

Contents of Work Package **4-WP12**: Methods for Gear Testing

4-WP12: Methods for Gear Testing

Coordinator of the WP

České vysoké učení technické v Praze, Gabriela Achtenová

Participants of the WP

ŠKODA AUTO a. s., Technical University Ostrava

Main Goal of the WP

Increasing the service life of gears, optimizing the operating environment of gears, enabling simple inter-operational and output inspection of gears and gearboxes during production

Partial Goals for the Current Period

A test set of wheels with defined gear geometry, material and heat treatment will be manufactured to conduct experiments related to measuring gear error and gear life.

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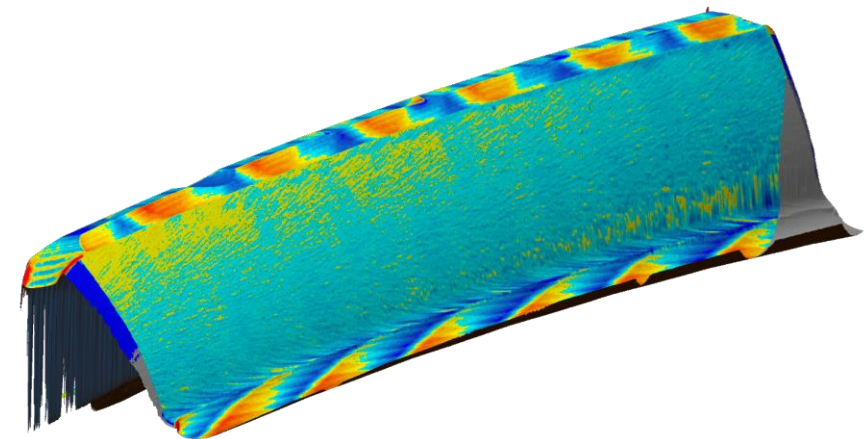
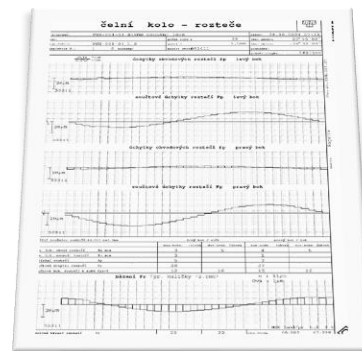
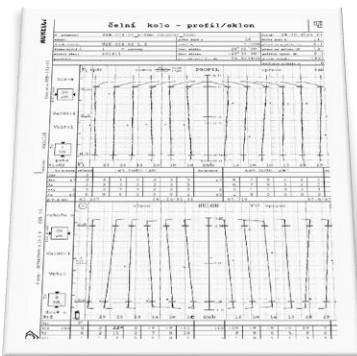
Official 4-WP12 Deliverables

- 4-WP12-001 | **Report on the dependence of gear life on working and material conditions of operation and transmission error**, O, XII./2025, TUO 0.9; SA 0.1
- 4-WP12-002 | **Set of test gears with specified geometry for testing gear error and gear life**, G-funk, XII./2025, TUO 0.2; SA 0.8

Activities of Work Package **4-WP12**: Methods for Gear Testing

4-WP12-002: Set of test gears with specified geometry for testing gear error and gear life

- In cooperation with our partner SKODA AUTO, the gears on which the life tests will be carried out has been selected. Specifically, the 3rd helical gear from the MQ 200 gearbox the micro-geometry of the gearing was modified to suit the reconstructed test rig.
- The gears are currently being measured on a KLINGELNBERG CMM machine and an Alliacona InfiniteFocus G5 optical microscope, which will map the surface of the teeth in detail and monitor their wear during testing.



Activities of Work Package **4-WP12**: Methods for Gear Testing

4-WP12-002: Set of test gears with specified geometry for testing gear error and gear life

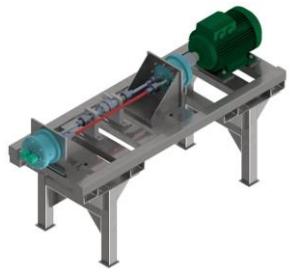


- The manufactured and measured gears will be tested on a reconstructed test rig designed for testing the lifetime test of gears under defined and monitored conditions. The results of which will be reported in the report on **4-WP12-001: Report on the dependence of gear life on working and material conditions of operation and transmission error.**

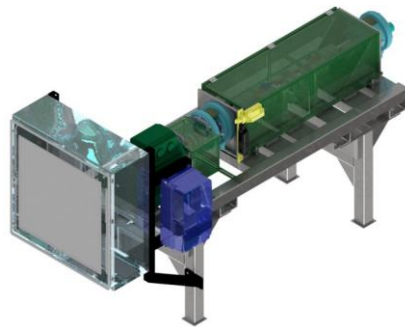
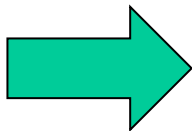
Activities of Work Package **4-WP12**: Methods for Gear Testing

4-WP12-002: Set of test gears with specified geometry for testing gear error and gear life

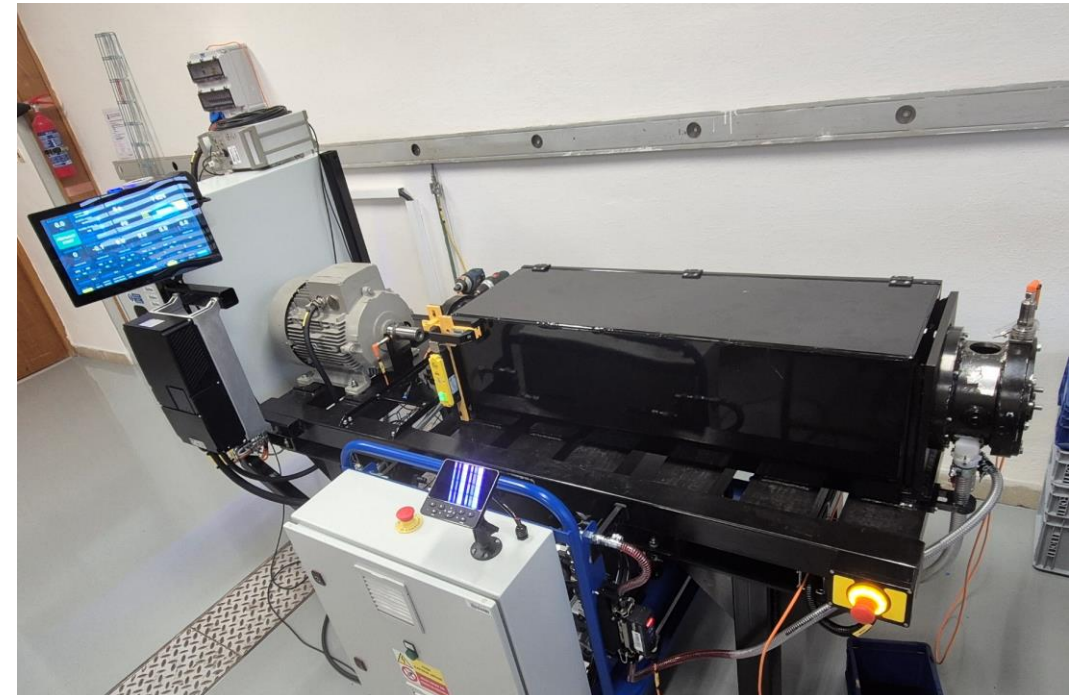
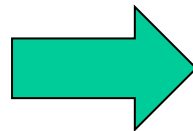
- In 2024, the reconstruction of the test rig and the production of test gears was completed. In Q4 2024, initial tests and reliability testing of the equipment are currently underway.



Q1 2023



Q3/4 2023



Fulfillment of goals and deliverables of **4-WP12**: Methods for Gear Testing

Current State of Deliverables, Milestones and Fulfillment of Goals

- 4-WP12-001 | **Report on the dependence of gear life on working and material conditions of operation and transmission error, O, XII./2025, TUO 0.9; SA 0.1 in progress & no major delays.**
- 4-WP12-002 | **Set of test gears with specified geometry for testing gear error and gear life, G-funk, XII./2025, TUO 0.2; SA 0.8 in progress & no major delays:**
 - Design and manufacturing of gearwheels redesigning of test rig

List of Due Deliverables and Their Added Value

4-WP09-001 – Report summarizing the results from experimental measurements

4-WP09-002 – Investigation of geometry parameters on gear error

Current contribution of **4-WP12**: Methods for Gear Testing

Assessment of the Formal/Administrative Goals of the Work Package

	VŠB - TUO	Skoda
Finances (reporting/spending)	OK	OK
Commercialisation	OK	OK
Deliverables	OK	OK

Current contribution of **4-WP12**: Methods for Gear Testing

Acknowledgment

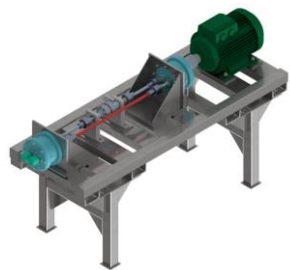
This research has been realized using the support of Technological Agency, Czech Republic, programme National Competence Centres II, project # TN02000054 Božek Vehicle Engineering National Center of Competence (BOVENAC).

Results of **4-WP12**: Methods for Gear Testing – Achieved 2023-2025

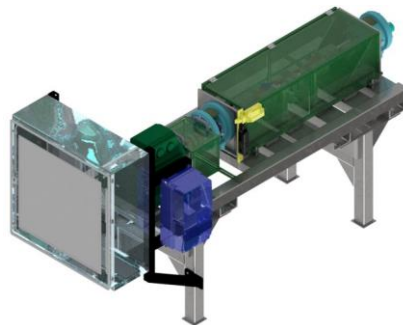
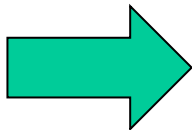
Main author

Dr. Trochta (VŠB)

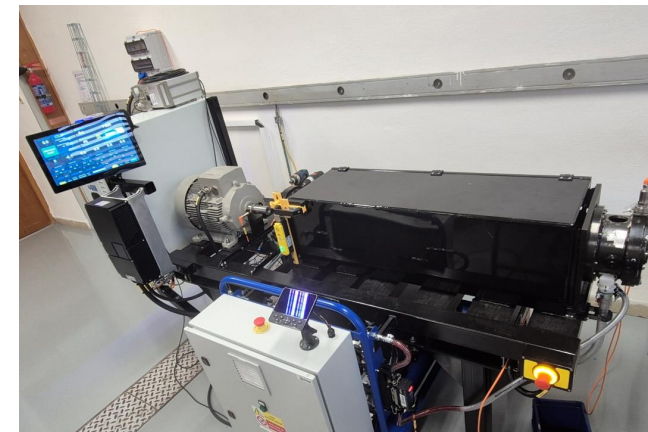
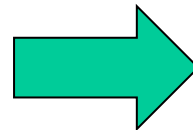
Návrh ozubení se specifickou geometrií pro měření na nově upraveném měřicím stavu



Q1 2023



Q3/4 2023



Hlavní autor

Dr. Trochta (VŠB)

Návrh měřicího stavu

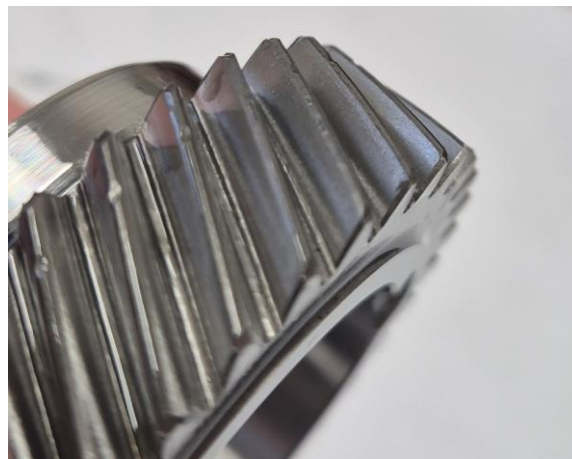
Q3/4 2024

Výtah z prací 2023-2025 na **4-WP12**: Zkoušení ozubených kol

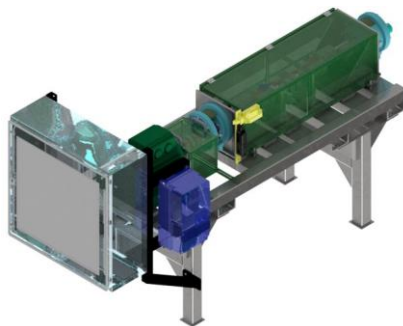
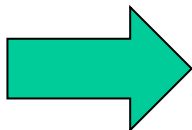
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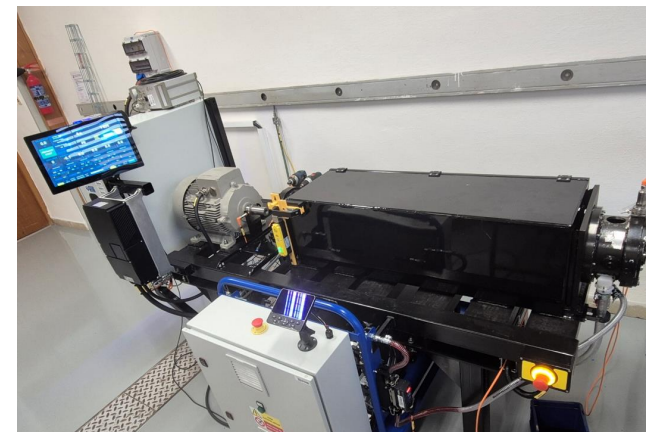
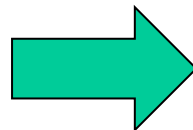
Gearwheels with specified geometry for testing of gear error on newly redesigned test stand



Q1 2023



Q3/4 2023



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Steps of redesign of test stand

Q3/4 2024