

Light Weight Piston for Passenger Car Gasoline Engine

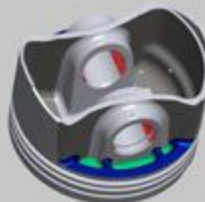
By India Pistons Limited | Category: Most Innovative Supplier

With the ever-increasing demand of higher specific output gasoline engines, coupled with improved fuel economy and CO2 emission reduction, friction reduction has become increasingly significant. This necessitates incorporation of lightweight design concepts for the power train with increased strength and durability.

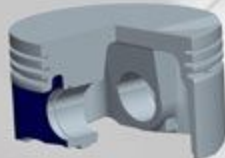


The Innovation

India Pistons has introduced IP Lite, a state-of-the-art lightweight piston design. In this concept, an innovative casting technology is adopted that enables recesses in the casting behind the second and third grooves that was made possible by incorporating a special feature in the conventional die tool and adopting a strict control of foundry process parameters. The recess so produced helps in reducing the groove temperature by taking away the heat more efficiently apart from weight reduction. The IP Lite piston also has variable wall thickness and contact area in the skirt portion which further assists in weight reduction and better stress distribution. These technology features helped in achieving significant performance improvement along with low friction and improved reliability. This design is called IP Lite and the first application has been developed for a newly launched passenger car (Tiago) petrol engine in which the piston assembly successfully addressed the challenges in terms of low friction, light weight and best in class performance.



- Optimized Skirt Profile
- Side Reliefs
- Front Panel
- Front Cast Pockets



- Optimized Crown Thickness
- High strength Alloy (IP123)
- Graphite Coating



Overcoming Challenges

During the development process witnessed more challenges in positioning the as-cast recess with regard to durability and soundness of casting. With the aid of the advanced simulation tool, the team arrived at an optimal position to cater to the demand.

Impact of the Innovation

Gasoline (NA) Tiago vehicles running successfully

1 Lakh

pistons on road

+3 Lakh

monthly Tiago production

25,000-30,000