

> PROJECT OBJECTIVE

The e-Lift3 project aims at developing an electromagnetically activated variable valve train component making it possible to optimize low engine size with 3/4 cylinder in a non-exclusive way.

The system may be installed on the air intake or exhaust and on all or part of the valves of the target engine.

This technology is part of a niche left open on the market between 2-stage and continuous variable valve timing systems, in terms of both cost and performances. It would help to support carmakers in complying with the European regulation of 95 g of CO₂ per km in 2020 and in producing hybrid or I.C. engine vehicles with very low emission levels. Fuel savings of 9 to 12% for 4-cylinder engines and 6 to 8% for 3-cylinder engines equipped with e-Lift3 are expected.

> CEDRAT TECHNOLOGIES CONTRIBUTION

This year CTEC has invested in the design, manufacturing and test of electromagnetic actuators. In the framework of this automotive project CTEC has manufactured a series of electromagnetic actuators requiring means of production like a new winding tool for the fabrication of coils with wires from 80um to 3mm. This kind of tool will allow responsiveness to cope with the industrial projects requirements. To fit our customers' needs, coiling technologies are now mastered: thermo bonded, round or rectangular coils, wire or PCB coils, overmolding...

In order to characterize and test its coils and actuators, CTEC owns all necessary equipments: dielectric testers, impedance meter, network analyzer, force & torque sensors, position & speed sensors. The measured performances of the actuators are compared to the predictions provided by the soft tools such as Flux and Matlab / Simulink. In the framework of industrial and collaborative projects specific test benches are designed and used.

> PARTNERS

CTEC is working in collaboration with **Valeo**, **PSA**, **Danielson Engineering**, **EMC**, **PRISM (Poly'Tech Orléans)** and **SATIE labs (ENS Cachan)**.



Fig1: Series of electromagnetic actuators CTEC



Fig2: Series of coils CTEC



Fig3: Winding Machine CTEC

For more information, please contact:

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