

PAUL GROUP

#TransformingTrucking

SPEAKER: Christian Huber



PAUL GROUP

approx. 500 employees at 3 locations

Paul Nutzfahrzeuge GmbH
Special Trucks & Chassis Vilshofen



Josef Paul GmbH & Co. KG
Service Center Passau



Josef Paul GmbH & Co. KG
Service Center Vilshofen



CERTIFICATED OEM



KRAFTFAHRT BUNDESAMT

World Manufacturer Identification & Vehicle Type Approvals
(Production in accordance with EC-Policies and UN-Regulations)



ISO 9001:2015
Certificated
Quality Management System



TÜVRheinland®
Genau. Richtig.



ISO 14001
Certificated
Environmental Management System



Development of E/E Systems
based on
ISO 26262



Welding Process
ISO 9606-1
ISO 15614-1



Gas System Installation Inspection and
Gas System Inspection in accordance with BMVI
Requirements
VkBl. 8/2006 S. 422 ff., DGUV Vorschrift 2 & BetrSichV



Professional work on
High-Voltage Systems based on
BGI/GUV-I 8686



EU chemical climate protection regulation
& Regulation (EG) Nr. 307/2008 based on
VDA-, VDIK-, ZDK-Schulungskonzept

PH₂P[®]

Paul Hydrogen Power

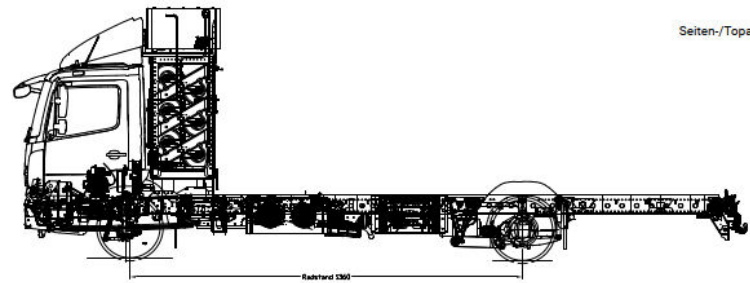


Hydrogen Truck for middle distribution

PH2P[®]: techn. Datas 4x2

FAHRGESTELL

- Atego 1523 L 4x2, Radstand 5360 (BM 967027)



PH2P 4x2

- Hinterachsluftfederung
- Brennstoffzelle Toyota 80 kW
- Antrieb Voith 200 kW / 310 kW peak, einstufig, Dauerdrehmoment 3100 Nm
- Batterien 120 kWh
- 30 kg Wasserstoff, 6 Flaschen a' 5 kg, 350 bar
- Reichweite ca. 450 km solo (ohne Anhänger), je nach Fahrprofil
- Fahrzeuggewicht ohne Aufbau ca. 8000 kg
- Steigfähigkeit 25% (16t) / 17% (26t)
- Achsübersetzung 6,143
- Bremswiderstand als 3. Bremse
- Rekuperation bei Verzögerung und Bergabfahrt
- 16 t Gesamtgewicht solo
- 26t Gesamtgewicht mit Anhänger

CHASSIS

- Atego 1523 L 4x2, Wheelbase 5360 (BM 967027)

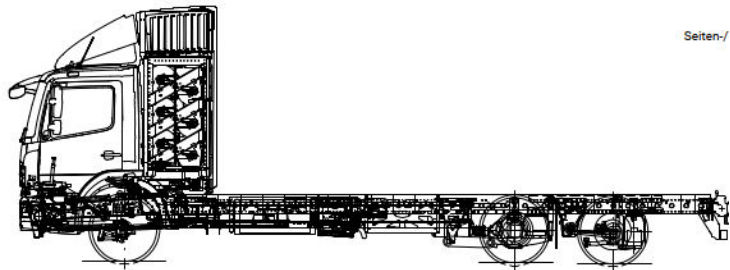
PH2P 4x2

- Rear Axle Air Suspension
- Fuel Cell Toyota 80 kW
- Drive Voith 200 kW / 310 kW peak, single-stage
- Continuous Torque 3.100 Nm
- Batteries 120 kWh
- 30 kg Hydrogen, 6 Bottles of 5 kg each, 350 bar
- Range approx. 450 km solo (without trailer), depending on driving profile
- Vehicle Weight without body approx. 8000 kg
- Gradeability 25%/17% (26t)
- Final Drive Ratio 6.143
- Braking Resistor as 3rd brake
- Recuperation when decelerating and driving downhill
- 16 t total weight alone
- 26t total weight with trailer

PH2P[®]: techn. Datas 6x2

FAHRGESTELL

- Atego 1523 L 6x2, Radstand 5360 (BM 967027)



PH2P 6x2

- Hinterachsluftfederung
- Brennstoffzelle Toyota 80kW
- Antrieb Voith 200 kW/310kW peak, einstufig, Dauerdrehmoment 3100 Nm
- Batterien 120kWh
- 30 kg Wasserstoff, 6 Flaschen a' 5 kg, 350 bar
- Reichweite ca. 450 km solo (ohne Anhänger), je nach Fahrprofil
- Fahrzeuggewicht ohne Aufbau ca. 8835 kg
- Steigfähigkeit 25% (16t)/17% (26t)
- Achsübersetzung 6,143
- Bremswiderstand als 3. Bremse
- Rekuperation bei Verzögerung und Bergabfahrt
- 22 t Gesamtgewicht solo
- kein Anhängerbetrieb zulässig

CHASSIS

- Atego 1523 L 6x2, Wheelbase 5360 (BM 967027)

PH2P 6x2

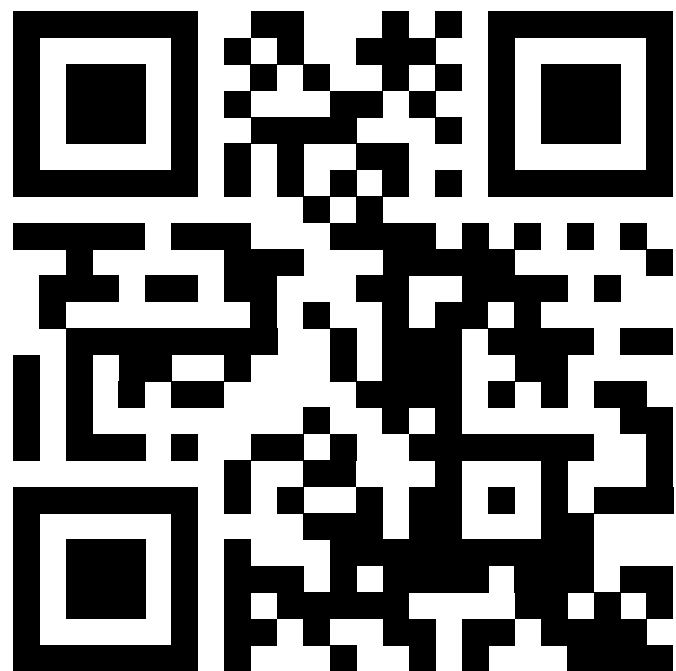
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- Continuous Torque 3.100 Nm
- Batteries 120 kWh
- 30 kg Hydrogen, 6 Bottles of 5 kg each, 350 bar
- Range approx. 450 km solo (without trailer), depending on driving profile
- Vehicle Weight without body approx. 8835 kg
- Gradeability 25% (16t)/17% (26t)
- Final Drive Ratio 6.143
- Braking Resistor as 3rd brake
- Recuperation when decelerating and driving downhill
- 22 t total weight alone
- no trailer operation permitted



PH2P[®] TRUCK

DATASHEET

PH2P[®] Truck



PH2P - Aftersales

Paul Hydrogen Power 4x2



DAIMLER & PAUL

Experiences from our first market Germany:

- All units are sold with a full service contract
- Agreement with DAIMLER Truck for using service work shops für PH2P
- **PAUL Academy** provides training for High Voltage and Hydrogen systems, also product and service training.
- Access to spare part and documentation system.

>> This model has proven itself in practice and meets our customers expectations.

We will now implement this in other markets.

PH2P - Partnership



Local Partnership

Currently we prepare a Partnership for the Netherlands

- Consulting
- Sales
- Aftersales

>> Stay tuned for some news!

PH2P[®] TRUCK



“Especially in land transport, where no alternative drive solution has yet been established, it is important for us to test various sustainable solutions in the spirit of a technology-open approach. In addition to battery-electric trucks, this also includes hydrogen vehicles, which particularly score points with their range and quick refueling.”

Dr. Thomas Vogel, CEO DACH, UK & IE DHL Freight

PH2P[®] TRUCK



"We want to eliminate the biggest CO₂-causing factor in our company. Currently, 60 percent of our emissions come from our fleet, even though most of the vehicles already meet the Euro 6 emissions class. We don't want to commit ourselves to just one energy source."

Constantin Troiber, Executive Board, Troiber GmbH & Co. KG

PH2P[®] TRUCK



“The fact that a German medium-sized company like Paul can develop a hydrogen truck faster than the large OEMs and can also offer the corresponding infrastructure solution with an H2 filling station on its company premises – that is quite remarkable. It was immediately clear to us that we wanted to be one of the first to offer this sustainable logistics solution.”

Holger Detzer, Geschäftsführer, Detzer Aircargo Service GmbH

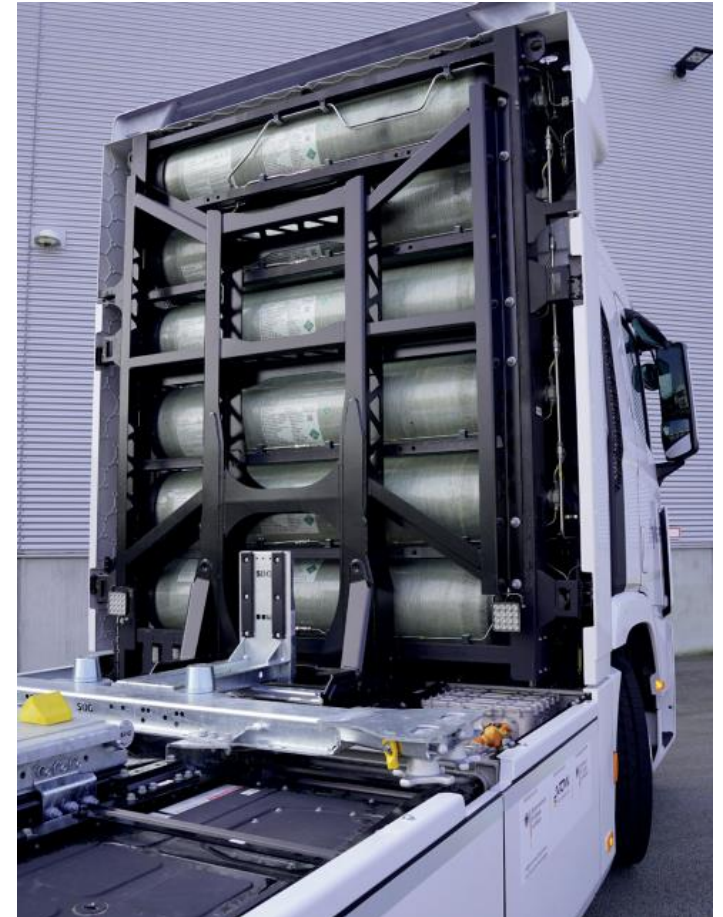
PAUL HYDROGEN

HYUNDAI - Partnership



PAUL is authorized partner of HYUNDAI

- Hydrogen standalone Tanksystem
- Chassismodifications
- Swap bodies-solution



PAUL HYDROGEN

KEYOU – Partnership (combustion engine)

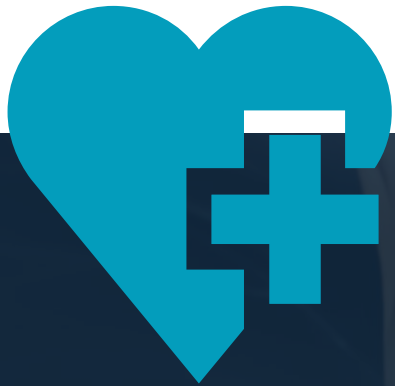


“We have long relied on the comprehensive expertise of the Paul Group, which has been a reliable and competent partner for us when building our prototype vehicles. [...] The fact that we will be able to rely on Paul’s extensive partner network in the future is a great benefit for everyone involved.”

Markus Schneider, COO, KEYOU GmbH

PAUL ACADEMY

Coaching & Consulting



Security



Equipment



Know-How