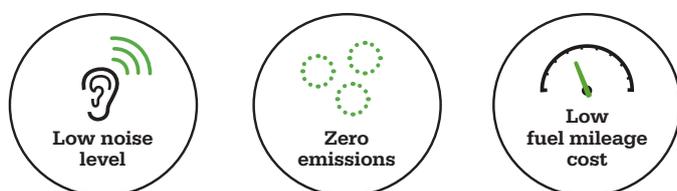




## Q&A with **Andreas Bodén, Director Sales & Marketing**

# Fuel cells – a key role in public transportation

Hydrogen-powered public transportation plays a key role when making our cities greener and more sustainable. Our research shows that fuel cell buses are quieter, cheaper to operate and have zero emissions compared to fossil buses. The technology is already in use – helping to decrease the total societal cost in urban areas worldwide.



### Core benefits of fuel cells

Our research shows several major benefits when comparing fuel cells and fossil fuels. A hydrogen-powered bus helps our cities become quieter and cleaner. Firstly, the noise level is lower compared to a fossil bus, contributing to a higher comfort level. A fossil bus emits carbon dioxide (CO<sub>2</sub>) and other pollutants such as nitrogen oxides (NO<sub>x</sub>) and sulphur oxides (SO<sub>x</sub>) whereas a hydrogen-powered bus has zero emissions. The fuel mileage cost is also lower for a fuel cell bus: 0.48 EUR/km compared to 0.60 EUR/km for a fossil bus. When it comes to fuel economy, a hydrogenpowered bus is 30% more energy efficient, looking at fuel consumption per 100 km.

	FUEL CELL BUS 60 KW	FOSSIL BUS STANDARD
<b>Fuel weight</b>	30 kilo hydrogen	80 liters fossil fuel
<b>Expected range per day</b>	200 km	200 km
<b>Expected operating hours without refueling</b>	10 hours	10 hours
<b>Emissions</b>	None	CO <sub>2</sub> , NO <sub>x</sub> , SO <sub>x</sub>
<b>Noise level</b>	Low	High
<b>Public comfort level</b>	High	Low
<b>Cost per km for application*</b>	0.48 EUR	0.60 EUR
<b>Fuel consumption per 100 km</b>	8 kilo hydrogen	30 liters fossil fuel
<b>Refueling time</b>	<10 minutes	<10 minutes

Sources: Volvo Bus Corporation, DOE Hydrogen and Fuel Cells Program Record, Fuel Cells and Hydrogen: From Technology to Market, PowerCell.

\*Based on expected hydrogen cost by 2025, according to DOE Hydrogen and Fuel Cells Program Record.

### Societal benefits

We are becoming increasingly aware of the societal costs of fossil fuels – rising healthcare costs due to pollution and the low comfort levels are only two examples of the negative impact fossil fuels has on society. Hydrogen-powered public transportation helps to decrease the societal cost. The comfort level for both passengers and operators is significantly higher due to the low noise level and absence of toxic emissions, which all in all contribute to healthier citizens and greener cities.

### What role will hydrogen-powered buses play in the near future?

“To meet the goals of the Paris-Agreement, renewable energy needs to be scaled up six times. Fuel cells will play a key role in the electrification of public transport. Hydrogen-powered buses are the only alternative to obtain longer operational cycles, and at the same time the emissions are zero.”

### How ready is the technology for usage in our cities?

“The technology is ready and here. Hydrogen-powered buses are already in use, primarily in Europe and China. Even if the infrastructure is still not fully in place, we see numerous examples of great interest and real projects being initiated globally.”

### What are the core benefits of hydrogen-powered public transportation?

“Fuel cell buses are quieter, cheaper to operate and have zero emissions compared to fossil buses. These benefits work on different levels – bus operators are is mostly concerned about costs. Politicians need to consider the emission levels, and the passengers and citizens are affected by the noise.”

### What are the societal benefits?

“The largest societal benefit is that a community can become its own producer of fuel. Being able to produce hydrogen locally is a great advantage. Moreover, the reduced noise and emissions levels contribute to the well-being of individuals and society in general.”

### What can PowerCell offer?

“On our path to solving the demand for clean energy, PowerCell is always striving to develop state-of-the-art technology, cooperating with the major industrial OEMs in the world. Our latest partnership with Bosch proves that our innovative solutions based on hydrogen-powered fuel cell technology and long tradition of Swedish engineering are highly valued by the market.”