Saving fuel with coatings.

Intelligently coating moving components reduces friction in vehicles and paves the way for additional efficiency measures.

Reducing CO$_2$ emissions is a key issue in the automotive industry. By 2015, new vehicles in the European Union will only be permitted to emit a maximum of 130 grams of CO$_2$ per kilometer. By 2020, fleet average emissions are to drop to 95 grams per kilometer. Internal friction forces play an important role in this context.
Up to 20 percent of the power available is lost to friction in the power train. In other words, one fifth of a driver's fuel bill goes on unnecessary heat loss.

To combat this, the automotive industry is working feverishly to develop low-friction power trains. Coatings are to be used to combat power loss on moving parts. Car manufacturers use chromium targets from Plansee to coat, for instance, piston rings with a low-friction, hard-wearing CrN layer. And our tungsten carbide coating material is used to create DLC (diamond-like carbon) layers that lower the coefficient of friction of the injection needle.

Acting as a development partner, Plansee is collaborating with automotive suppliers to develop new, improved coating materials (= sputtering targets). Plansee provides prototypes, that are thoroughly tested in the customers' coating plants. Experience with coated prototypes on the test rigs makes it possible to further develop the targets to deliver exactly what is needed. At the same time, Plansee is developing and adapting manufacturing procedures that will guarantee the quantities and quality needed for series production.

As well as the reduction in friction provided by the coatings, wear resistance at high temperatures is becoming an increasingly important aspect. Take a diesel injection system, for example. Improved combustion of the fuel/air mixture lowers fuel consumption. One measure to improve efficiency is therefore to increase the combustion temperature. This has consequences for the coating. It has to be more heat-resistant. Plansee is currently working together with major customers to develop coatings made of molybdenum-copper nitride and molybdenum-copper for this application.

Find out more about thin film materials from Plansee.