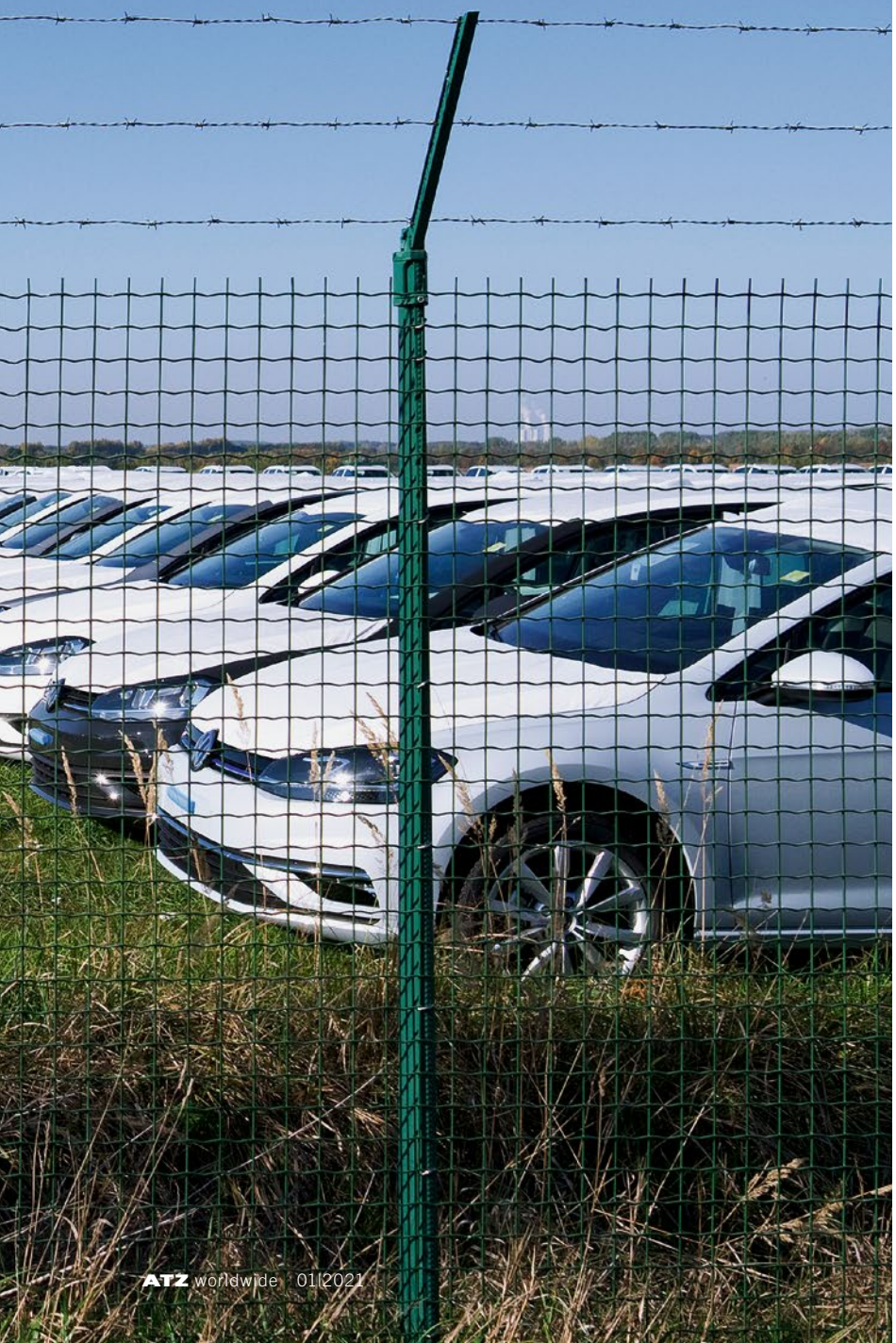
The EU versus the Automotive Industry

In the coming weeks the Court of Justice of the European Union will issue a ruling on permitted exceptions to the use of defeat devices for combustion engines. The case, which was transferred to the CJEU by a French court in 2018, focuses on Regulation (EC) No. 715/2007 concerning type approval.



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"The new normal:" A lot of people are pinning their hopes on these three words, which describe the social and world order that will follow the coronavirus pandemic. But there are many other challenging situations where a new normality is also needed. Ever since the decision to use a defeat device in the VW EA189 engine more than a decade ago, the automotive industry has been in search of a new normal.

In 2015 the International Council on Clean Transportation (ICCT) highlighted Volkswagen's violation of the US Clean Air Act, among other legislation, and the Environmental Protection Agency (EPA) confronted the German carmaker with the problem, which had far-reaching consequences. Since then diesel engines and the emissions they produce have been subject to social and political condemnation. Courts all over the world are handling an enormous number of cases concerning claims made by consumers against Volkswagen and other car manufacturers and compliance with emission legislation in cities. In addition, the Court of Justice of the European Union (CJEU) has been investigating the interpretation of the rules on the type approval of motor vehicles since 2018 [1].

PRELIMINARY DECISION

A French court – the tribunal de grande instance de Paris – asked the highest judicial body in Europe to make a preliminary ruling. In case C-693/18, the CJEU firstly considered the meaning of the concepts of "element of design" and "emission control system" to evaluate the presence of a defeat device. This led to the interpretation of the exceptions for defeat devices provided for in Article 5(2) of Regulation (EC) No. 715/2007. Although the discussions about the VW EA189 engine may have resulted in the public taking a different view of the situation, it is not the case that all defeat devices are prohibited. "Is slowing down the aging or the clogging-up of the engine among the requirements of 'protecting the engine against damage or accident' or of 'safe operation of the vehicle' that may justify the presence of a defeat device within the meaning of Article 5(2)(a)?". This is the central question that was highlighted by the British Advocate General, Eleanor Sharpston, in her summation of the case on April 30, 2020 [2].

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The defeat device of the Volkswagen EA189 diesel engine triggered the diesel scandal

If the CJEU considers the answer to this general question to be no, the individual cases would still have to be decided by the national courts. But it would then seem to be obvious that the so-called switch logic of the VW EA189 engine is not a permitted defeat device. Sharpston focused on the different operating states recorded by Volkswagen during the type approval test and in "normal driving conditions." The Advocate General considers this differentiation to be illegal in principle, even if the special mapping for the type approval test sometimes occurs in normal driving conditions, which Volkswagen explained to the French court was the case for the EA189. If the CJEU adopts the summation made by Sharpston, using different data for the type approval test and for normal driving conditions in the EA189 engine would not be compatible with the homologation regulations from 2007. By the editorial deadline for this article, no date had yet been announced for the delivery of the judgment.

1. Interpretation of the concept of "design"
1(1): What is covered by the concept of 'element of design' in Article 3.10 of Regulation (EC) No 715/2007[1] which defines 'defeat device'?
1(2): May a program integrated in the engine control calculator or more generally acting on that calculator be considered to be an element of design within the meaning of that article?
2. Interpretation of the concept of "emission control system"
2(1): What is covered by the concept of 'emission control system' in Article 3.10 of Regulation (EC) No. 715/2007, which defines 'defeat device'?
2(2): Does this emission control system include only the technologies and strategies aimed at treating and reducing emissions (in particular of NO_x) after they have been created, or does it also incorporate the different technologies and strategies that enable the initial production of emissions to be limited, such as EGR technology?
3. Interpretation of the concept of "defeat device"
3(1): Is a device that detects any parameter connected with the conduct of the approval procedures provided for in Regulation (EC) No. 715/2007, for the purposes of activating or adjusting upwards, during those procedures, the operation of any part of the emission control system, and thus obtaining approval of the vehicle, a 'defeat device' within the meaning of Article 3.10 of Regulation (EC) No. 715/2007?
3(2): If so, is that defeat device prohibited under Article 5(2) of Regulation (EC) No. 715/2007?
3(3): May a device as described in Question 3(1) be characterised as a 'defeat device' if the upwards adjustment of the activation of the emission control system is effective, not only during the approval procedures, but also on specific occasions when the precise conditions detected for the purpose of adjusting the emission control system upwards during those approval procedures are encountered in actual traffic?
4. Interpretation of the exceptions provided for in Article 5
4(1): What is covered by the three exceptions provided for in Article 5(2) in Chapter 2 of Regulation (EC) No. 715/2007?
4(2): Might the prohibition of the defeat device activating or adjusting upwards the operation of any part of the emission control system specifically during the approval procedures be disregarded for one of the three reasons listed in Article 5(2)?
4(3): Is slowing down the aging or the clogging-up of the engine among the requirements of 'protecting the engine against damage or accident' or of 'safe operation of the vehicle' that may justify the presence of a defeat device within the meaning of Article 5(2)(a)?

[1] Regulation (EC) No. 715/2007 of the European Parliament and of the Council of June 20, 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information (OJ 2007 L 171, p. 1).

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Questions referred in Case C-693/18 at the CJEU [3]

ARE EMISSION REGULATIONS PERMISSIBLE?

The CJEU judgment will raise the question of the legality of temperature-dependent emission control systems in combustion engines, independently of the EA189 case. They are not comparable with the switch logic of the EA189 engine and are not the subject of the CJEU proceedings. But temperature-dependent emission control systems can in formal terms be described as defeat devices. This leads to the question of whether they are permitted in order to protect the engine or ensure safe operation of the vehicle. German courts are already considering the issue of which defeat device scenarios that are not tested as part of the type approval process are in fact permitted. These include, among others, the scenarios applied outside the regulations for ambient temperature in the homologation process, for example to prevent the build-up of soot on the valve for the exhaust gas recirculation system. The German Association of the Automotive Industry (VDA) has commissioned an expert report on this specifc case from Professors Thomas Koch (Karlsruhe Institute of Technology), Christian Beidl (Technical University of Darmstadt) and Hermann Rottengruber (Otto von Guericke University Magdeburg) in order to obtain a scientifc assessment of the need for the defeat device in the exhaust gas recirculation system under differing conditions [4].

EXPERTISE ON THERMAL WINDOWS

The authors of the report came to the conclusion that a "general temperature-dependent control system for the emission reduction variables and, in particu-

lar, a control system for the exhaust gas recirculation valve dependent on the temperature of the coolant or the external temperature is technically necessary to prevent wear- and emission-related damage to components with consequential risks for the safe operation of the vehicle [4].” By contrast, in her summation, Advocate General Sharpston is of the view that “aging or clogging-up of the engine or of an engine component [is] the inevitable result of the normal use of the vehicle.” These are the “normal and predictable effects of the gradual build-up of contamination in the engine during the entire normal service life of the vehicle under normal conditions of use.” Long-term and regular planned maintenance could mitigate these effects. Therefore, the assumption that any functional restrictions on the component constitute accidents, damage or risks to the safe operation of the vehicle in legal terms is incorrect, according to the British lawyer. [1]

However, the technical analysis and the related conclusions do not conflict with Sharpston’s summation. Instead, the analysis considers the consequences of the summation for the temperature-dependent emission control systems from a technical perspective, if it is adopted by the CJEU. The results show that the exceptional case, which the Advocate General considered to be permissible, of sudden damage that cannot be prevented by regular maintenance and that is also safety-related, concerns the damage caused when the operating conditions for temperature-dependent mission control systems are disregarded. From a general perspective, the corridor defined on the basis of the EA189 could be too narrow. Therefore, in the opinion of the experts, the data used in temperature-dependent emission control systems should always be subjected to an individual test based on the latest technology. This probably also applies to the software updates and shutdown devices for the SCR retrofit solutions recently approved by the German Federal Motor Transport Authority (KBA).

2. The use of defeat devices that reduce the effectiveness of emission control systems shall be prohibited. The prohibition shall not apply where:

(a) the need for the device is justified in terms of protecting the engine against damage or accident and for safe operation of the vehicle;
(b) the device does not function beyond the requirements of engine starting; or
(c) the conditions are substantially included in the test procedures for verifying evaporative emissions and average tailpipe emissions.

Article 5, Paragraph 2 of Regulation (EC) No. 715/2007 [5]

The latter provides an example of the consequences that would generally arise from a rejection of cut-off devices. In the “Announcement of the Requirements for Nitrogen Oxide Reduction Systems (NO_x Reduction Systems) with High Reduction Performance to Maintain an Emission Value of Less than 270 mg/km

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Portable emissions measurement systems are used to test vehicle emissions in real driving conditions

NO_x for Motor Vehicles with Compression ignition Engines (NO_x MS Passenger Cars)" issued by the Federal Ministry of Transport and Digital Infrastructure (BMVI), it is stated: "The technical modification by means of a hardware retrofit must ensure that the NO_x MS passenger car is effectively functional in the warm operating condition of the motor vehicle at ambient and reagent temperatures of up to 266 K (-7 °C) [5]." Thus, the BMVI approves a temperature-dependent defeat device at ambient and reagent temperatures below -7 °C. In addition, the specification does not take into account emissions during cold starts. This may make sense from the point of view of physics, as the expert opinion by Koch, Beidl and Rottengruber confirms. However, the specification could contradict what the CJEU ultimately finds with regard to the EA189 engine by Volkswagen.

FAR-REACHING CONSEQUENCES

In addition to the preliminary ruling of the French court, the CJEU will probably also have to deal with this complex of issues for vehicles from other manufacturers. At the Stuttgart Regional Court, for example, on March 13, 2020, a judge in the case with the file number 0 31/20 decided to also appeal to the CJEU. The defendant in this case is Dr. Ing. h.c. F. Porsche AG. Following the questions referred, the highest European court is to clarify, among other things, what is meant by "normal operating conditions" within the meaning of Regulation (EC) No. 715/2007. Building on this, the Stuttgart Regional Court wants to have the "permissibility of temperature-dependent

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2 QUESTIONS FOR ...

Are the defeat devices that are the subject of permitted exceptions under the terms of EU regulations a necessary component of combustion engines?

STAN _ Defeat devices, which were introduced in particular to protect exhaust gas recirculation systems, are an emergency solution for a stage of development of the combustion engine that no longer represents the latest technology. They are also harmful to the environment. Controlled auto-ignition in the combustion chamber, for example using pilot injection, is the ideal way of reducing nitrogen oxide emissions. The engine needs areas of hot exhaust gas in the combustion chamber and not cold exhaust gas from the recirculation system, which inhibits combustion throughout the chamber rather than locally, with the aim of preventing the dissociation temperatures that cause nitrogen oxides to form.

In case C-693/18, the CJEU is considering, among other things, the interpretation of the exceptions for defeat devices under the terms of EU Regulation No. 715/2007. What signifcance does the legal interpretation of a regulation more than a decade after it was adopted have for the future of the development process? How can we ensure that engines comply fully with current regulations?

STAN _ Calling regulations into question after such a long period of time is simply nonsensical. That applies to the development not only of vehicles but also of any type of product. How can developers work productively if they cannot rely on the legal framework? If reliable regulations cannot be applied for a long period, the legislators must reduce the amount of time allowed for reviewing the regulations and include all the stakeholders in the review process. In the area of exhaust gas treatment systems, I would set up an exhaust gas evaluation committee with equal representation from the EU and the automotive industry that would meet every three years.

emission reduction strategies" discussed: "Is Article 5(1) of Regulation (EC) No. 715/2007 to be interpreted and applied to the effect that it is impermissible to equip a vehicle in such a way that a component which is likely to affect the emission behavior is designed in such a way that the exhaust gas recirculation rate is regulated in such a way that it ensures a low-emission mode only between 20 and 30 °C and is successively reduced outside this thermal window [6]?"

The legal review of the operating strategies used to achieve the emission targets poses challenges not only for the automotive industry, when the CJEU makes its assessment. Legislators and control authorities are also under criticism. If, some 15 years after the publication of an EU regulation, its interpretation by the judges in Brussels differs from what national authorities such as the KBA have meanwhile waved through at product level during homologation, it is hardly possible to place the blame solely on the automotive industry. The Federal Ministry of Transport, Building and Urban Development (BMVBS), which was responsible in Germany at the time Regulation (EC) No. 715/2007 was issued, saw technical necessities – also in terms of a thermal window – in the implementation of an exhaust gas aftertreatment system in the same way that the BMVI, which is responsible today, has manifested these necessities in a specification for retrofit solutions. Thus, in the wake of the rulings in Brussels, the question of how the legislator can avoid uncertainties in the interpretation of specifications, both in industry and in the authorities, certainly also arises. This could be a first step toward a new normal for engine developers.

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OPINION

"Legislators must put in place mandatory regulations. The automotive industry has to work within the framework defined by the legislation. If it exceeds the specifed limits, it becomes the target of justifable criticism. But in the case of the diesel scandal, the criticism was directed at technical solutions that do not confict with current legislation. Thermal windows are a good example of this. For many years, the application of this operating strategy, which is necessary according to the principles of physics, was not regarded as prohibited by the EU or the transportation ministries in any of the member states. Now it is less about the question of whether the technical solution is appropriate and up-to-date and more about a discussion of what the future regulations should look like so that, on the one hand, developers have a framework for their design activities and, on the other, the guidelines remain resilient. Otherwise the next scandal will be just around the corner."

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