Press Release

The hydrogen engine is coming – KEYOU gives first pioneer truck to logistics group EP-Trans

Munich, May 12, 2023,

CO2-free driving, with the smooth engine running, ample power, long range, and short refueling times - Munich-based hydrogen specialist KEYOU makes it possible. Not with an e-truck or a fuel cell-powered vehicle, but with a truck with a hydrogen engine classified as "zero emission" according to the EU standard. The first customer, EP Group from Regensburg, has signed the contract for the first two 18-ton trucks at the "Transport Logistic" trade show.

Great demand from customers, first pioneer signs at Transport Logistic trade fair

KEYOU is on the home stretch: Following the world premiere of the 18-ton truck and the 12-meter city bus powered by hydrogen engines at the IAA Transportation 2022, customer operations are set to begin soon. The prototype truck, based on the Mercedes Benz Actros chassis, is currently making its daily rounds at the German Armed Forces' Neubiberg test site. The engine calibration on the 18-ton truck has been completed, and the integration and coordination of the various systems is almost finished. TÜV Süd has already issued individual vehicle permits, and road operation is now imminent. The first eight trucks will be integrated into everyday operations at pioneer customers in the fourth quarter of this year. These trucks will be converted to hydrogen combustion and equipped with CO2-free KEYOU-inside engine.

One of the first customers is the Regensburg-based freight forwarder EP-Trans, which uses around 300 trucks to transport goods from A to B throughout Europe for well-known end customers. Managing director Markus Pumpf is convinced by the technology: "Electric trucks are out of the question for our purposes. On the test track, we were very positively surprised by the performance of the 18-ton truck, so we decided quite early on to order two vehicles." Georg Ehrlinger, also on the management board of EP-Trans, adds: "The EP Group is committed to sustainability and is focusing on hydrogen technologies. Together with KEYOU, we are, therefore, starting a project in which we will include two hydrogen-powered trucks in our vehicle fleet to evaluate the permanent use of hydrogen technology for our requirements in a test phase. In doing so, we are taking a pioneering role in Germany." During the Transport Logistic trade fair, a symbolic handover of keys took place at the KEYOU trade fair stand, where the truck that will be delivered at the end of the year could also be seen.

Euro VI without exhaust gas after-treatment, no CO_2 – "Zero Emission" according to EU standard

The six-cylinder in-line engines with 7.8-liter displacement and 210 kW output are based on a diesel engine platform from an established manufacturer and are converted for hydrogen operation by partner companies according to KEYOU specifications. The gas is injected into the intake system at a pressure of up to 15 bar, and spark plugs ensure the ignition of the gas-air mixture. KEYOU's proprietary combustion processes are the reason for the extremely low exhaust emissions while maintaining high efficiency. The engines comply with the Euro VI emission standard without any expensive and vulnerable exhaust after-treatment technology. "No CO2 is produced during combustion because there is no carbon in the hydrogen, and we are well below the nitrogen oxide limits because the engines are operating with very efficient lean-burn combustion, in a range where no nitrogen oxide is produced" explains KEYOU CEO Thomas Korn. In addition to the 7.8-liter engine, the Munich-based company is currently adapting the KEYOU-inside conversion system to a 13-liter engine, which will soon be tested in a 40-ton Volvo truck.

Short refueling time and long range

The converted KEYOU hydrogen engine impresses with its smooth engine running and significantly lower noise level than diesel truck engines. Visitors to the trade show were able to see this for themselves. Since only water vapor is emitted during operation, KEYOU was the only company allowed to run the engine in the trade show hall. Another advantage: while electric trucks spend several hours at the charging station, refueling with hydrogen takes only about 15 minutes; the current tank configuration with 27 kilograms of hydrogen enables a range of about 350 kilometers. Depending on customer requirements, the installation space can be extended, making a range of up to 600 kilometers possible.

For freight forwarders and logistics companies, the hydrogen engine also pays off financially: one kilogram of hydrogen offers the same energy content as 3.3 liters of diesel. However, the alternative drive and the classification as zero-emission vehicles eliminate a TCO cost driver – the KEYOU vehicles are toll-free. The shift to hydrogen will become even more attractive on January 1, 2024, when the so-called CO2 toll will be introduced in Germany, with additional costs for diesel trucks of 200 euros per ton of CO2.

H2 Mobility as a Service – KEYOU offers its customers a pay-per-use model

KEYOU makes it easier for its customers to get started with hydrogen mobility with an all-around carefree package. Unlike the usual purchase or leasing business, KEYOU rents out the first eight trucks and charges a flat rate per kilometer based on the annual mileage. In addition to the vehicle rental, this includes maintenance & service, insurance, and even hydrogen. All service and warranty work is taken care of by KEYOU or partner workshops. "The rental concept lowers the entry barrier, eliminating potential concerns customers may have about a new technology, offering the opportunity to use the vehicles in everyday operations. In the future, KEYOU will expand the pay-per-use model and offer the conversion of diesel trucks in the payload range between 16 and 40-ton trucks," says KEYOU CEO Korn.

Conversion of new and existing vehicles

KEYOU's business model will focus on converting both new and existing vehicles rather than manufacturing them in-house. To achieve this, KEYOU will utilize established chassis and engines, which will be adapted accordingly. The first prototype truck was converted by Paul Nutzfahrzeuge GmbH, one of the leading European manufacturers of specialized vehicles. The complete conversion process for the initial eight pioneer vehicles is estimated to take approximately 14 days per truck. This will change as Thomas Korn explains: "We are aiming to decrease the conversion time to a few days as the processes are optimized and experience is gained." There is significant potential for conversion, as millions of diesel vehicles will continue to be produced worldwide in the coming years, which can then be converted to hydrogen. KEYOU aims to begin converting existing vehicles in the second half of 2024.

City bus with hydrogen engine as mild hybrid system, 13-l engine for 40-ton truck in pipeline

At the IAA Transportation last year, KEYOU presented a 12-meter city bus with a hydrogen engine and mild hybrid system in addition to the 18-ton truck. The 48-volt system with 35 kW power supports the starting process; transmission specialist Voith contributed to the Diwa-NXT automatic transmission, which was specially developed for buses. After the successful market launch of the truck, KEYOU will increasingly focus on the market launch of the buses.

But the focus is initially on the truck market. KEYOU's next step will be to convert a heavy-duty truck with a 13-l engine to hydrogen, as this is currently the area with the highest demand, according to the Munich-based hydrogen specialist.

About KEYOU

KEYOU is a successful clean mobility company based in Munich, Germany. Since 2015, KEYOU has been developing innovative hydrogen technologies that can be used to cost-effectively transform conventional engines into zero-emission hydrogen engines - without requiring major modifications to the base engine. Based on the engine conversion and integration of an H2 tank system, KEYOU offers its customers CO_2-free hydrogen vehicles that are emission-free, efficient and economical at the same time - without compromising on performance, capacity and range.

In addition to pure conversion and a CO_2-free "second life" for existing vehicles, KEYOU's "Hydrogen Mobility as a Service" approach is a fully comprehensive hydrogen mobility solution. The total solution offered in a pay-per-use model ranges from the conversion of the vehicle and engine to the provision of the fuel, to the corresponding insurance and an attractive service & maintenance package. Zero emission mobility becomes a reality with KEYOU.

About EP-Trans

The Regensburg-based EP Group is a modern medium-sized logistics company with many years of experience in transport and logistics services. The company develops individual and innovative logistics concepts together with its customers. It stands for quality, flexibility, reliability and always sees itself as a partner in the cooperation with its customers. EP Group has a fleet of about 300 owned vehicles.

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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Photos and Captions

Symbolic handover of the vehicle keys after the
signing the contract with logistic company EP-Trans | ©KEYOU GmbH

Thomas Korn, Co-founder, and CEO of KEYOU GmbH | ©KEYOU GmbH

Markus Pumpf, CEO of EP-Trans Internationale Speditions-GmbH | ©KEYOU GmbH

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KEYOU's hydrogen truck: After TÜV approval, it will soon be seen on public roads. | ©KEYOU GmbH