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KS Kolbenschmidt GmbH

Piston innovation as a module for Euro 6

To meet the Euro 6 emission standard, the commercial vehicle segment as a rule uses exhaust gas recirculation systems as well as SCR catalytic converters for lowering nitrogen oxides. Yet, other engine components, too, can curb emissions. A steel piston from KS Kolbenschmidt GmbH is now available with a modified shape and interior cooling chamber for significantly reducing the temperatures in the combustion bowl. The improved piston cooling effect noticeably lessens the formation of nitrogen oxides and hence serves as a module in meeting Euro 6. Presently the new piston is in development projects at six commercial vehicle customers; series production start-up is planned as from 2012.

Right now, KS Kolbenschmidt is the sole manufacturer offering a monobloc steel piston with a cooling chamber integrated in the piston crown, a feature that is creating ample customer interest.

The innovative piston consists as before of two forgings which are friction-welded to each other. The newly developed additional feature is the cavity for cooling the central crown zone. The cavity is closed off from the crankcase. The arrangement considerably lowers temperatures on the combustion chamber and oil sides alike.

The redesigned piston also improves rigidity and fatigue strength. The low temperatures (for a steel piston) have a favorable effect on the formation of nitrogen oxides and also significantly reduce blow-by oil particles caused by the formation of fine aerosols on the hot surfaces; oil carbon deposits are thus prevented from collecting on the inside of the piston.

In the heavy-haul market, where long life-cycles are of major importance, the monobloc steel piston generally ensures greater mileages than conventional aluminum pistons. Kolbenschmidt's monobloc steel piston with interior cooling passage typifies this technology at the top end of the market.

Apart from this, Kolbenschmidt's steel piston lineup includes the KS SpinteKS piston, produced by a completely new and patented technique. Unlike the monobloc steel pistons this design only consists of one forging, spin-bent in such a way as to create a sealed coolant passage. As there is no space needed for the friction weld beads compression heights of less than 50 percent of the cylinder diameter are possible without limiting space needed for the piston rings and piston shaft linear guidance. This piston, too, is worldwide in demand and offers advantages, especially in terms of low clearances.