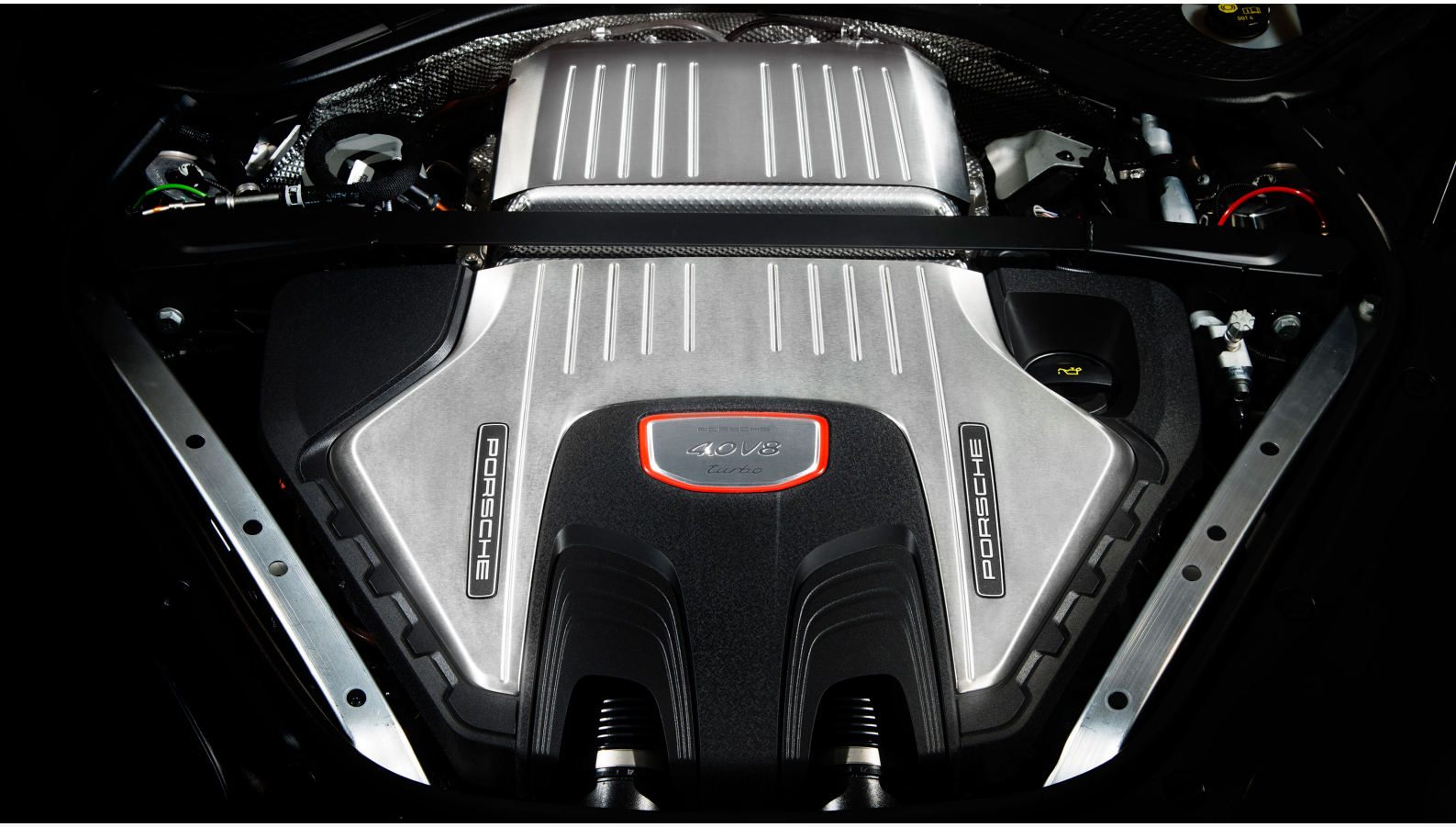

The eight-cylinder V-engines from Porsche

12/07/2016 The fourth generation has now begun. Four decades of Porsche experience with eight-cylinder V-engines have been built into the new top engines of the Panamera.

A powerful history: Each generation was developed to be a high-performance powerplant. The 928 and Cayenne, Panamera and 918 Spyder attained superior driving performance with these engines and advanced to become the sportiest vehicles at the top of their segment.

July 8, 2016 marked exactly 40 years since it all began: in the early morning hours, a Porsche sports car which was an entirely new development left the development centre in Weissach for the first time without camouflage. Under the bonnet was an engine that had never been implemented at Porsche before: an eight-cylinder engine whose cylinders were arranged 90 degrees to one another in the form of a V. It is true that Porsche had already built engines with eight combustion chambers back in the 1960s and 1970s. However, they had a flat engine layout, and they were air-cooled and only used in race cars. The water-cooled V-engine served a different purpose. Starting in 1977, it was designed to power the 928: the first Gran Turismo and the third model line from Porsche.

Its primary source of power was a tamed race engine. At 132 hp/litre displacement, it had the world's highest specific power of a street-legal naturally-aspirated engine, and at the same time it was the lightest production naturally-aspirated V8 engine, weighing 135 kilograms. Rotating inside the eight-cylinder engine with its usual bank angle of 90 degrees was a flat-plane crankshaft with 180 degree offset crank throws for the connecting rods.

Porsche engineers developed direct fuel injection

The 4.6-litre engine was derived directly from the engine of the successful RS Spyder. It had a power output of 447 kW (608 hp) at 8,700 rpm. Porsche engineers developed direct fuel injection with centrally located solenoid injectors – an especially efficient and low-emission combustion process. These injectors send fuel into the combustion chambers at pressures up to 200 bar via seven holes each. Extensive lightweight design measures resulted in such features as titanium connecting rods and thin-walled low-pressure castings of the crankcase and the cylinder heads.

The eight-cylinder V-engine emotionalised the 918 Spyder by its performance capabilities and by its sound. In addition to the ignition sequence, this is attributable first and foremost to what are known as the "top pipes": the tailpipes terminate at the upper part of the rear end directly above the engine. No other production vehicle used this solution. The top pipes' greatest technical benefit is optimal heat rejection, because the hot gases are exhausted via the shortest possible path, and exhaust gas back pressure remains low.

The quintessence of four decades of eight-cylinder V-engines by Porsche

This type of HSI engine design – where HSI stands for "hot side inside" – the 918 engine created a definitive foundation for the new eight-cylinder engine of the Panamera. It contains the quintessence of four decades of eight-cylinder V-engines by Porsche.

More information about the eight-cylinder V-engines from Porsche.

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Dr. Ing. h.c. F. Porsche Aktiengesellschaft
Porscheplatz 1
70435 Stuttgart