



## *World leader in alternative fuel systems*





## *A green and cost-efficient alternative*

“ Alternatives to petrol and diesel. They exist. Fuels such as autogas (LPG), natural/biogas (CNG/LNG), hydrogen and hythane. Each fuel has its positive result in costs and emissions. For many years, Prins has been a leading developer and supplier of alternative fuel systems to installers, importers and (A)OEMs all over the world.

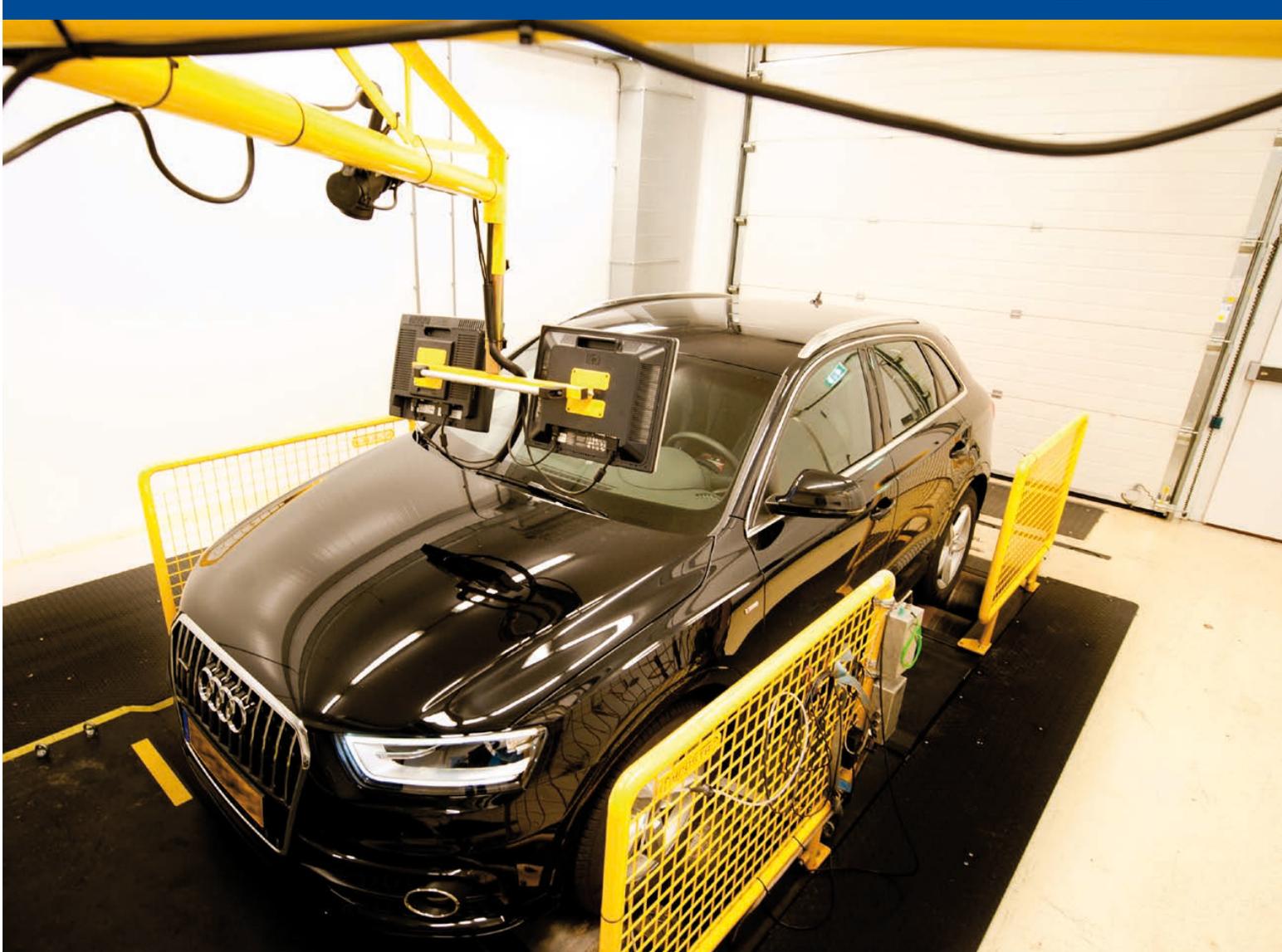
A lot of progress has been made over the past few decades. The integration of the filler behind the petrol tank cap and the location of the alternative fuel tank in the spare wheel compartment are just a few examples. Also in terms of performance, safety and maintenance the necessary progress has been made.

Prins is a Dutch total solution provider serving a worldwide customer base and delivering a wide range of alternative fuel products for light-, medium- and heavy-duty vehicles. The company is continuously developing and innovating with a strong focus on durability and sustainability. ”

Bart van Aerle,  
CEO Prins Autogassystemen B.V.

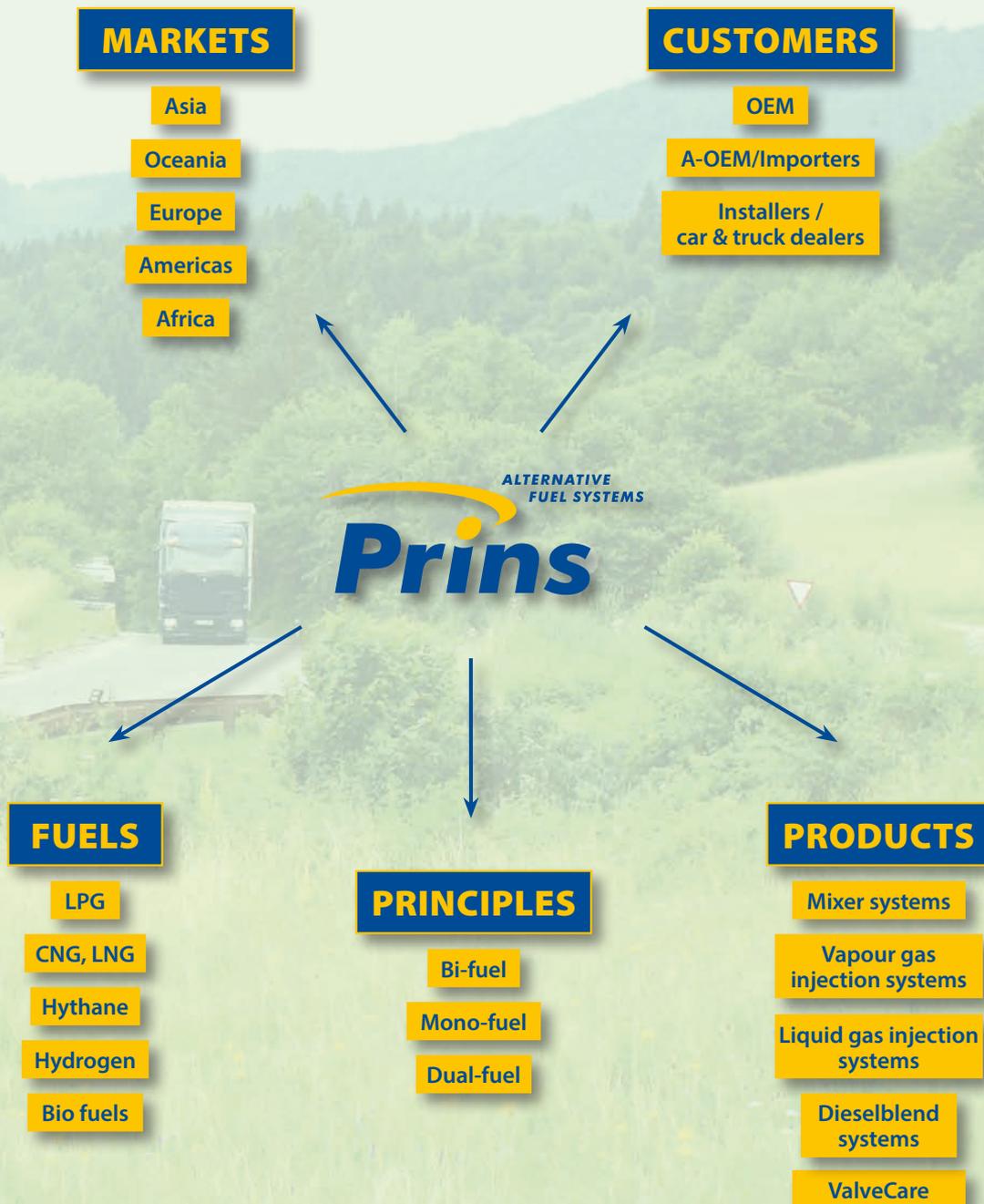


*Our ambassador,  
the Prins Mascot,  
symbolises eco-friendly  
and economical driving.*



***'Quality, Innovation and Customer Care:  
it's in our nature'***

# The total solution provider





For more than 25 years, Prins Autogassystemen has been a leading player in the development and production of alternative fuel systems. As a group partner of SHV Energy, Prins provides (A)OEM customers, importers and installers in over 50 countries with cost-efficient and innovative solutions for a wide variety of engine types and engine technologies. All partners and customers are trained and certified in-house to ensure proper installation and maintenance of the Prins systems. All Prins staff members are dedicated and highly qualified and operate in accordance with ISO 9001 and ISO 16949 standards. The After Sales Service department and the global network of Prins service locations provide customers with ongoing support.

## Why Prins:

- **Leading developer and supplier of high-quality components and alternative fuel systems**
- **Worldwide service network**
- **One-stop shopping**
- **Innovative – with a proven track record**
- **Focus on sustainability**



# Engineering at a global level

Innovation is at the center of Prins. In collaboration with Keihin Corporation of Japan, one of the world's leading manufacturers of Original Equipment (OE) fuel systems, Prins has developed a high-tech sequential vapour gas injection system (VSI). This system is suitable for both LPG and CNG applications and indirect as well as direct injection engines (VSI-DI).

Prins also collaborates with other first-tier technology partners such as Bosch, Continental and several technical universities. Prins has been able to develop systems for the latest families of direct injection engines with direct liquid gas injection: Direct LiquiMax for LPG applications. For the medium- and heavy- duty vehicle segment, Prins has developed Dieselblend, in which diesel is used with LPG, CNG or LNG in an optimal mix ratio for the most reliable and optimal drivability.

The in-house Research & Development (R&D) department develops all core components, software and systems. Together with the Application department (system integration), immediate testing and application is possible. Core components and software can often be found integrated over the full range of systems to ensure optimal exchange and integration.

## Patents

Prins has patented most of its important innovations. In addition, applicable solutions for and on behalf of Prins are continuously being developed together with partners and suppliers.





### Reliability and quality

Besides functionality, Prins greatly values reliability and quality. The testing of components and complete systems is done at various facilities both within and outside Prins. Amongst other things, the systems are tested for exhaust emissions, power and drivability under various climatic conditions. All components are validated in-house, comply with EU R67/R10/R110/R115/CSA/EPA/ISO 15500 regulations, and are 100% C.O.P.-tested before dispatch.

Products are also globally subjected to durability, heat and cold tests. For the ultimate performance tests, Prins makes its products available to several racing teams that use alternative fuels.



*Automechanika  
Innovation Award*



*Automechanika  
Green Directory Award*



*INPRO Award*

### Award winning

Prins and its products are regularly awarded with leading industry awards. The company won the INPRO Award, the Automechanika Innovation Award, and the Automechanika Green Directory Award, all for the Direct LiquiMax. Prins also won the bronze Sustainable Entrepreneur Award and VSI-2.0 DI was awarded the INPRO Award.

### The various alternative fuels:

**Autogas (LPG)** is a familiar, eco-friendly fuel. LPG is a by-product of oil refinement and is released through the extraction of natural gas. Driving on autogas means saving on fuel costs, reducing CO<sub>2</sub> emissions by up to 15% and reducing the percentage of particles by up to 90%, without compromising your driving pleasure.

**CNG (Compressed Natural Gas)** is less expensive and cleaner than other fuels that are currently available. Biogas, also called green gas, is produced through fermentation. **LNG (Liquefied Natural gas)** is the liquid form of natural gas. Because of its positive properties like its larger range and storage capacity, it is used in the transport sector. The quantity of natural gas and biogas is expressed in weight.

**Hydrogen** and **Hythane** are fuels that are expected to be available on a large scale in the near future. Already, Prins is carrying out extensive testing projects with these fuels in order to be ready when the market is. The purpose of these projects is the development of a fuel system with minimal emissions.

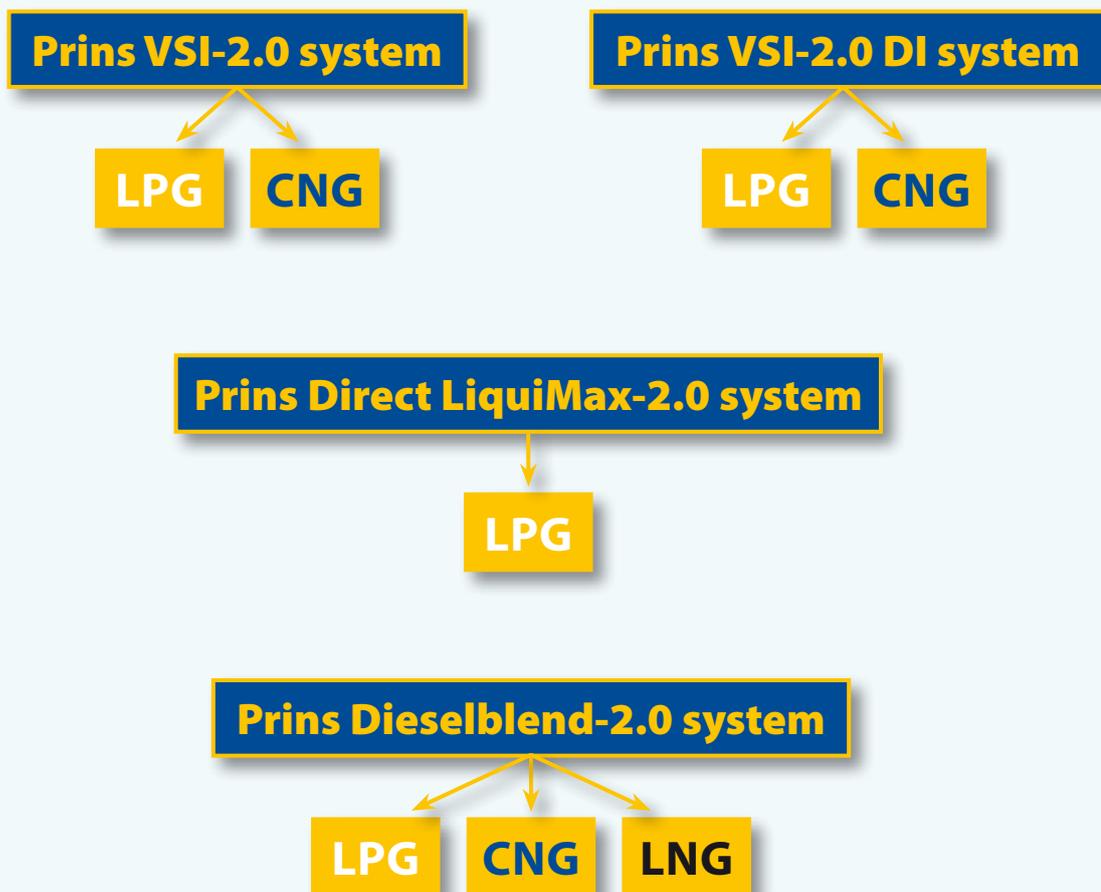
ALTERNATIVE FUEL SYSTEMS  
**Prins**





# Product range

*The Prins alternative fuel systems can be categorised according to type of fuel and its application. Prins has systems for both vaporous and liquid injection. The result: a wide range of products and a Prins system for almost any vehicle. Irrespective of whether it is for cars or buses, lighter or heavier transport. Prins systems even fit marine and industrial use. The Prins systems consist of components that are finely attuned to each other and are sometimes interchangeable. Prins also supplies complete sets with all relevant accessories and parts, and offers its customers the convenience of a total solutions provider.*





## Prins VSI and Prins VSI-DI

Prins VSI (Vapour Sequential Injection) is a highly advanced bi-fuel injection system available in an LPG and a CNG version. This universally applicable system has already been on the market for more than ten years and has acquired a solid top ranking worldwide. The components of the VSI system are of OEM quality and specially developed for LPG and CNG applications.

As a dedicated system, VSI is suitable for the latest generation of Direct Injection engines (VSI-DI).

Both the VSI and the VSI-DI system have proven their strength in three-, four- and five-cylinder vehicles, and in particular in six-, eight- and ten-cylinder vehicles. VSI-2.0 is a refinement of the original version, even more tailored to the latest generation of vehicles.



Together with the VSI system, Prins optionally supplies the ValveCare product, a unique additive dosaging system with liquid to prevent excessive wear of the valves and valve seats of engines that are sensitive to driving on LPG or CNG.





## Direct LiquiMax-2.0 (DLM-2.0)

Because of its chemical and physical properties, LPG is extremely suitable as fuel in combination with direct injection engines. Extensive tests have shown that the efficiency of the engine increases dramatically by using LPG, and this results in a CO<sub>2</sub> reduction of 10 to 15% and in reduction of particles of up to 90% compared to petrol.

Prins Direct LiquiMax is a fuel system that injects liquid LPG directly under high pressure (20-250 bar) into the engine and makes optimal use of the OEM electronics and components that are already present in the vehicle. It can be applied as a mono or bi-fuel solution. With Direct LiquiMax the driver will not notice any difference between driving on LPG or petrol. The vehicle even starts immediately on LPG.





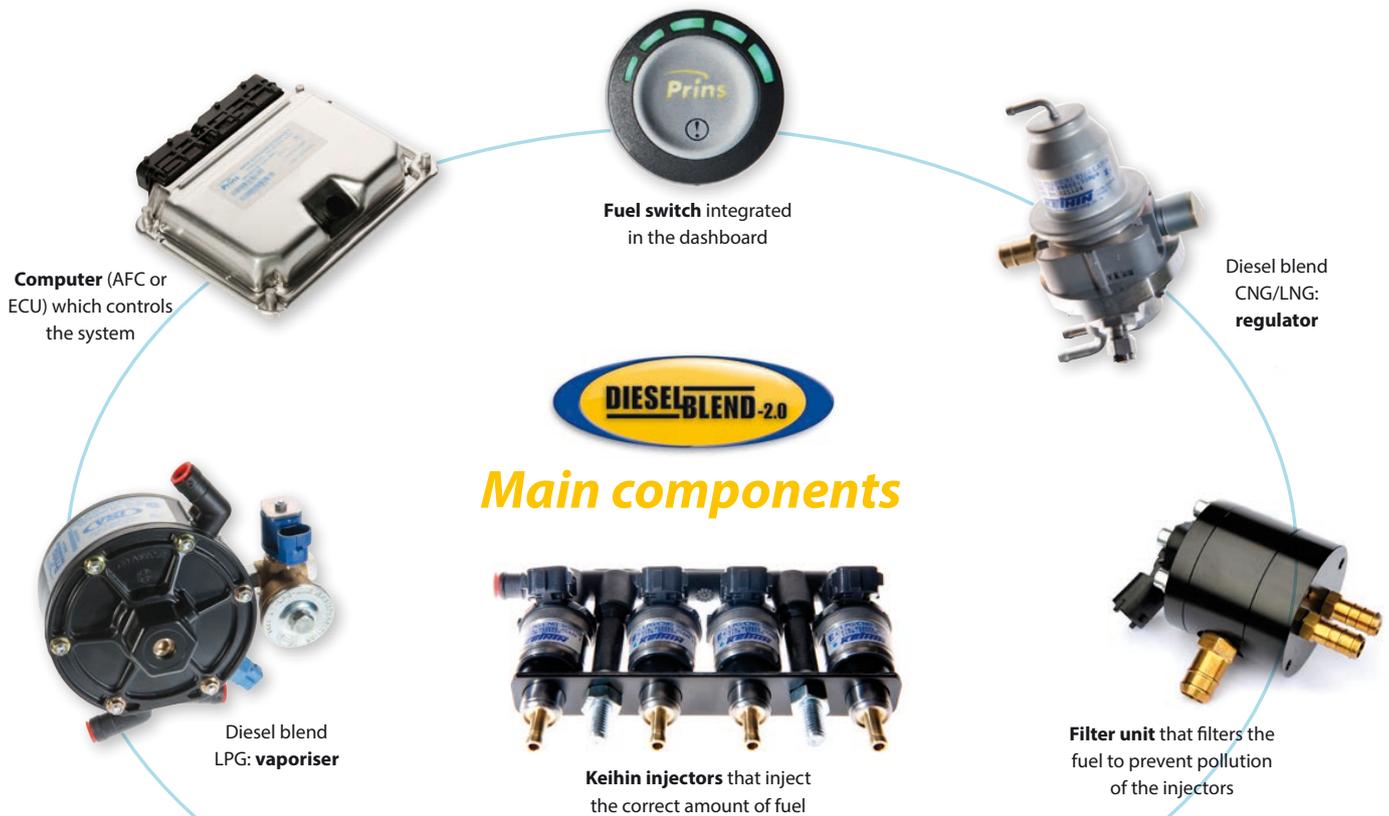
## Prins Dieselblend

When a Prins Dieselblend system is added to a diesel engine, it can use the much cleaner and cheaper LPG, CNG or LNG fuel. Especially where large distances are driven, it pays off to use an alternative fuel while the original engine is still in tact. This way, substantial savings on fuel costs can be realised as well as considerable reduction of the emissions of CO<sub>2</sub> and NO<sub>x</sub>. This supports the Lean and Green principle.

The single-point and sequential multipoint vapour injection system is fitted parallel to the original engine management system. Thus, in principle Prins has a system available for all diesel engines. The systems are fully computer-controlled to inject the correct amount of LPG, CNG or LNG and this is specifically tailored to the engine's characteristics.

### Reliability

With components of high quality, refined adjustment and worldwide professional support, Prins offers a reliable dedicated system. Drivers will notice no difference in driving performance and experience.



**Tank:** there are several options for positioning the storage tanks for LPG, CNG and LNG



# Corporate Responsibility

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***Quality is utmost importance to Prins. It calls for professional and high-quality business management. The choice to provide quality has consequences for all Prins operations, from the choice of products and manufacturers to the interior of the building and use of materials. Long-term vision and continuity are fundamentally important issues.***

## ***Service at large***

Prins believes in doing business the right way; corporate responsibility is everyone's responsibility. This is deeply rooted in our operational management and it enables Prins to deliver a remarkable financial, social and environmental performance. This driven and dynamic corporate culture makes it possible to attract exceptional people.

## ***Customer care***

Customer care is one of the core values of Prins. The After Sales Service department closely collaborates with service partners worldwide. They are trained in-house at Prins. Drivers are provided with professional assistance throughout the entire world. Local partners are listed at [www.prinsautogas.com](http://www.prinsautogas.com).

## ***Social Responsibility***

It is important to Prins to show corporate social responsibility and consequently we have a strong focus on people, planet and profit.

Prins collaborates closely with local sheltered workshops for the integration of mentally or physically disabled people. In the day-to-day business operations, all processes and purchases and sales are assessed according to sustainability. Prins supports the Stichting Natuur & Milieu (Nature & Environment foundation) and sponsors various local initiatives. In 2013, Prins has won the bronze Sustainable Entrepreneur Award.

Together with suppliers, manufacturers, customers, and other partners and stakeholders, Prins is building towards a sustainable future. Prins is convinced that only through collaboration it is possible to continue to offer quality in a responsible manner.





WINNER OF  
**automechanika**  
greendirectory AWARD  
&  
**automechanika**  
innovationaward

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