What is an oil-water heat exchanger in a Porsche?

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What is an oil-water heat exchanger and how does it work in a Porsche?



Plate heat exchangers, as installed in our Porsche, belong to the group of oil coolers.

They have now been used very successfully for many years in the entire range of the Porsche series, whether in Porsche sports cars or in thoroughbred racing cars with absolute top performance.

The main task of such a heat exchanger is to use a plate system made of conductive aluminum to separate the oil and water circuits from one another, but at the same time to connect them so closely that the different media can exchange heat with one another and thus regulate them very well.

Depending on the number and size of the individual plates installed in the heat exchanger system,

the heating output, but also the cooling output, is regulated when the engine is running at full load.

A plate heat exchanger is used in a Porsche engine because sufficient cooling water is available there and because oil cooling using cooling water and a heat exchanger is the most efficient variant of an oil cooler on a Porsche car.

In newer Porsche vehicles, oil-water heat exchangers are used in engines, but also in the gearboxes of the GT variants.

In top-class racing vehicles, the heat exchangers are about twice as large as in production vehicles. This is because the temperature differences between oil and water are much greater during operation and have to be regulated by the heat exchanger.

During cold running, the cooling water is heated up faster than the engine oil.

The heat exchanger ensures that the cooling water, which warms up more quickly, heats up the oil much faster than without a heat exchanger.

At full throttle, in a racing car for example, the engine oil usually gets much hotter than the cooling water. Here the heat exchanger again ensures a very good heat balance between the two media and a very good cooling of the engine oil.

Even with short-term peak performance, the engine oil heats up, especially in the areas in the engine where there is a lot of friction, such as the bearings and at the pistons and cylinders. Here the heat exchanger ensures very good cooling.

An oil temperature indicator is not used in newer Porsche vehicles, because the temperature difference
between the cooling water and the engine oil is only slightly different during normal operation of the vehicle.

I'm happy to answer any questions

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