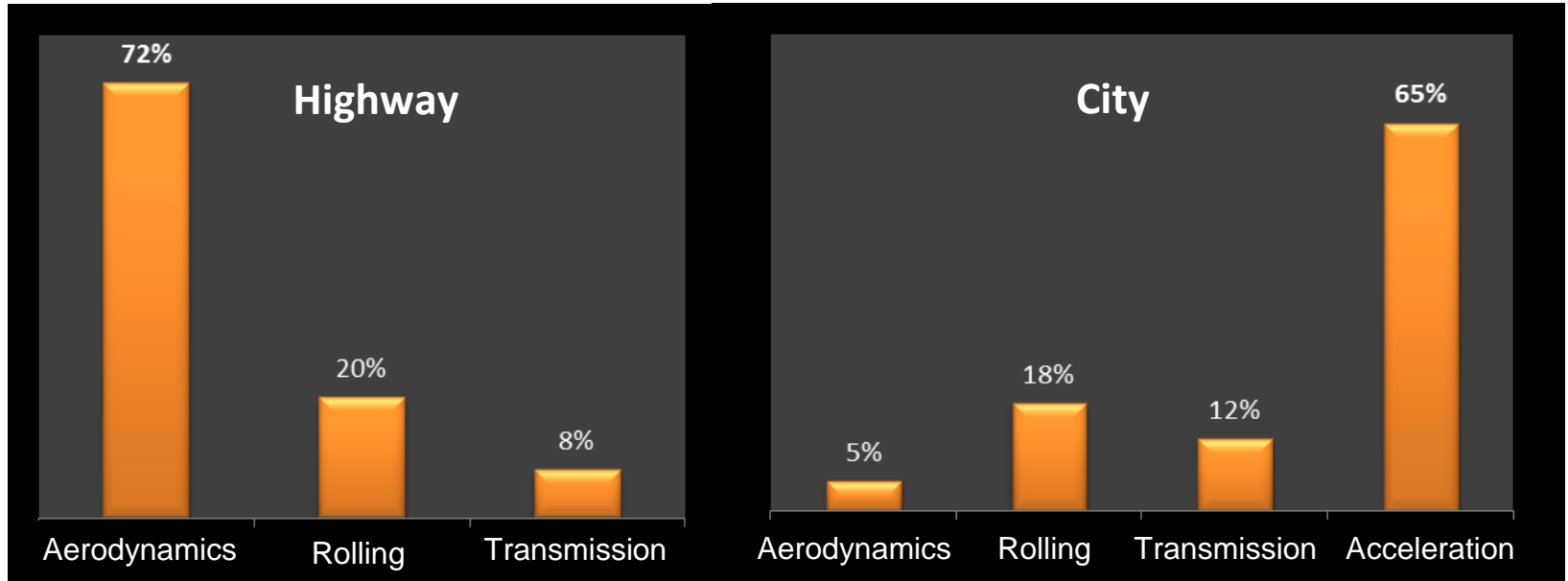


digital worx

„E-lungs“

Janko Pavlovic  
CEO, digital worx Serbia

# Fuel consumption contributors in different driving modes



**Air resistance** rises with the square of velocity.

Solution: **Vacuum** -> Hyperloop

**Acceleration** contributes with **65%** in city drive.

**Solution?**

# Public transportation

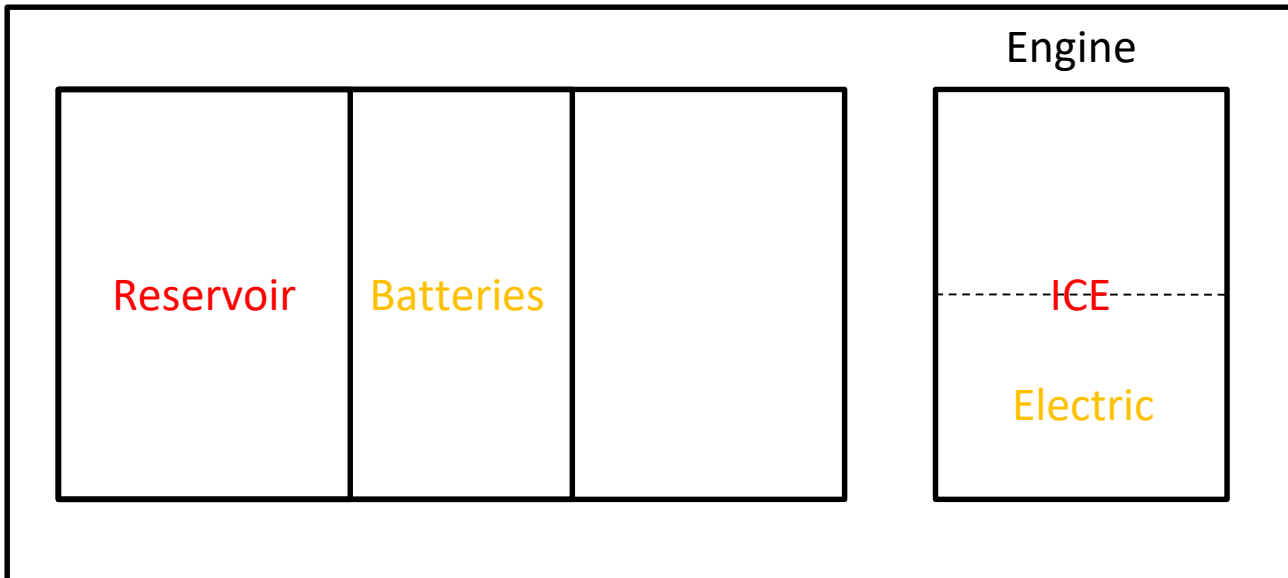
**Same route with preordered stops: stations and traffic lights**  
**18h/day, every day**



10t city **bus** going 40 km/h **posses 600 kJ** of kinetic **energy**.  
**Every time** it stops, **energy dissipates** into heat through the brakes.

# Vehicle electrification

Recuperation

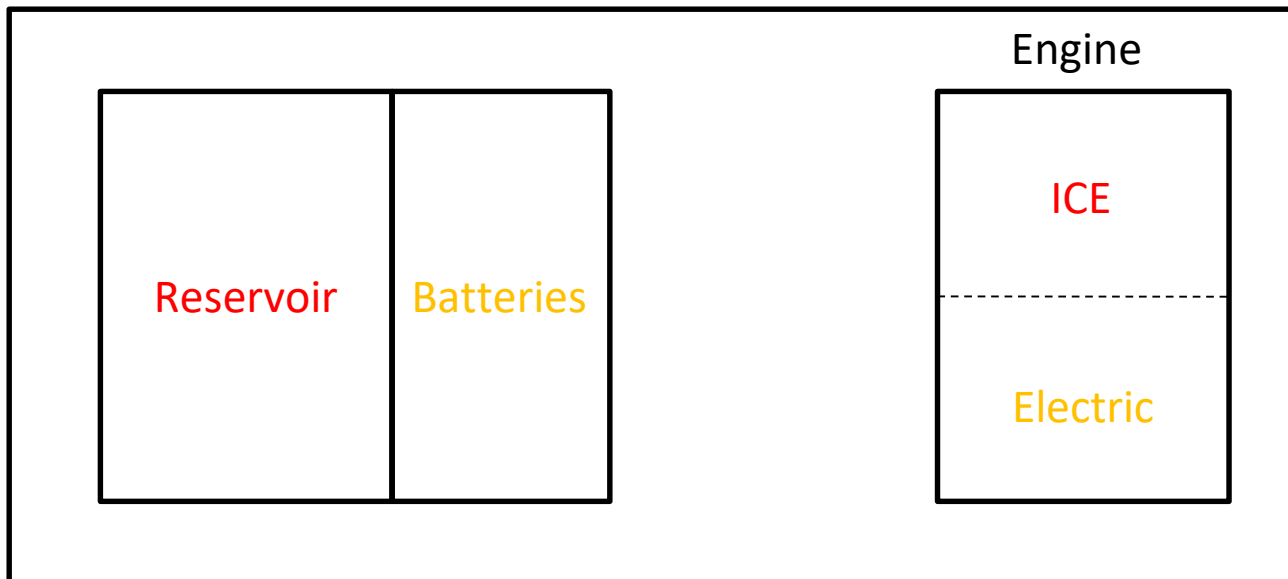


Conventional vehicle

# New type of hybrid vehicle

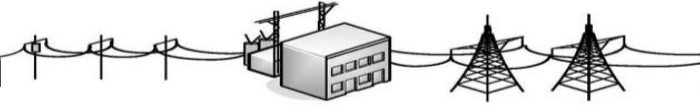
Station

Recuperation



Hybrid vehicle  
without batteries

# Energy exchange between bus and station



Slide-in



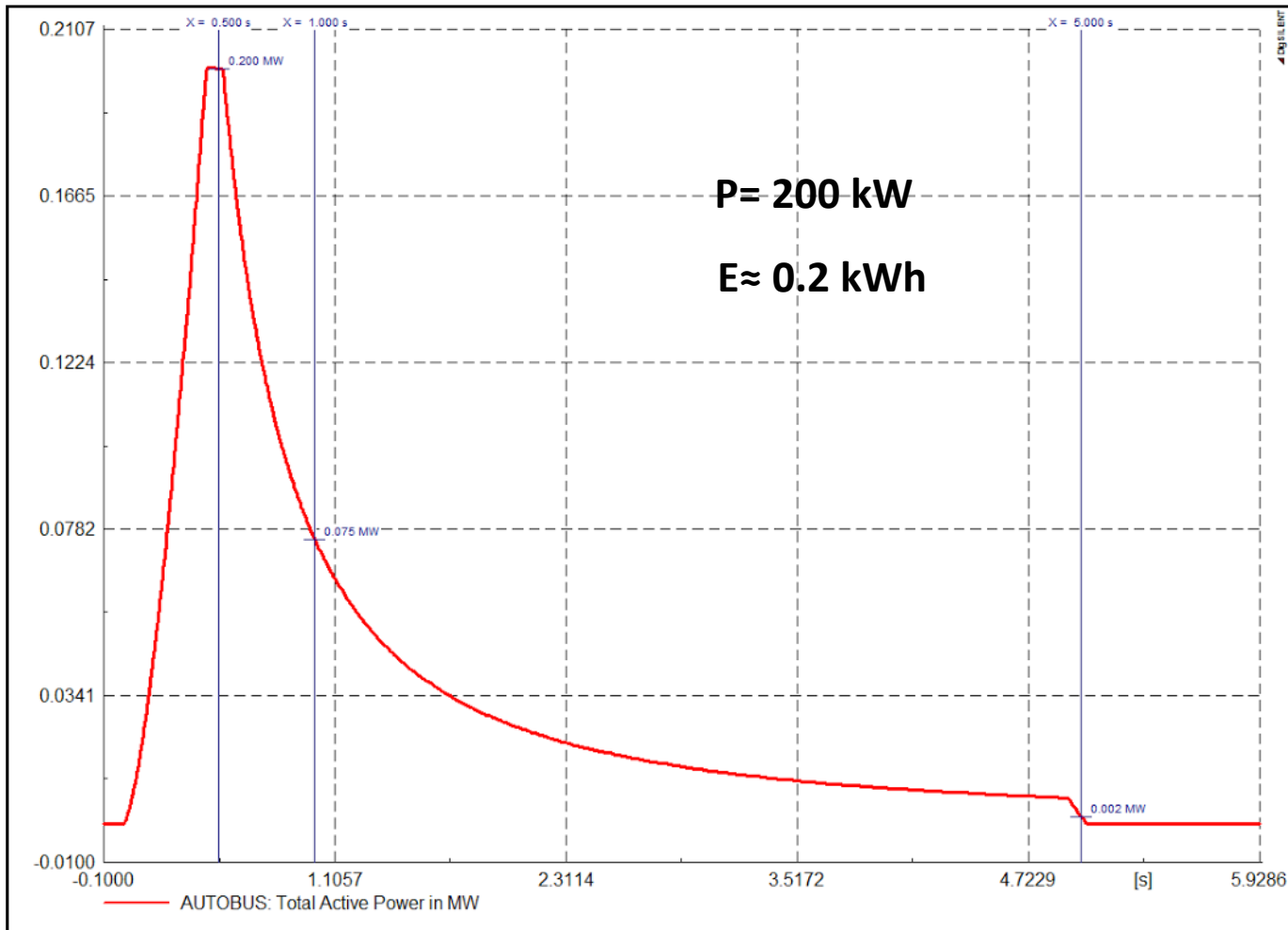
Overhead catenary



Induction (wireless)

- Conventional & innovative models of energy transfer
- Developed power grid in the city -> **No need for batteries**
- **Grid breathes** during interaction -> „E- Lungs“

# Model of the bus



Negligible exchange **Energy?**

Ave. ICE efficiency = 15 – 20% -> **0.2 kWh/20%** = 1 kWh of equivalent fuel energy

Ave. EV eff.\* = 20 kWh/ 100 km -> 1kWh = **5 km**

\*Given values are for the car, not for the bus, but serve good for showing the point.

# Conclusion

- Significantly reduced acceleration losses, which are biggest contributor.
- Significantly lowered air pollution in highly populated city areas.
- System is completely autonomous and can work without grid.
- Power lines should be planned in advance, so they have enough capacity.
- There is no significant voltage impact to the grid.



# Thank you!

Mail: [janko.pavlovic@digital-worx.rs](mailto:janko.pavlovic@digital-worx.rs)

[www.digital-worx.rs](http://www.digital-worx.rs)

Phone: +381637496107