

Fact Sheet XXL

SCHAEFFLER

DTM Hockenheim

May 5/6, 2018

Races 1 & 2

#DTMHockenheim

DTM opener with a highly motivated Mike Rockenfeller in the Schaeffler car sporting colors adapted to those of the company



Touring car elite +++ Hockenheim +++ All races +++ Team +++ Driver +++ Car +++ Partner Audi +++ This is the DTM +++ Interview with executive board members +++ History: Schaeffler in the DTM +++ Schaeffler and the IC engine +++ Strategy: mobility for tomorrow +++ Facts and figures +++ Race track +++ Schedule +++ Contacts

Editorial

The DTM is a series not to be missed by fans of spectacular touring car racing – and has been for more than three decades. Initially a platform for serious amateur drivers, the DTM has long evolved into an absolutely top-caliber series in worldwide motorsport. The sound of the V8 engines, door-to-door duels including

the exchange of paint – the overall package is perfect. I can only warmly recommend that you visit a DTM event. We keep our fingers crossed particularly for our Schaeffler brand ambassador Mike Rockenfeller who is again representing the company’s colors in the Schaeffler Audi RS 5 DTM. We have summarized information, facts and figures for you in this brochure.



Jörg Walz
Vice President Communications & Editor-in-Chief Schaeffler

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The touring car elite

Some of the world’s most notable drivers fight gripping duels in high-tech race cars with more than 500 horsepower on race tracks throughout Europe

The internationally most popular touring car series has been captivating fans since 1984 with a mix of attractive motorsport and a program featuring a variety of entertainment. Three German premium manufacturers pitted against each other in high-caliber racing, an enhanced event calendar, two races per weekend, six different countries hosting the DTM – the overall conditions for the 2018 season could not be better.

Even in the DTM’s early years, Schaeffler supported drivers and teams with its motorsport and technical know-how, emphasizing its passion for technology. Since 2011, the company has been giving its name to the Schaeffler Audi and has celebrated major successes including two title wins. This season, Schaeffler, Audi, Phoenix Racing, the Schaeffler Audi RS 5 DTM and driver Mike Rockenfeller are again forming a unit that promises to deliver success.



#DTMHockenheim



Hockenheim–Herzogenaurach



249 km

A small German town with a big name in the worldwide motorsport scene – that’s Hockenheim

Country and people

Hockenheim is located in the Rhine-Neckar county not far from Mannheim, the “cradle of the automobile” where Karl von Drais in his day invented the “draisine” running machine and Carl Benz developed the first automobile with an internal combustion engine. The 55-kilometer long Kraichbach river divides Hockenheim into two parts. In 2019, the town will celebrate the 1250th anniversary of its first official mentioning in the “Lorscher Codex,” the volume of official documents of the Abbey of Lorsch.

Mobility

Hockenheim’s population of some 20,000 residents benefits from the town’s geographic location with good travel connections in the Northern Baden’s Upper Rhine valley. Two freeways, A6 and A61, are routed directly past Hockenheim and A5 is just a few kilometers away. As a result, in spite of its small area of only 35 square kilometers, Hockenheim is one of Germany’s most important “automobile towns.” A train station, connections to federal roads and two country roads plus the nearby regional airports in Speyer and Mannheim underpin the town’s central location.

Race track

Initially established in 1932 as a triangular track of some twelve kilometers in length on unpaved trails in the Hardtwald forest, the Hockenheimring went on to become one of the country’s most important race tracks. In the DTM, the Grand Prix circuit enjoys a special role as well. Ever since the racing series’ relaunch in 2000, it has, with one exception, been hosting both the opening and the final event each season. With 86 races the Hockenheimring ranks ahead of the Nürburgring (77) as the most frequently used DTM track.

21,625

inhabitants

34.84 km² of area

Picturesque Hockenheim’s historic center



Hockenheim in May

14 °C
Daytime temperature

9 °C
Nighttime temperature

7
Hours of sunshine/day

10
Days of rain/month

More *racing action*

20 races in six European countries – the 2018 DTM calendar is more extensive than it has ever been since the 1996 season

3 & 4

Change of course

May 19/20, 2018

For the first time since 2004, the DTM is racing on the long version again. In the current driver field, Gary Paffett is the only entrant to have raced in the DTM back then.



Lausitzring
Germany

Budapest
Hungary

Nostalgia

June 2/3, 2018

The DTM debuted at the Hungaroring as far back as in 1988, in the days of the Iron Curtain. In 2018, the circuit near Budapest is represented on the calendar for the fifth time.

5 & 6

Zandvoort
The Netherlands



9 & 10

Rocky's turf

July 14/15, 2018

On Circuit Zandvoort located directly on the North Sea coast, Schaeffler driver Mike Rockenfeller has previously celebrated two victories.

Misano Italy

13 & 14

Double premiere

August 25/26, 2018

Misano World Circuit, usually a venue for motorcycle racing, is celebrating a premiere in the DTM. In addition, the track will host the series' first night races (each starting at 10.20 PM).

Norisring
Germany

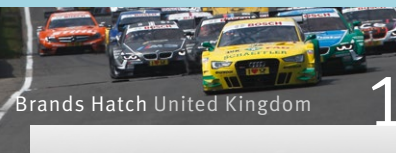


7 & 8

Highlight

June 23/24, 2018

City circuit feeling at the Norisring – and painful memories for Mike Rockenfeller: Last year, he broke his midfoot in an accident that was not his fault.



Brands Hatch United Kingdom

11 & 12

Comeback

August 11/12, 2018

Following a four-year break, the DTM is returning to the motherland of motorsport. The races will not be held on the short version as before, but on the full Grand Prix circuit.

Hockenheim
Germany



Crowd puller

May 5/6, 2018

The Hockenheim races have traditionally been highly popular with DTM fans. More than 100,000 fans regularly flock to the circuit in Baden-Württemberg.

1 & 2



15 & 16



Nürburgring
Germany

Long runner

September 8/9, 2018

The Nürburgring is the only track to have continuously appeared on the calendar ever since the DTM's 1984 inaugural season. The races are held on the short version of the Grand Prix circuit.

Spielberg Austria



Natural spectacle

September 22/23, 2018

Formerly having hosted races under the name of Österreichring and subsequently A1-Ring, the Red Bull Ring has been part of the DTM program since 2011. It is famous for its idyllic surroundings.

17 & 18

19 & 20

Showdown

October 13/14, 2018

The grand finale not to be missed: In nine of the past 15 seasons, the DTM title was only awarded on the last race weekend.

Hockenheim Germany



Drivers' standings 2017

Pos.	Driver	Team	Points
1	René Rast (D)	Audi	179
2	Mattias Ekström (S)	Audi	176
3	Jamie Green (GB)	Audi	173
4	Mike Rockenfeller (D)	Audi	167
5	Marco Wittmann (D)	BMW	160
6	Lucas Auer (A)	Mercedes-Benz	136
7	Timo Glock (D)	BMW	133
8	Maxime Martin (B)	BMW	132
9	Robert Wickens (CDN)	Mercedes-Benz	119
10	Gary Paffett (GB)	Mercedes-Benz	102

Teams' standings 2017

Pos.	Team	Points
1	Audi Sport Team Rosberg, Audi	352
2	Audi Sport Team ABT Sportsline, Audi	257
3	HWA, Mercedes-Benz	221
7	Audi Sport Team Phoenix, Audi	189

Manufacturers' standings 2017

Pos.	Team	Points
1	Audi	798
2	Mercedes-Benz	568
3	BMW	560

Congenial *quintet*

Premium partner **Schaeffler**, manufacturer **Audi**, fielding team **Phoenix Racing**, driver **Mike Rockenfeller** and the **Schaeffler Audi RS 5 DTM** race car – these players are jointly battling for points and trophies in the 2018 DTM

Titles and victories

Schaeffler has celebrated triumphs in series such as:
 DTM, Formula E,
 WEC, 24 H Le Mans,
 24 H Nürburgring,
 Dakar Rally and
 endurance rallies

SCHAEFFLER

Innovative technology group +++ Motorsport as a platform for technology between road and race track +++ Has been supporting DTM teams and drivers since the 1980s +++ Has been naming sponsor of the Schaeffler Audi since 2011 +++ Responsible for the powertrain technology of the championship-winning team in Formula E



DTM

2 x driver champions
 1 x team champion

GT victories

4 x 24 H Nürburgring
 2 x 24 H Spa
 1 x 12 H Bathurst

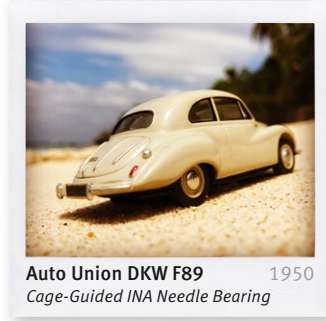


PHOENIX RACING

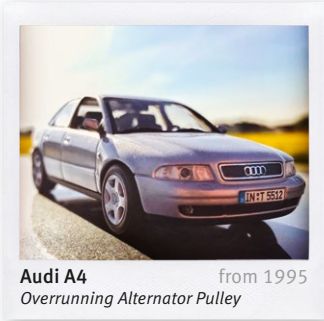
Formed in 1999 +++ Home base in Meuspath located directly at the Nürburgring +++ Active in DTM since 2000, as official Audi factory team since 2006 +++ Phoenix provided the DTM Champion in 2011 and 2013 +++ GT racing is second pillar – major successes: four victories in 24 Hours of Nürburgring



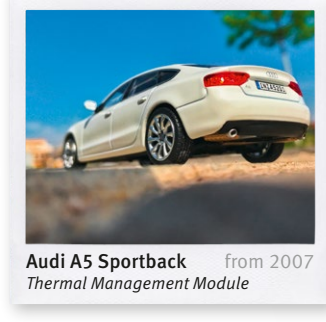
Active in motorsport with factory commitment since the 1980s +++ Initially active in DTM in the 1990s +++ Factory-backed comeback in 2004 season +++ Also involved in Formula E, rallycross, GT and TCR racing +++ Long-standing partnership with Schaeffler in production car sector +++ Left: examples of Schaeffler technologies at Audi



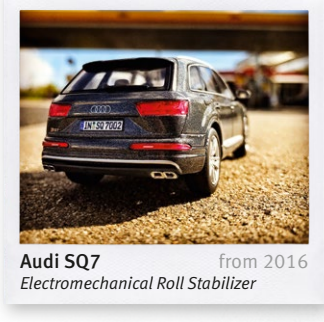
Auto Union DKW F89 1950
 Cage-Guided INA Needle Bearing



Audi A4 from 1995
 Overrunning Alternator Pulley



Audi A5 Sportback from 2007
 Thermal Management Module

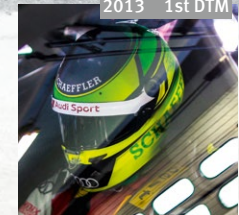


Audi SQ7 from 2016
 Electromechanical Roll Stabilizer

Formula E
 1 x drivers' champion
WEC
 2 x drivers' world champion
 2 x manufacturers' world champion
 13 x 24 H Le Mans winner
DTM/Super Touring Cars
 10 x drivers' champion (DTM)
 4 x manufacturers' champion (DTM)
 12 x drivers' champion (STW)
 8 x manufacturers' champion (STW)
Rally
 2 x drivers' world champion
 2 x manufacturers' world champion

#99

- 2004 1st Porsche Carrera Cup
- 2006 1st 24 H Nürburgring
- 2008 1st Le Mans Series
- 2010 1st 24 H Le Mans
- 2013 1st DTM



Mike Rockenfeller
 Date of birth October 31, 1983
 Place of birth Neuwied (D)
 Residence Landschlacht (CH)
 Height 1,75 m
 Weight 68 kg

Chassis
 CFRP monocoque with integrated fuel cell

Engine
 Gasoline V8 aspirated,
 4 valves per cylinder

Drivetrain
 4-plate CFRP clutch,
 Semi-automatic 6-speed transmission

Suspension
 Independent front and rear, double wishbones, pushrod system

Schaeffler Audi RS 5 DTM

1,115 kg
 Weight including driver

5,010 mm Length

> 500 hp
 Power output

1,950 mm Width

275 km/h
 Top speed

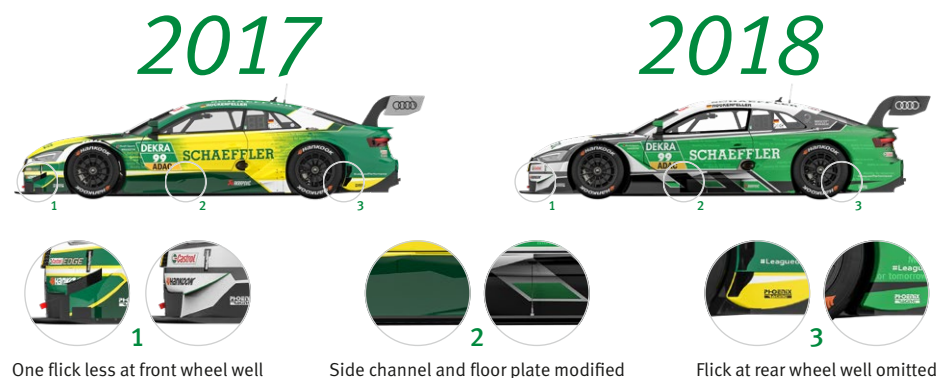
1,150 mm Height



This is the **DTM**

The DTM has been thrilling its fans for more than three decades, thanks to the organizers and the governing body who keep working on making the popular touring car series even more attractive and exciting with ever new ideas.
A summary of sporting and technical aspects that define the DTM

Aerodynamics



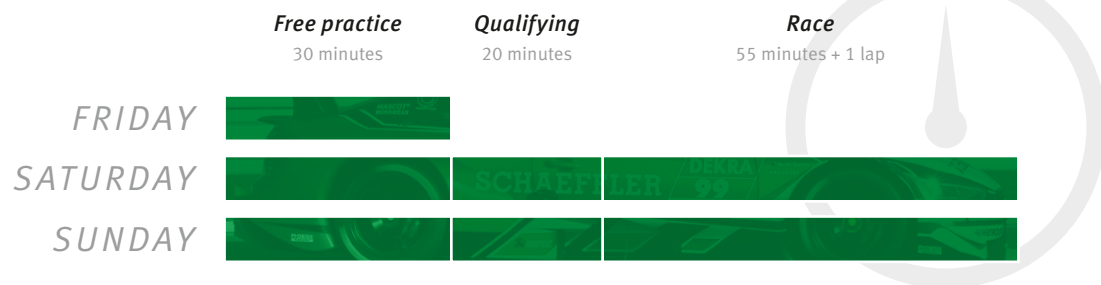
One flick less at front wheel well

Side channel and floor plate modified

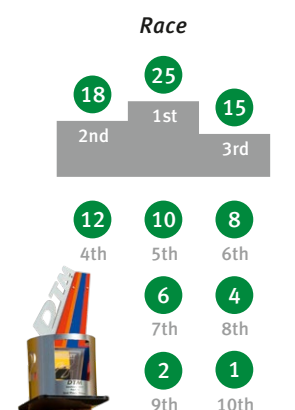
Flick at rear wheel well omitted

→ 25 percent less downforce resulting in greater spectacle for fans

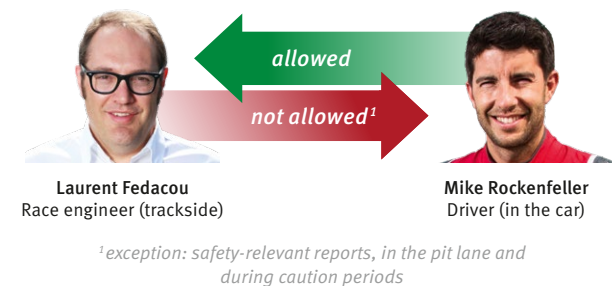
Race format



Points



Radio



Pit stop



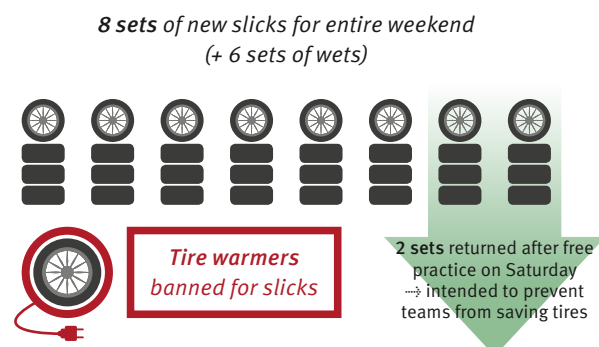
1 pit stop per race

9 mechanics (max.), 1 impact wrench per side

4 tires are changed

Driver decides when to pit

Tires





Prof. Peter Gutzmer (right), Deputy Chief Executive Officer and Chief Technology Officer of Schaeffler AG, and Matthias Zink, CEO Automotive of Schaeffler AG, in an interview

3 questions for ...

... Prof. Peter Gutzmer and Matthias Zink

As far back as in the 1980s, DTM cars were racing with stickers of Schaeffler's LuK brand and since 2011, an Audi fully wrapped in Schaeffler's colors has been attracting attention. What's the objective that drives this commitment?

Peter Gutzmer: "Schaeffler has always been an innovation driver. About three decades ago, we extended our commitment from the factories to the race tracks in a manner of speaking in order to present our brands in the competitive environment of motorsport. Many cars not only in the DTM but also in other motorsport disciplines such as rally racing were emblazoned with logos of Schaeffler's LuK, FAG and INA. Today, we're communicating our brand values in motorsport under the 'One Schaeffler' theme. In addition, motorsport not only reflects the competitiveness of our products, but also strengthens the skills of our young engineers who increasingly often join us with experience from the Formula Student engineering design competition."

Talking about technology transfer: The technologies in race cars and production automobiles are frequently not so far apart from each other. How do these two fields benefit from each other?

Matthias Zink: "The complexity and speed in motorsport commitments sharpen the focus on what's essential and require our engineers to deliver feasible solutions at a fixed point in time. In addition, motorsport promotes team spirit. All this is beneficial for Schaeffler's daily work as a globally active automotive and industrial supplier as well."

As an official technology partner of Team Audi Sport ABT Schaeffler you are active in the Formula E electric racing series as well. This is a totally different field particularly in terms of the type of powertrain. IC engines and electric mobility – how do these two fit together in a portfolio in your case?

Peter Gutzmer: "Electric mobility is our future but, this said, electric mobility is the future of the IC engine as well. As many studies have shown, we're not going to achieve the envisioned targets by 2050 with purely battery-based electrification. Looking at it from the perspective of total systems, this will only be possible if we create CO₂-neutral energy carriers using renewable energy sources which can ideally be achieved in an IC engine system. The future of our personal mobility will be defined by a sound mix of hybrids, efficient IC engines and electric powertrains."

Champion makers

From small stickers to full vehicle branding – Schaeffler has been progressively extending its DTM commitment over the past 30 years. Success in racing has proved the company right



The beginnings

The logo of Schaeffler's LuK product brand is featured on Kurt Thiim's racing suit and car, among others. In the first event, at Zolder in 1986, the Danish rookie races from second on the grid to victory. At the end of the season, Thiim even wins the title. In the following DTM years, the LuK, INA and FAG logos can be seen on many other cars of the Alpina, Audi, BMW, Ford, Mercedes-Benz and Opel marques and on the racing suits of their drivers.



2011

Triumph in Schaeffler's colors

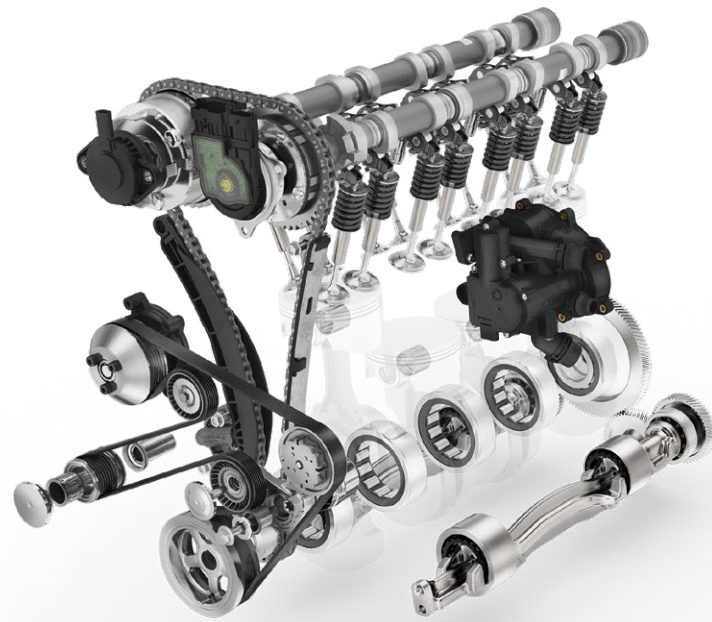
For the 2011 season, Schaeffler concentrates its commitments and becomes the naming sponsor of a full race car of Audi Sport Team Phoenix. The Schaeffler Audi A4 DTM sporting conspicuous colors and dubbed "Caipirinha express" in the hands of campaigner Martin Tomczyk turns out to be a guarantee for points. In all ten races of the season, the Bavarian driver claims a place in the top five, celebrating three victories in the process. At the end of the season, he scores the title win. The whole Schaeffler Group is the champion in its DTM debut year.

2013

Repeating the feat

In the 2013 season, the Schaeffler campaigner's name is Mike Rockenfeller. In just his second race, at Brands Hatch, he celebrates his first victory that season and takes the lead of the standings. Victory number two, at Moscow, produces an early decision in Rocky's favor in the title race with BMW driver Bruno Spengler. After the penultimate event at Zandvoort, Rockenfeller can no longer be bumped from the top spot in the overall standings.





Efficiently into the future

In the medium term, 70 percent of all newly registered vehicles – hybrid models included – will have an IC engine on board, according to a forecast by a Schaeffler scenario for 2030. In the light of future climate and emission targets, it is all the more important to make established powertrain technology fit for the future

For the globally active automotive and industrial supplier, it is clear that an either-or philosophy will not be sufficient on the road toward mobility for tomorrow. “Important keys to success lie in the ability to think systematically and in ambidexterity, the gift of acting with ‘both hands.’ This means continuing to develop the things that have proven viable while breaking new ground at the same time,” explains Prof. Peter Gutzmer, Schaeffler’s Chief Technology Officer.

The further development of things that have proven viable include, for example, rolling bearings for engines and transmissions with particularly low friction, as well as mechanically and electronically optimized control systems such as the UniAir fully variable electrohydraulic valve control and electromechanical camshaft

adjusters or VCR systems enabling variable compression ratios. Another highly attractive and effective technology: Schaeffler is testing three-cylinder engines with so-called rolling cylinder deactivation where a different combustion chamber is shut off after every four cycles. This is where Schaeffler’s patented dual-mass flywheels with pendulum-type absorbers for vibration absorption are utilized as well – an invention that for many years has been responsible for perfectly smooth running of ICE powertrains in a wide variety of configurations. In addition, it enables driving in particularly low engine speed ranges and thus yields additional savings potential.

45 percent efficiency realistic

In spite of continuous improvements, it is also clear that without additional electrification of the

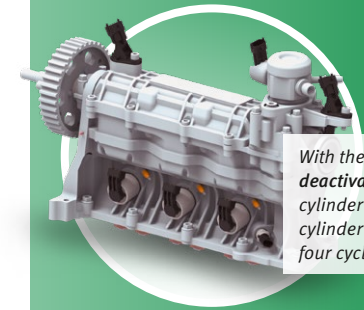
powertrain the IC engine will not be able to comply with future emission limits. Schaeffler has developed a large number of production solutions in this context, ranging from the thermal management module derived from the internal combustion engine to electric clutch systems to 48-V and hybrid technologies.

In 2030, Schaeffler expects that annual production just of so-called P0 hybrid drives, in which the electric motor is connected with the crankshaft of the IC engine via a belt, will amount to some 20 million units. These belt-driven starter-generators make it possible to recuperate braking energy to be stored in small, cost-effective lithium-ion batteries. The recovered energy can be used to restart the engine in start-stop or in coasting modes and to boost acceleration. To enable the dynamic alternation between various operating modes, Schaeffler, among other things, developed an electrically operated active belt tensioner. With these technologies Schaeffler expects that an efficiency increase of gasoline engines to 45 percent is realistic. That would raise it to the level of modern diesel units.

An important aspect of looking at efficiency is that Schaeffler goes beyond the consumption of the powertrain, instead considering the entire energy chain of mobility, from well (source) to wheel. In terms of emissions, the IC engine no longer compares so poorly with its electric competition if the analysis is based on the current electricity mix in which fossil fuels throughout the EU account for 44 percent. But even a complete switch to electricity produced from renewable sources would not necessarily mean the end of the IC engine. The combustion of synthetic fuels produced with green electricity is low in emissions and CO₂-neutral. Synthetic fuels achieve a vehicle range comparable to that of fossil fuels and can be easily sold via existing filling station networks.

“Crucial for success is a holistic view of the powertrain and the interaction of the electric motor, the internal combustion engine and the related infrastructure,” explains Matthias Zink. “With its expertise in electric mobility as well as in engine and transmission systems and chassis Schaeffler is superbly positioned.”

More efficiency – innovative technologies from Schaeffler



With the rolling cylinder deactivation of a three-cylinder engine a different cylinder is shut off every four cycles



Electromechanical camshaft adjusters offer higher adjustment speeds than hydraulic systems



Electromechanical belt tensioners enable dynamic variation of the engine’s operating modes



The UniAir fully variable valve train system delivers the optimum amount of air to the combustion chamber for every operating point

Mobility for tomorrow

For Schaeffler, innovation has been part of its corporate DNA ever since the company was founded. Lateral and interdisciplinary thinking is part of the program

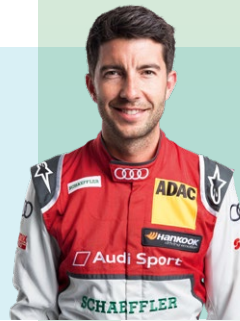
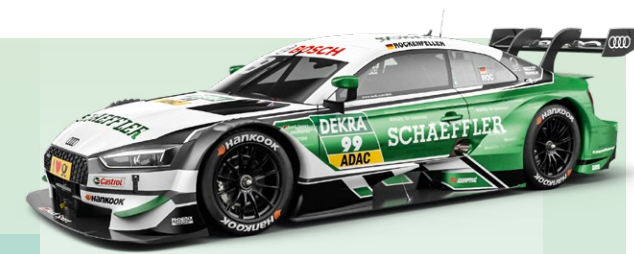
Schaeffler is known as an innovation leader delivering a wealth of technologies that make automobiles more fuel-efficient, environmentally friendly and safer. Additionally, the company offers products for trains, aircraft, wind turbines and many other industrial sectors. Schaeffler can be found wherever things are in motion. And motion means mobility as well. The challenges facing mobility of the future are immense. That's why Schaeffler is committed to its holistic "Mobility for tomorrow" strategy concept geared to finding sustainable solutions for the world of tomorrow.

"Progressive climate change, increasing urbanization and globalization, as well as digitalization will have a substantial impact on our lives and work. This particularly applies to the field of mobility"

Klaus Rosenfeld,
Chief Executive Officer Schaeffler



Compact info



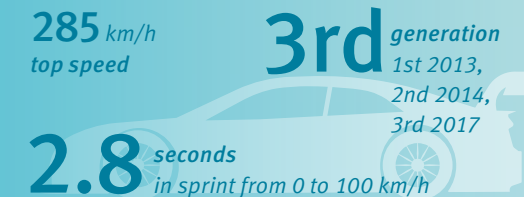
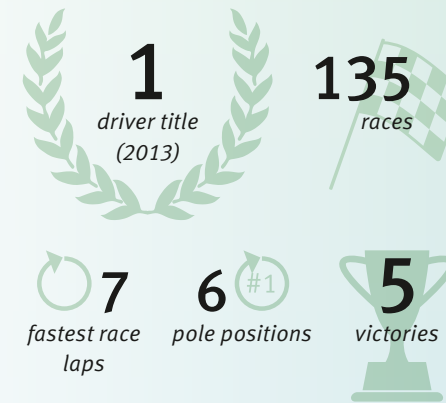
Mike Rockenfeller

- 🌐 mike-rockenfeller.de
- 📘 mikerockenfeller
- 🐦 @m_rockenfeller
- 📷 mike_rockenfeller

Schaeffler Audi RS 5 DTM

- Chassis**
CFRP monocoque with integrated fuel cell, CFRP crash elements at the sides, front and rear
- Engine**
Gasoline V8 aspirated engine, 4 valves per cylinder, 4,000 cc, more than 500 horsepower
- Driveline**
Rear-wheel drive, 4-plate CFRP clutch, Semi-automatic 6-speed transmission with paddle shifters, adjustable plate-type limited-slip differential
- Suspension**
Independent front and rear, Double wishbones, Pushrod system with spring/damper unit
- Basic weight**
1,115 kg (including the driver)
- Dimensions**
Length 5,010 mm, width 1,950 mm, height 1,150 mm

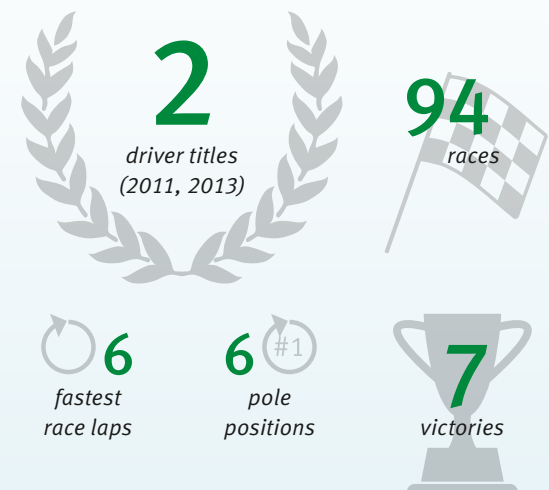
Rockenfeller in the DTM



Schaeffler facts



Schaeffler in the DTM (2011–2018)



The *race track*

Hockenheimring Baden-Württemberg

SCHAEFFLER

185 km/h Fastest turn

260 km/h
Top speed
(275 km/h with DRS)

50 km/h
Slowest turn

4,574 m

Track length

- 1 Start/Finish
- 2 Pit lane
- 3 Media Center
- 4 Audi Hospitality

Schedule (local time)

FRIDAY, MAY 4

11:50 – 12:20	ADAC Formel 4	Free practice 1
12:35 – 13:05	Audi Sport Seyffarth R8 LMS Cup	Free practice 1
14:30 – 15:00	ADAC Formel 4	Free practice 2
15:45 – 16:15	DTM	Free practice 1
16:35 – 17:05	Audi Sport Seyffarth R8 LMS Cup	Free practice 2
17:25 – 18:00	ADAC Formel 4	Qualifying

SATURDAY, MAY 5

09:00 – 09:30	DTM	Free practice 2
10:35 – 11:05	ADAC Formel 4	Race 1
11:25 – 11:45	DTM	Qualifying 1
12:05 – 12:35	Audi Sport Seyffarth R8 LMS Cup	Qualifying 1
13:33 – 14:28	DTM	Race 1
15:30 – 16:05	ADAC Formel 4	Race 2
16:30 – 17:00	Audi Sport Seyffarth R8 LMS Cup	Race 1

SUNDAY, MAY 6

09:00 – 09:30	DTM	Free practice 3
09:50 – 10:20	Audi Sport Seyffarth R8 LMS Cup	Qualifying 2
10:40 – 11:10	ADAC Formel 4	Race 3
11:25 – 11:45	DTM	Qualifying 2
13:33 – 14:28	DTM	Race 2
15:15 – 15:45	Audi Sport Seyffarth R8 LMS Cup	Race 2



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Audi Sport

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Phoenix Racing

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Learn more about
mobility for tomorrow