



OPERATING ANALYSIS | FUEL AND ENGINE MANAGEMENT

Customer Report 1112

CS 50905

Development after installation of Zenride Optimizer
and adaptive engine management regulation

DOCUMENTED OPERATING DEVELOPMENT

03.10.2023

INSTALLATION

21.84 L/100 KM

BEST MEASURED MONTH

27.7%

LOWER THAN 1555

1. Overall result

Zenride Optimizer was installed on 1112 CS 50905 on 3 October 2023. The recorded development series shows consistently low consumption from the first month of operation and a further improvement in the latest verified measurement periods.

Measurement point	Consumption	Km/l	Status
Month 1 after installation	23.2 l/100 km	4.31	Start-up
Month 6	23.1 l/100 km	4.33	Stable operation
Month 12	23.0 l/100 km	4.35	Stable operation
Month 20	23.0 l/100 km	4.35	Stable operation
May 2026	21.84 l/100 km	4.58	Verified
July 2026	21.98 l/100 km	4.55	Verified

2. Reference and calculated effect

The effect is calculated against two relevant operating references: the recorded Scania fleet average of 27.5 l/100 km and reference vehicle 1555 at 30.20 l/100 km.

1112 measurement	vs. 27.5	vs. 1555	Litres saved/100 km
Month 1 - 23.2	15.6%	23.2%	7.0 L
Month 12 - 23.0	16.4%	23.8%	7.2 L
May 2026 - 21.84	20.6%	27.7%	8.36 L
July 2026 - 21.98	20.1%	27.2%	8.22 L

Customer's calculated benefit

At 100,000 km of annual driving, the July result corresponds to approximately 8,220 litres less diesel compared with consumption of 30.20 l/100 km. At a diesel price of DKK 12/litre, this equals approximately DKK 98,640 per year for one vehicle. The result assumes comparable operating conditions.

3. Adaptive engine management regulation

Modern diesel engines use an electronic control unit, ECU, which processes sensor signals in real time. Within the manufacturer's programmed limits, the ECU controls fuel quantity, injection timing, air supply, boost pressure, EGR, idling, torque and parts of the exhaust aftertreatment system.

Bosch describes modern engine management systems as model-based systems with self-learning functions. This means that the control unit continuously uses operating data to make corrections so that the required torque is delivered as efficiently and steadily as possible.

What does adaptation after installation mean?

After installation of Zenride Optimizer, the ECU continues its normal adaptive regulation. The ECU does not need to recognise the Zenride unit itself. It responds to operating changes registered by the vehicle's existing sensors. If the engine's actual operating conditions change, the ECU can gradually adjust regulation within the original software and the manufacturer's safety limits.

Important technical clarification

Zenride Optimizer is not described here as ECU reprogramming. The explanation is that the engine management system continues its normal regulation and responds to recorded operating conditions. A specific saving therefore cannot be attributed to ECU adaptation alone without a controlled before/after test.

Which operating conditions are included?

- Cold and warm engine and different ambient temperatures
- Light and heavy loads, acceleration and steady speed
- Idling, rural roads, urban driving and motorways
- Changing driving patterns, drivers and routes
- Current sensor values from the engine and aftertreatment system

Why is a representative measurement period required?

A single trip can be affected by load, traffic, weather, idling, refrigeration unit and driver behaviour. Repeated operating cycles both allow the ECU to make normal corrections and provide a more representative data basis. Initial results therefore serve as the start-up reference, while monthly measurements are used to assess stability and overall effect.

4. Significance for the assessment of 1112

For 1112, adaptive regulation means that development should be assessed as a sequence and not from a single day of driving. The historical series is around 23.0–23.2 l/100 km, while the verified monthly measurements for May and July 2026 are 21.84–21.98 l/100 km.

Phase	What happens?	How is it assessed?
Start-up	The ECU continues normal regulation under the new actual operating conditions.	The first period is used as reference.
Stabilisation	More loads, temperatures, routes and driving patterns are included.	Development is compared across repeated periods.
Documentation	Fuel and distance are normalised to l/100 km and km/l.	Monthly data are assessed with operation, load and driving style.

5. Calculation method

Fuel economy is calculated directly from distance travelled and recorded diesel:

Litres per 100 km = recorded diesel / kilometres travelled × 100

The comparison between 1112 and 1555 uses litres per 100 km, thereby normalising the difference in distance travelled. To document an actual product effect with a high degree of confidence, vehicle type, load, route, speed, idling, refrigeration-unit consumption, weather and driver behaviour should be as comparable as possible.

6. Conclusion

The recorded data show that 1112 maintained consistently low diesel consumption throughout the stated operating period after installation. The latest verified measurements are approximately 22 l/100 km and below both the fleet reference used and reference vehicle 1555.

The adaptive functions of the engine management system provide a technical explanation for why engine regulation can be continuously corrected during actual operation. However, they do not in themselves document the cause of the entire measured difference. The report’s strength is therefore continuous measurement over representative periods and the normalised comparison of fuel consumption.

Data basis

Period	Recorded operation	Fuel result
August 2025	13,045.4 km / 187 h 31 min	Historical operating month
September 2025	12,829.3 km / 182 h 31 min	Historical operating month
October 2025	13,786.8 km / 199 h 04 min	Historical operating month
May 2026	12,089.89 km	2,640 L / 21.84 l/100 km
July 2026	11,417.62 km	2,509.5 L / 21.98 l/100 km
July 2026 - 1555	10,099.68 km	3,050.5 L / 30.20 l/100 km

Sources

- Jaxicloud/Wialon: trip and fuel reports for 1112 CS 50905 and 1555 TL 1555.
- Zenride Optimizer Analysis: installation date 3 October 2023 and historical development series.
- Bosch Mobility: Electronic Engine Control Unit - fuel, air and injection control and model-based, self-learning functions.
www.bosch-mobility.com/en/solutions/control-units/engine-control-unit/
- Bosch Mobility: Common-rail system with piezo injectors - Diesel - flexible control of injection pressure and timing.
www.bosch-mobility.com/en/solutions/powertrain/diesel/common-rail-system-piezo/

Overall customer conclusion

1112 documents consistently and significantly lower recorded diesel consumption than the references used. The ECU's adaptive regulation means that the engine continuously fine-tunes its operation based on sensor signals, but the measured effect should still be assessed over comparable and representative operating periods.

Note: This report is an operating analysis based on the stated data. It is not a laboratory, type-approval or emissions certification.