



## **Ballast Nedam IPM designs and builds natural gas filling station for Nijmegen busses**

The Arnhem Nijmegen City Region has awarded public transport company Novio a three year concession to provide bus transport in the Nijmegen region. In order to make the city greener, buses in Nijmegen will be running on natural gas from December 2009. Novio has purchased 75 new natural gas buses for this.

In order to ensure that the busses can be refuelled, councillor Jan van der Meer and Erik Kemink of Ballast Nedam subsidiary CNG Net signed the contract for the construction and operation of a natural gas filling station in June 2009. Ballast Nedam has all the required expertise and experience in this area, much of it acquired on similar natural gas filling stations developed previously in Haarlem, Velsen and The Hague. The station constructed on the Hermes site on Industrieweg is one of the largest in Europe.

Ballast Nedam IPM, the market leader in the field of developing natural gas filling stations, was responsible for the design, engineering, licensing process and construction of the entire filling station, all in accordance with the standards and guidelines specified by the relevant laws and regulations. We are also responsible for the all-in service and maintenance of the systems over the concession period.

The experience gained at other bus filling stations was very useful in dimensioning this system, which needs to be able to fully refuel the 75 busses quickly with a maximum refuelling time of 7 minutes per bus. Special measures also have to be implemented on this project in order to guarantee availability and prevent the loss of public transport in the city.

In order to be able to install all this within the existing site, a noise-proof prefab concrete housing was engineered and constructed in which the system was placed. The housing has been installed in a cellar in order to be able to work efficiently on the system during construction and during the operation phase and in order to save space. The system consists of three compressors with a total capacity of 1800 Nm<sup>3</sup> of natural gas per hour. If the gas pressure in the low pressure gas network falls below a certain level, a pre-compressor is automatically activated which compresses the gas to the desired intake pressure for the compressors. These compressors bring the gas up to the desired final pressure in four stages.

The system has been specially developed and built for this application. If one of the compressors is lost due to a fault, a back-up compressor can always take over the work. The installed storage buffer serves - amongst other things - to minimise the number of start-stops for the compressors.

The required refuelling speed for the busses has been achieved by designing and producing two industrial dispensers at our own production site. These incorporate a flow meter in order to be able to record the amount of natural gas per bus. A special loop incorporated in the tarmac detects the busses and release the pumps. After refuelling the filled quantities per bus are recorded automatically.

This natural gas filling station in Nijmegen is operated by CNG Net, part of Ballast Nedam Concessies, whilst responsibility for managing faults and maintenance lies with Ballast Nedam Beheer. Hence Ballast Nedam has full responsibility for the filling station.

With this project Ballast Nedam IPM has shown that it can successfully carry out the complete process of design, engineering, licensing and construction in five months. As a result, Nijmegen's very first natural gas bus could be refuelled on 4 December in the presence of councillor Jan van der Meer.

Project by	: Ballast Nedam IPM B.V.
Function categories	: Natural gas filling stations (new-build)
Location	: Nijmegen (The Netherlands)
Client	: Nijmegen City Council
Status	: Completed