

## **World premiere: KEYOU presents 18t truck and 12m city bus with hydrogen engine for the first time**

Munich, 6 April 2022,

**Hydrogen mobility is gradually taking shape: Numerous well-known manufacturers are developing hydrogen-powered commercial vehicles. They are at full speed on both fuel cells and hydrogen engines. New consortia are emerging, and investments in H2 infrastructure are increasing. As the first hydrogen specialist company worldwide, KEYOU, presents an 18-ton truck and a 12-meter city bus with a hydrogen engine - based on an already existing diesel engine platform. At the heart of both vehicles is KEYOU's proprietary KEYOU-inside system, which will be used in the future primarily to convert existing vehicles.**

### **Successful "engine wedding" at the beginning of the year, first "on-road" tests in spring**

Since 2015, KEYOU has been developing H2-specific technologies, components, and combustion processes that can be used to transform conventional combustion engines into emission-free hydrogen engines. In the process, KEYOU has succeeded in developing the world's most efficient H2 engine to date from a diesel engine platform. Both prototype vehicles presented are based on the 7.8-liter hydrogen engine developed by KEYOU. The 18t truck is based on a Daimler Actros chassis. The integration work, which started in January 2022, was carried out by Paul Nutzfahrzeuge GmbH from Vilshofen, the European market leader in special vehicle construction. Following the successful "marriage" - i.e., the integration of the engine into the vehicle - the first test drives are now scheduled near Munich. Individual approval for the demonstration vehicle is expected to be completed as early as this summer so that the 18t truck will be allowed to travel on public roads for demonstration purposes. The European Innovation Council (EIC), which is providing financial support for the project via the EIC Fund, is also impressed by the technology and the team.

With the 12-meter city bus, which is based on the chassis of a leading European bus manufacturer, KEYOU presents another zero-emission vehicle with a "KEYOU-inside hydrogen engine." Development and construction of the vehicle are supported by the Bavarian Ministry of Economic Affairs. Paul Nutzfahrzeuge GmbH is also responsible for the integration work on this vehicle. A special feature of this vehicle is that the hydrogen engine is operated here as a mild hybrid variant, thus fulfilling to a particular degree the requirements that a transport company places on a city bus.

### **Both prototype vehicles live for the first time at the IAA 2022**

The 12-meter city bus, as well as the 18-ton truck, will be presented live to a wide audience for the first time in September at this year's IAA Commercial Vehicles. "With our prototype vehicles, we are not only demonstrating that hydrogen engine technology works in practice, but also that it is a cost-effective and robust alternative to battery-electric or fuel cell vehicles," explains Thomas Korn, CEO, and co-founder of KEYOU GmbH.

### **The engine - is close to the diesel, but CO<sub>2</sub>-free and without expensive exhaust after-treatment**

Most vehicles used by fleet operators, whether in the logistics industry or by urban transport operators, still consist of classic diesel trucks and buses. To be on a par with these, vehicles with hydrogen engines must meet the numerous parameters of the benchmark diesel. In addition to price, the focus here is on the range, robustness, and suitability for everyday use. This is the only way fleet operators can go "green" without having to give up their business model. The way KEYOU develops hydrogen engines and converts vehicles closes the gap between "zero emissions" and cost-effectiveness. For example, the two-vehicle types offer range potentials of over 500 kilometers. With an output of 210 kW the engines do not only provide sufficient power but also remain below the zero-emission CO<sub>2</sub> limit defined by the EU in the demanding WHTC reference cycles. Uniquely, these easily meet the EURO 6 emissions standard without the need for expensive exhaust after treatment, which has previously been assumed an absolute necessity. The next step is to prove these values on test tracks and public roads.

### **Outlook: First pilot projects planned with pioneering customers, increased focus on existing vehicles**

To achieve the climate protection targets in the commercial vehicle sector, a solution for existing vehicles is also essential. A big plus for the technology developed by KEYOU is that it can also be applied to the existing market. "This is where we see," Thomas Korn continues, "the greatest leverage for the hydrogen engine in vehicles." This is because the technology is not only durable, robust, and independent of rare earths, but also offers a diesel-equivalent cost structure for the end customer - especially when looking at the overall costs. Not least because only minor modifications to the underlying base engine are required and existing combustion engine infrastructure can be used in the production of the engines and vehicles. "So you can say: customers get a zero-emission vehicle at a comparable price to a diesel vehicle without having to make any sacrifices," emphasizes Thomas Korn. Unlike other manufacturers, KEYOU does not plan to produce its own vehicles and engines. Instead, the Munich-based hydrogen specialist is concentrating on the further development and conversion of new and existing vehicles. "In the next ten to 15 years, millions of diesel vehicles will still be produced worldwide, especially for the commercial vehicle sector. So we are facing a huge market here, which we want to serve with our 'zero-emission' technology," says Thomas Korn.

After this year's vehicle tests, KEYOU plans to conduct an intensive field test phase together with pioneering customers at the end of 2023. Here, various application scenarios will be mapped and technology and vehicle will be tested under real conditions. In 2024, two more engine platforms will be added, which will then be used to increasingly address the existing market.

### About KEYOU

KEYOU is a successful high-tech company in the Clean Mobility sector that develops innovative hydrogen technologies, specific H2 components, and combustion processes for the automotive industry, which can be used to transform conventional engines into emission-free hydrogen engines, cost-effectively and without major modifications to the basic engine. The new "green" combustion engine with KEYOU-inside technology means zero emissions, efficiency, and economy at the same time - without compromising on performance, capacity, or range. Vehicles with such engines are considered zero-emission vehicles according to EU standards. The technology is engine and manufacturer-independent, scalable, and can be used both on-road and off-road. The focus is currently on commercial vehicle engines. With KEYOU, "Sustainable Zero Emission" becomes a reality.

### Sounds interesting?

Do you want to learn more about KEYOU hydrogen technology? Get in touch with us. We will be happy to keep you up to date on the exciting developments!

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#### Responsible for Marketing & Communication:

Jürgen Nadler (CMO)

#### Contact Person KEYOU:

Roberto-Fabio Nobile (Marketing & Communication Manager)

**KEYOU GmbH**

Arnulfstr. 60  
80335 München

Phone: +49 152 09331468

Email: [fabio.nobile@keyou.de](mailto:fabio.nobile@keyou.de)

Website: [www.keyou.de](http://www.keyou.de)

## Photo material



KEYOU is the first company to simultaneously present a 12-meter city bus and an 18-ton truck with hydrogen engine.



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The first 18-ton truck with "KEYOU-inside" technology will be presented for the first time at the IAA in September 2022.



At the same time as the 18-ton truck, KEYOU is also presenting a 12-meter static bus. This will also be presented at the IAA in September 2022.