



## News service MAN Group

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### **Cooperation between MAN Nutzfahrzeuge Group and Ballard Power Systems in fuel cells / MAN plans new fuel-cell bus**

**The MAN Nutzfahrzeuge Group and Ballard Power Systems of Kirchheim/Teck-Nabern (Germany) have signed an agreement on the delivery of a fuel-cell system for use in a city bus. The vehicle is to be operated as part of the hydrogen project at Munich Airport from early 2004 onwards.**

The low-floor bus will be a hybrid fuel-cell bus powered by a 65 kW PEM fuel-cell system and an energy storage unit. Of the various types of fuel cell PEM fuel cells (PEM = Proton Exchange Membrane) are particularly suitable for mobile applications because of their low operating temperatures of 60 - 80° C and their high efficiencies. The hydrogen is carried in tanks on the roof of the vehicle at a pressure of 350 bar. The new concept holds the promise of cost savings, as it uses fuel-cell technology that is intended for the car sector. The electrical energy storage system makes it possible to reduce fuel consumption through use of the brake energy.

Over the last few years MAN has gathered extensive experience with hydrogen as a fuel for both internal combustion engines and fuel cells. The cooperation now agreed with Ballard Power Systems marks a further milestone in the development of alternative drive systems.

MAN regards fuel-cell drive as a future-orientated option with the potential of establishing itself as a drive system for vehicles, in particular in the public transport sector. Before this can happen, however, further developments in the technology will be needed if the requirements necessary for a broad-based market introduction are to be met. Fuel-cell drive systems can be expected to be ready for series production from 2010 onwards.

Ballard Power Systems is the acknowledged market leader in PEM fuel-cell technology. Ballard concentrates on the development of fuel-cell products for mobile, stationary and portable applications and on bringing them up to market maturity. The company also offers important subsystems and components which complement and support Ballard® fuel-cell products.

The MAN Nutzfahrzeuge Group is the largest single company in the MAN Group and one of the leading international manufacturers of commercial vehicles. In fiscal year 2002 the company generated with over 34,000 employees a sales revenue of € 6.6 billion with some 54,000 trucks and 7,600 buses sold.