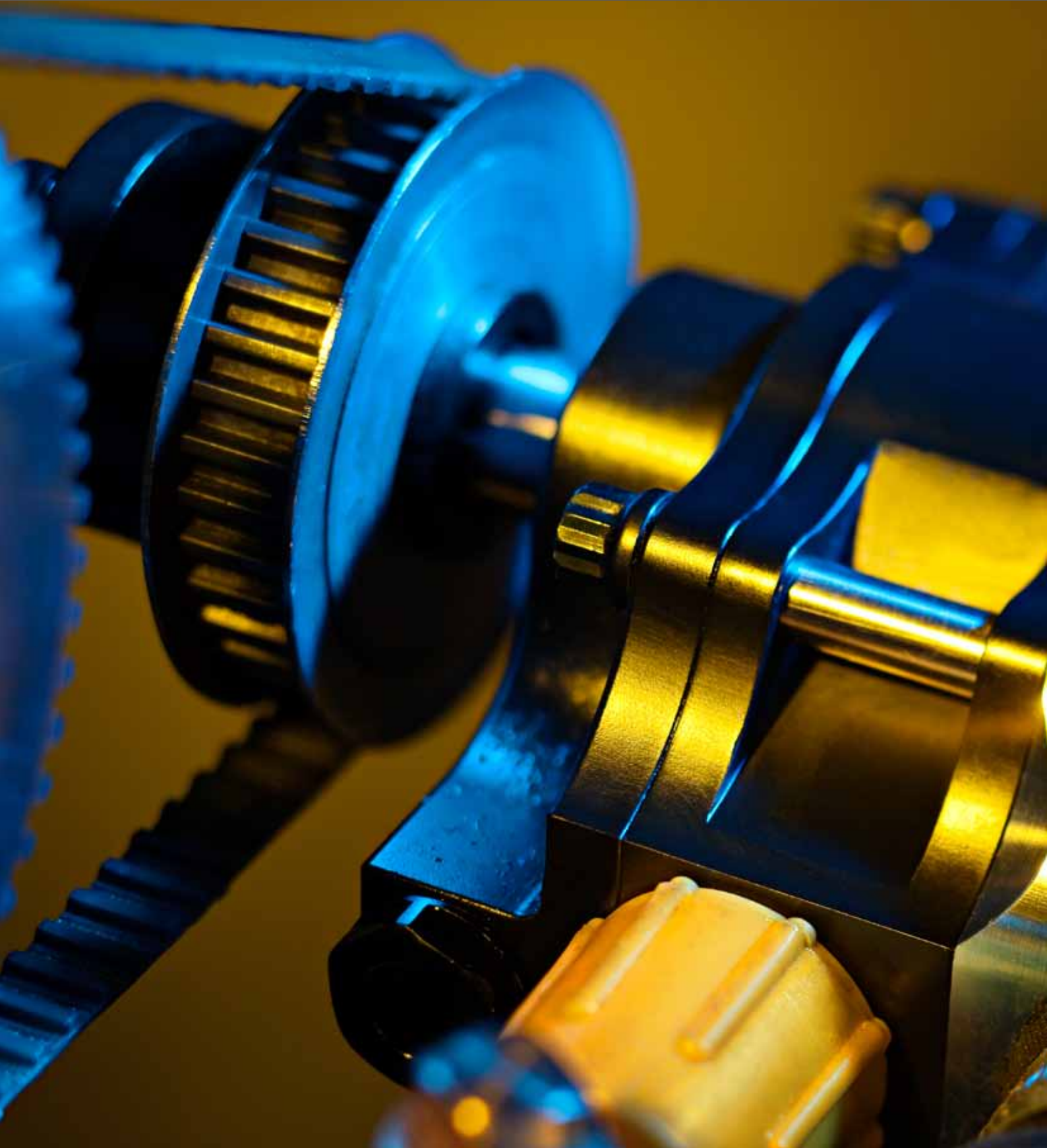


HCCI Technology AB

Presentation of HCCI engine



Introduction



Creative ideas are just the first step in the long journey to building self-sustaining companies, and eventually, category-leading corporations. In most cases, the development of new technology requires the financing from a venture capitalist. Midroc New Technology (MNT) is a venture capital company within Midroc Europe and its mission is to provide equity capital and business expertise for carefully selected high-risk opportunities with the hope of extraordinary returns. Focus is set on private equity in new, potentially ground-breaking, technologies and business concepts with an emerged window of opportunity.

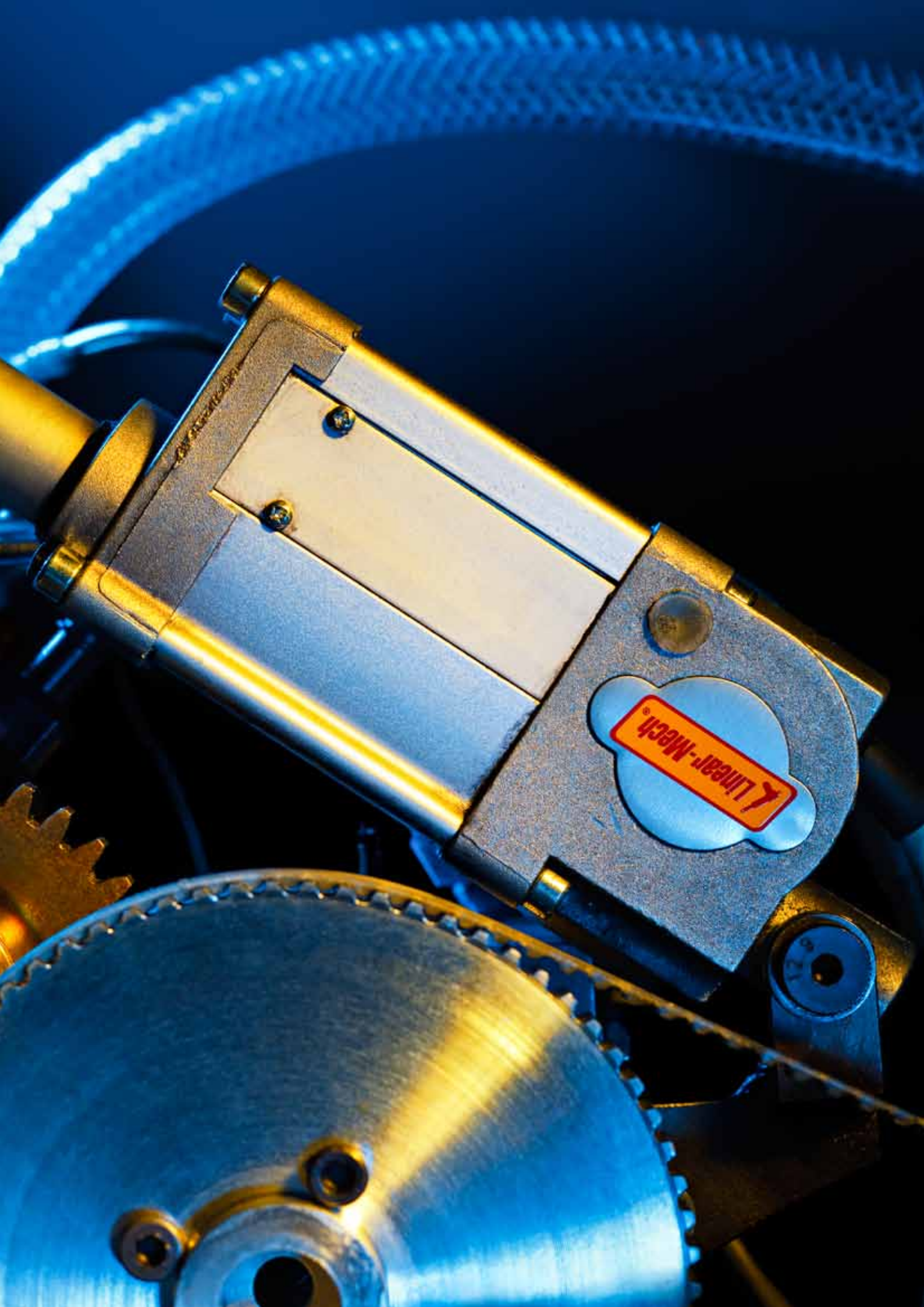
Although we occasionally make our initial investment in companies at later stages of their growth cycle, we prefer to invest in new technologies that are revolutionary, as opposed to evolutionary, prior to commercial development because it enables us

to leverage our value-added capabilities. Our hands-on approach is key reason that leading entrepreneurs choose to partner with us. As company founders and entrepreneurs ourselves, we know firsthand what it takes to cultivating viable technologies.

The timing and method of returning invested capital are of course important considerations for MNT as for any venture capitalist. Exits will take place at the point in time when a portfolio company has proven itself and developed enough to allow a sale to a new structure of ownership that is industrially logical and justified which can mean a new phase of development, rationalizations, synergies, restructuring or expansion.

Göran Linder,
Managing Director
Midroc New Technology AB





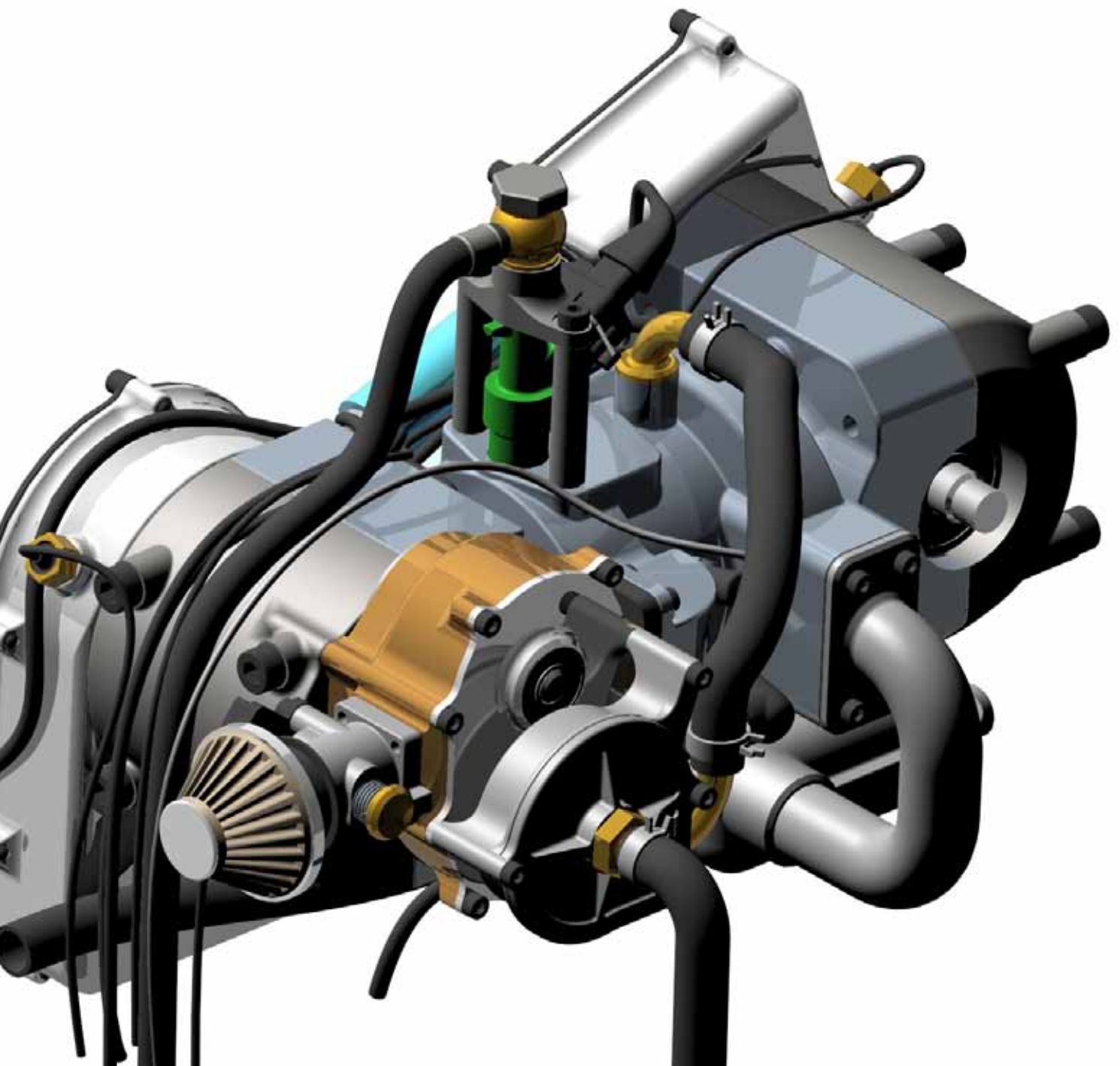
Foreword

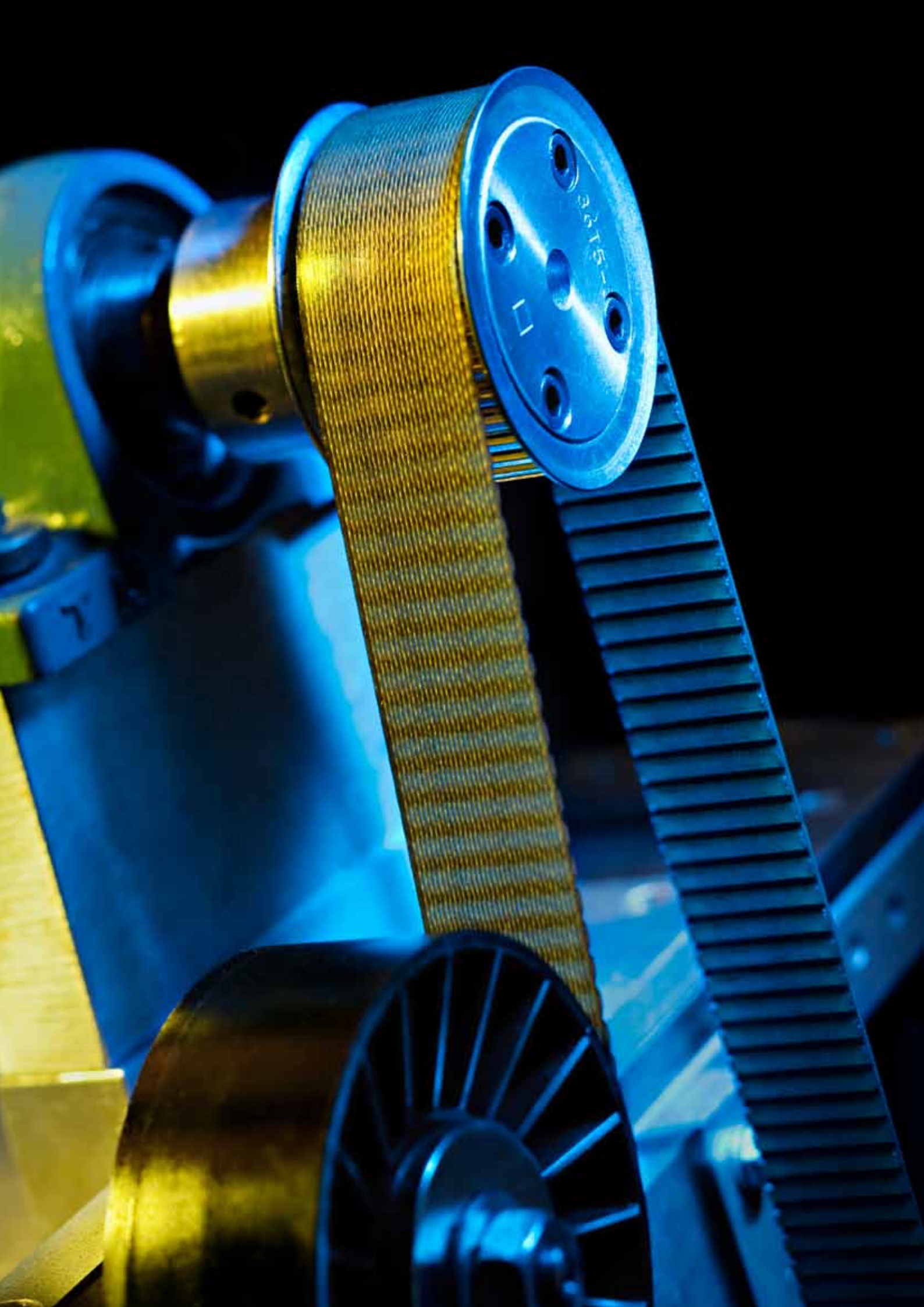
The HCCI engine is the result of more than 35 years of research and development work on the combustion engine. Before being made professor of internal combustion engines at the KTH Royal Institute of Technology in Stockholm, I was chief designer in charge of vehicle engines at Scania. In recent years, requirements on low environmental impact and high operating efficiency have meant hybrid vehicles

have an increasingly important role to play. My goal was to come up with an unconventional yet simple solution that satisfied demands in terms of modifying engines to run on alternative fuels and making them as vibration-free as possible. The unique gear arrangement with two moving gears located between the crankshaft gears permits phase displacement of the movement of the pistons, achieving control-

led compression. HCCI combustion gives you low fuel consumption and the counterstroke principle minimises vibrations. The engine complies with existing requirements and will entail major benefits when used in applications such as hybrid vehicles or boat engines.

Professor
Hans-Erik Ångström
HCCI Technology AB





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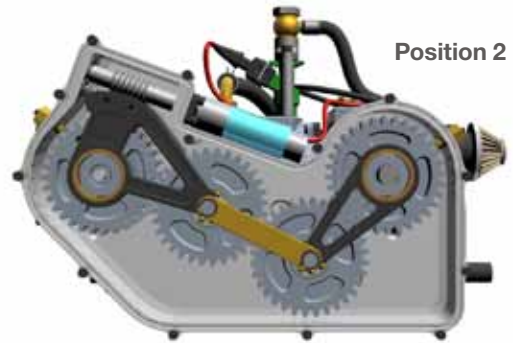
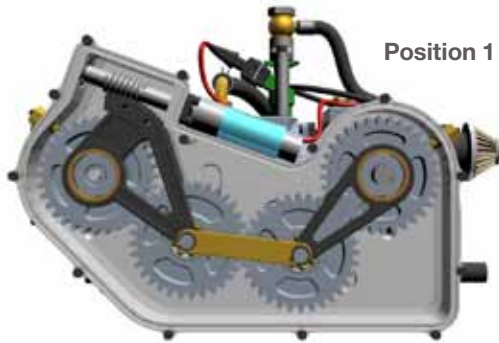
- The HCCI principle allows you to use the highest compression ratio which, combined with a rapid combustion rate gives you the highest possible efficiency and the lowest possible fuel consumption.
 - The two-stroke principle, with pistons working against each other, keeps friction and heat transfer surfaces to a minimum, which enhances efficiency.
 - Low levels of nitrous oxide.
 - HCCI combustion is particularly suitable for operating under constant load.
 - Length flushing of 2 pistons is the best flushing principle for 2-stroke engines.
 - The engine can handle overloading due to asymmetrical port times.
 - The engine is vibration-free thanks to its counter-rotating crankshafts.
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The engine's unique motion patterns

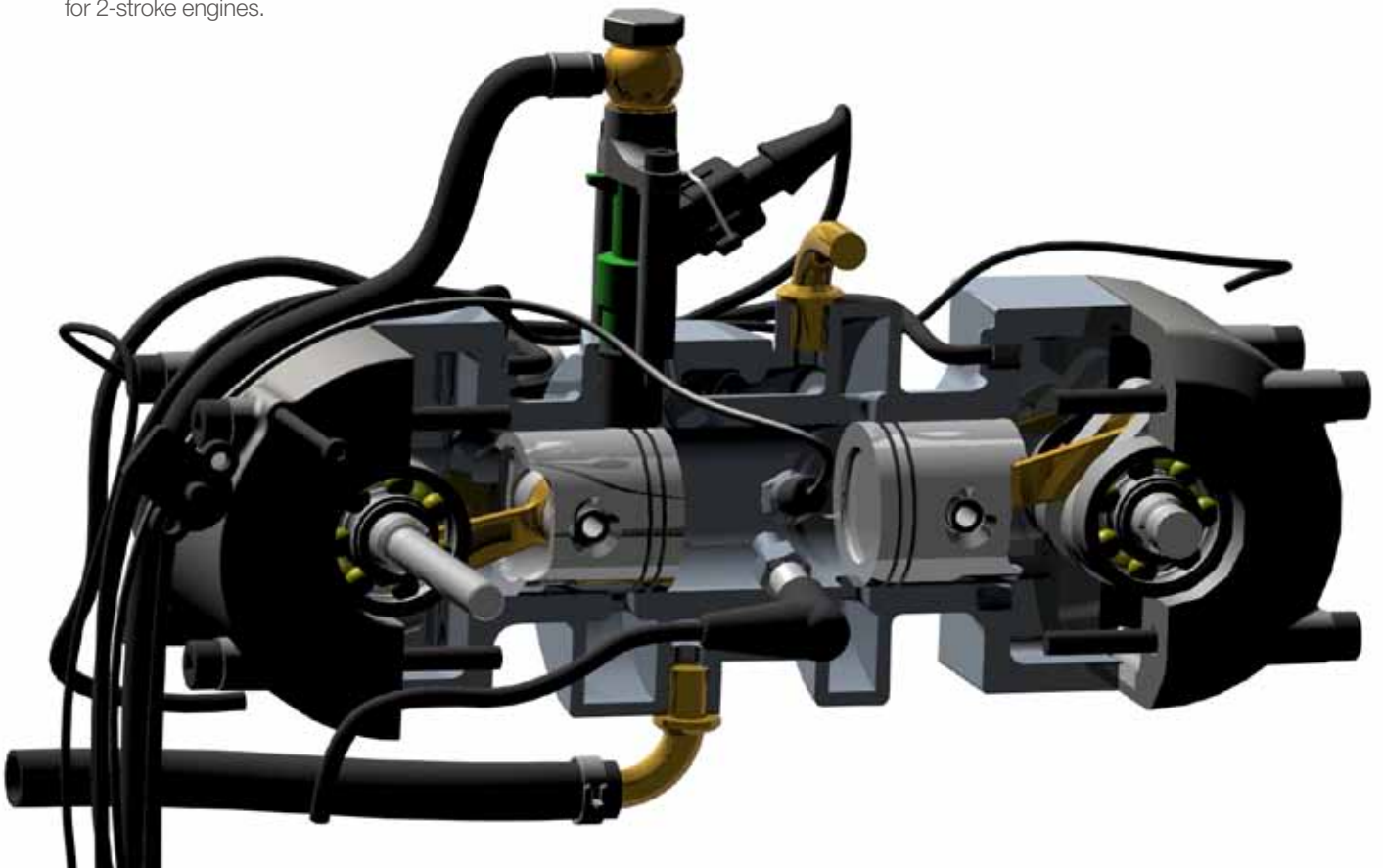
By controlling the compression, HCCI combustion can be regulated.

Position 2 shows low compression mode.



The signal from the knock sensor helps to optimise compression.

Length flushing is the best flushing principle for 2-stroke engines.



- The combustion setting for the HCCI engine needs to be checked.
- Controlling the compression allows you to adjust the HCCI combustion start point.
- The combustion rate of the HCCI engine can be controlled by the amount of waste gases. For the 2-stroke engine this can be done naturally by adjusting the flushing.

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