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Audi in Formula E 2016/2017

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Audi in Formula E 2016/2017

Audi commits to Formula E

Audi is strengthening its future commitment to the first global racing series for clean electrically powered cars. From the 2016/2017 season, Audi will be intensifying its involvement with Formula E team ABT Schaeffler Audi Sport. In addition, it is planned to expand the commitment into a factory-backed motorsport program for the 2017/2018 Formula E season.

“Electric mobility is one of the key topics in our field,” says Head of Audi Motorsport Dr. Wolfgang Ullrich. “We intend to evolve into one of the leading premium manufacturers in this field. By 2025, every fourth Audi should be an electric vehicle. The first model for this is planned to be an SUV we’re going to present in 2018. In the light of these plans, adapting our motorsport program and taking up a commitment in a fully electric racing series is only a logical move.”

Head of Audi Motorsport Dr. Wolfgang Ullrich: “Audi has consistently been using motorsport to test and develop new technologies further for subsequent use in production. With quattro drive we revolutionized rally racing and subsequently set standards in circuit racing as well. In the 24 Hours of Le Mans, Audi was the first manufacturer to have achieved victories with a TFSI engine, a TDI and a hybrid race car and made motorsport history with them on several occasions. Now we intend to repeat this in fully electric racing. Formula E with its races being held in the hearts of major cities is an ideal stage for this purpose and Team ABT Schaeffler Audi Sport a logical partner for us.”

Audi Sport has been giving its name to the team ever since the inaugural 2014/15 Formula E season and in the Brazilian Lucas di Grassi making one of its factory drivers available in the course of this cooperation. In addition, the team has been able to use Audi Sport’s infrastructure in Neuburg. Starting in the 2016/2017 season, Audi is going to intensify the existing partnership with Team ABT Schaeffler Audi Sport by financial and technical support. For the 2017/2018 season, on the road toward a full-fledged factory commitment, Audi Sport is going to join the development step by step in close cooperation with technology partner Schaeffler.

Audi’s commitment to Formula E will be visible for the fans as well. Effective immediately, the four rings will be prominently featured on the sides and on the rear wings of the ABT Schaeffler FE02.



The Formula E calendar features twelve races in ten international city centers. On June 10, 2017, the electric racing series will visit Berlin. Both final races will be held in Montreal (CDN) on July 29/30, 2017. On July 15/16, for the first time, two races will take place in New York City (USA).

Team ABT Schaeffler Audi Sport's drivers are Daniel Abt (Germany) and Lucas di Grassi (Brazil), who are tackling their third Formula E season together. In the inaugural season, di Grassi was third in the drivers' standings and, as-runner up, narrowly missed out on the title in the 2015/2016 season.



Interview

Dr. Wolfgang Ullrich: “Formula E suits Audi perfectly”

The Head of Audi Motorsport talks about Audi’s entry into Formula E

Why is Audi committing to Formula E?

Formula E, as a fully electric series, suits Audi perfectly. Electric mobility is an important topic for us and we aim to develop Audi into a leading premium manufacturer in this area. By 2025, every fourth Audi should be an electric car. Therefore, it’s only logical that we integrate Formula E into our motorsport commitment.

Audi has always used motorsport to test and further develop new technology for future production series. Is that now also the case with Formula E?

I am convinced of that. With quattro drive, we revolutionized rally racing and subsequently set new benchmarks in circuit racing as well. In the 24 Hours of Le Mans, Audi was the first manufacturer to win with a TFSI engine, a TDI and a hybrid race car and, as a result, repeatedly went down in motorsport history. We would like to continue this now in fully electric racing.

How do you see the development of Formula E?

Very positively. Formula E is the pioneer of electrified motorsport. At Audi, we addressed this topic long before Formula E and therefore have viewed this racing series positively and with an open mind from the beginning. Thanks to our partnership with Team ABT Schaeffler Audi Sport and our driver Lucas di Grassi, we have had a foot in Formula E from day one. After seeing the series develop in an exciting direction, we are now taking the next step.

Has the fact that Formula E is held in metropolises like Hong Kong and New York also played a role?

Absolutely. Formula E, with its races in the hearts of major cities, is an ideal stage on which to present the topics of electric mobility and urbanization to a large audience. Formula E is at present the only motorsport series that has managed to hold all of its races in cities. That means that with Formula E we bring motorsport to the people and not the other way around. That so many cities are hosting Formula E races is obviously possible just because the Formula E cars produce zero local emissions and low noise levels due to their electric powertrains. We have also gained the impression



that the audience at Formula E is not necessarily identical with your typical motorsport fans. Lots of young people, who are interested in modern things, come to the events and that perfectly suits our company's strategy.

What do Audi's next steps in Formula E look like?

First, we are partners of a team that has been successfully active in Formula E for two years. In the 2016/2017 season, our primary role is that of a sponsor and partner. During this season, we will begin to increase the support for the team. For the 2017/2018 season, we will expand our activity together with ABT and our technology partner Schaeffler into a full factory-backed program.

What role does Audi Sport at Neuburg play in this development?

ABT and Schaeffler were in charge of developing the FE02. In the future, we will progressively transfer the development to Neuburg, where all of our factory-backed motorsport projects are run. Activities in support of Formula E have been taking place at Audi Sport in Neuburg for quite some time and Team ABT Schaeffler Audi Sport has also performed roll-outs and bench testing there. This cooperation will now be intensified. This is where Formula E has an advantage as well. Due to the low noise levels, the cars can be driven in Neuburg without any problem – whereas the series' restrictions in terms of test days tend to pose a greater hurdle.

At the moment, Allan McNish is coordinating the Formula E project at Audi Sport. Will this be a permanent arrangement?

On a transitional basis, Allan has taken the lead of the Formula E project, comes to Neuburg once a week and will also be on site at the races. We have to first create the necessary base for Formula E, including manpower. I assume that by the beginning of 2017, at the very latest, we will be able to name a head of Formula E and Allan will be able to focus completely on his responsibilities as motorsport coordinator for the Audi Group.



ABT Schaeffler FE02

Efficiency in focus

Formula E is the first clean electric racing series in the world. But for Audi, it is not only the powertrain concept that is uncharted territory. For the first time ever, the brand with the four rings is committing to a single seater category.

Rally, Trans-AM, IMSA-GTO, DTM, Supertouring cars, Le Mans prototypes, GT3, TT Cup, TCR – the rally and circuit race cars from Audi Sport have until now all had one thing in common: closed wheels. With Formula E, Audi is now expanding its motorsport program by single seater race cars featuring exposed wheels, as known by fans of Formula 1 and IndyCars in America.

For the first Formula E season in 2014/2015, completely identical electric race cars were used, but for the 2015/2016 season, teams themselves were allowed to develop specific assemblies for the first time. Examples included proprietary powertrains as well as modifications to the chassis. This principle has been kept for the 2016/2017 season.

The ABT Schaeffler FE02 is therefore an evolution of the successful previous model with which Daniel Abt and Lucas di Grassi achieved ten podium positions last season -- three being victories. The engineers mainly focused on making the combination of the electric motor and the transmission even more efficient. This included lower weight and an optimized center of gravity, faster shift times and higher torque.

Similar to the DTM, technical changes after the homologation of the race car, which takes place once a year, are no longer allowed. During the season, the engineers and drivers are primarily concerned with making the most of the existing package and perfectly adapting the car to the respective street circuits. The software, which plays a crucial role in Formula E especially in terms of energy management, offers the greatest latitude for modification.

The heart of the race car is an approximately 200-kilogram energy accumulator (Rechargeable Energy Storage System, RESS) that was developed by Williams Advanced Engineering and is identical in all of the cars. The lithium-powered battery has a capacity of 34 kWh, of which 28 kWh is allowed to be used.



The Motor Generator Unit (MGU) is controlled using a single controller from McLaren Electronics. The MGU itself is a development of Schaeffler. In qualifying, its output is limited to 200 kW (270 hp) and in the race to 170 kW (231 hp). Three drivers each receive extra power of up to 200 kW (270 hp) by fans voting in the so called “FanBoost.”

For power transmission, ABT Schaeffler Audi Sport continues to use a three-speed unit which in the last season proved to be a good compromise. The driver can shift the three gears, like in the Audi R18 or the Audi RS 5 DTM, using paddle shifters in the steering wheel. The clutch, which is only used at the start and at the pit stop, is also operated on the steering wheel. A central display provides all the important information about the condition of the MGU, especially the system temperatures which are particularly important in an electrically powered race car.

A special feature of Formula E is the profiled all-weather tires, which are supplied by longtime Audi partner Michelin and have close relevance to the series. The cars themselves resemble Formula 1 race cars. For better distinction they have been given a striking double front wing for the 2016/2017 season, which differs considerably from the front wings of other single seater series.

Like in Formula 1, the drivers sit in a carbon fiber monocoque conforming to the latest FIA safety standards. Two roll bars and CFRP crash structures at the front, the rear and the sides ensure maximum safety. The minimum weight of a Formula E car is 880 kilograms (with driver). The electric car accelerates from 0 to 100 km/h in 3.5 seconds. The top speed is 225 km/h.



Technical data ABT Schaeffler FE02

As of: October 2016

Model	ABT Schaeffler FE02 (2016/2017)
Vehicle	
Vehicle type	Single seater (FIA Formula E)
Monocoque	Spec Spark chassis in composite fiber construction made of carbon fiber with aluminum honeycomb core, tested for strict FIA crash and safety standards, front, rear and side crashers from CFRP, front and rear rollbars
Body	Spec Spark carbon body Spec front and rear wings
Motor/Battery	
Motor Generator Unit (MGU)	ABT Schaeffler MGU01+
Power output practice and qualifying	200 kW (270 hp)
Power output race	170 kW (231 hp) plus FanBoost
FanBoost	Additional 100 kJ Energy
Battery	Rechargeable Energy Storage System (RESS) from Williams Advanced Engineering, maximum 200 kg, lithium-powered cells from Xalt, battery capacity 34 kWh, of which 28 kWh usable, charging time 45 minutes
Motor controller	McLaren Electronics ECU/CGU with Data Logging System
Driveline/Transmission	
Type of drive	Rear-wheel drive
Transmission	3-speed transmission, via paddle shifts on steering wheel
Drive shafts	Constant velocity joint shafts
Chassis/Steering/Brakes	
Steering	Rack-and-pinion steering, removable steering wheel with quick release, display, shift and rain paddles, FIA marshalling indicators
Suspension	Front and rear independent suspension on lower and upper steel wishbones, pushrod system, front torsion bars, rear spring suspension, two shock absorbers front and rear, adjustable stabilizers front and rear, adjustable ride height, toe and camber, two wheel retention tethers per wheel
Brakes	Hydraulic dual-circuit brake system, light metal calipers, front and rear carbon fiber brake discs, adjustable brake force distribution
Rims	Aluminum rims, front 9 x 18 inch and rear 11 x 18, minimum weight per wheel front 7 kg, rear 8 kg
Tires	Profiled road-like tires, specially developed for Formula E, Michelin Pilot Sport EV, front 245/40 R18, rear 305/40 R18
Weight/Dimensions	
Length	5,000 mm
Width	1,790 mm
Height	988 mm
Wheelbase	1,300 mm
Minimum weight	880 kg (incl. driver)
Performance	
0–100 km/h	Approx. 3.5 seconds
Top speed	225 km/h



Team ABT Schaeffler Audi Sport

Continuation of a successful partnership

ABT, Schaeffler and Audi Sport: Three strong partners make up the team that Daniel Abt and Lucas di Grassi will be on the grid with in the 2016/2017 Formula E season.

When the world's first all-electric racing series took shape at the end of 2013, Hans-Jürgen Abt was one of the first to recognize the potential of Formula E. The Managing Director of ABT Sportsline secured one of the ten team licenses and founded the first and currently only German Formula E team. Schaeffler AG got on board as technology partner and Audi Sport made available one of their factory drivers, Lucas di Grassi. Furthermore, Audi Sport gave its name to the team and allowed ABT Sportsline access to the resources of the Competence Center Motorsport in Neuburg an der Donau.

“When the decision was made to include Formula E in our factory-backed motorsport program on a long-term basis, Team ABT was a logical choice for us,” says Head of Audi Motorsport Dr. Wolfgang Ullrich. “Audi Sport and Abt Sportsline have enjoyed a longstanding, successful partnership.” In addition to Audi Sport Team Joest in the sports prototypes, Audi Sport Team Abt Sportsline is the most successful Audi factory team with 52 wins and five championship titles in the prestigious DTM touring car series.

Since the end of the 1990s, ABT Sportsline has been present in motorsport primarily with Audi. The first great success under the banner of the four rings was winning the German Supertouring Championship (STW) with the Audi A4 quattro. From 2000 to 2003, the family company ABT, headquartered in Kempten in the German Allgäu region, took part in the DTM as a privateer team and even clinched the 2002 title. In 2004, ABT Sportsline became an Audi factory team and has since taken four further driver titles.

About 20 employees, under the leadership of Hans-Jürgen Abt and Sport Director Thomas Biermaier, handle the concurrent Formula E project. Franco Chiochetti, who was working in the DTM for Audi Sport Team Abt Sportsline for many years –



including a stint as the vehicle engineer for Tom Kristensen and Eduardo Mortara – is the Technical Director.

After the first two years in Formula E, Team ABT Schaeffler Audi Sport can already look back on a number of successes. Audi driver Lucas di Grassi is one of the leading figures of the series, who missed out just narrowly on the title twice. In the teams' classification, the team came third and second in the first two years. Before the start of the 2016/2017 season, its track record reflects four victories – all by Lucas di Grassi – and 13 podium positions.

Major successes of ABT Sportsline

2nd Formula E drivers' and teams' classification: 2015/2016

3rd Formula E drivers' and teams' classification: 2014/2015

1st DTM drivers' classification: 2002, 2004, 2007, 2008, 2009 (all Audi)

1st DTM teams' classification: 2004, 2007, 2011 (all Audi)

1st German Supertouring Championship: 1999 (Audi)

1st ADAC GT Masters: 2009 drivers', 2010 teams' classification (both Audi)

1st ADAC Formula Masters: 2009

1st ADAC Formula Junior: 1991, 1992, 1996



Biography

Daniel Abt (D)

Date of birth: December 3, 1992

Place of birth: Kempten (D)

Residence: Kempten (D)

Marital status: single

Height/Weight: 1.79 m/72 kg

Motorsport debut: 2001

Sporting career

2001–2007 Karting

2008 8th ADAC Formula Masters

2009 1st ADAC Formula Masters

2010 2nd ATS Formula 3 Cup

2011 7th Formula 3 Euro Series, 4th FIA Formula 3 International Trophy

2012 2nd GP3 Series, 12th ATS Formula 3 Cup, Formula Renault 3.5

2013 22nd GP2 Series

2014 16th GP2 Series

2015 11th FIA Formula E, FIA World Endurance Championship (WEC), 1 victory
LMP1 privateer teams

2016 7th FIA Formula E, ADAC GT Masters

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instagram.com/daniel_abt

youtube.com/abtdaniel



Biography

Lucas di Grassi (BR)

Date of birth: August 11, 1984

Place of birth: São Paulo (BR)

Residence: Monaco (MC)

Marital status: married

Height/Weight: 1.79 m/75 kg

Motorsport debut: 1997 (Audi driver since 2012)

Sporting career

1997–2001 Kart, Pan American Kart Champion (2000)

2002 2nd Brazilian Formula Renault Championship

2003 2nd South American Formula 3 Championship

2004 British Formula 3 Championship, 3rd GP Macau, Formula 3 Masters

2005 1st GP Macau, 3rd Formula 3 Euro Series, 3rd Formula 3 Masters, Formula 1 test

2006 GP2 Series, Formula 1 test

2007 2nd GP2 Series, Formula 1 test driver

2008 3rd GP2 Series, Formula 1 reserve driver

2009 3rd GP2 Series, Formula 1 reserve driver

2010 Formula 1

2011 Formula 1 tire test driver, ILMC tests

2012 Formula 1 tire test driver, Nürburgring 24 Hours, 3rd WEC São Paulo (Audi R18 ultra)

2013 3rd Le Mans 24 Hours (Audi R18 e-tron quattro)

2014 2nd Le Mans 24 Hours, 4th FIA World Endurance Championship (WEC) (in Audi R18 e-tron quattro at each event)

2015 3rd FIA Formula E, 1 victory, 4th FIA World Endurance Championship (WEC) (Audi R18 e-tron quattro)

2016 2nd FIA Formula E, 3 victories, FIA World Endurance Championship (WEC), 1 victory, (Audi R18), 3rd Le Mans 24 Hours (Audi R18)

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FIA Formula E 2016/2017

Motorsport on new paths

Fully electric single seater cars, races on street circuits in the biggest cities of the world and direct interaction of drivers and fans in social networks – Formula E represents a completely new type of motorsport, in which Team ABT Schaeffler Audi Sport has been one of the leading figures from the first minute.

Formula E does a lot that differs from traditional racing series. This includes a countercyclical racing calendar that many will know from soccer. The 2016/2017 season begins on October 9 in Hong Kong and ends on July 29/30 with two final races in Montreal. Furthermore, Formula E is the first international racing series to be held in the “Big Apple” – in the middle of New York City at a spectacular location in Brooklyn.

The other locations are also first-class. In the third Formula E season, the tour around the globe takes Team ABT Schaeffler Audi Sport to Marrakesh, Buenos Aires, Mexico City, Monaco, Paris, Brussels and Berlin. The street circuits in the cities specifically set up for Formula E meet Formula 1 safety standards and make for spectacular races. Formula E events are compact, with free practice, qualifying and the race all on one day. Visitors can conveniently use public transportation to get to the venue, much like going to a soccer match. Spectator parking around the race tracks in Formula E is deliberately not provided for.

A special feature of Formula E is the fact that the drivers do not change tires in the middle of the race as is typically the case in motorsport, but rather their cars. That should change for the fifth season of Formula E (2018/2019) when the new battery from technology partner McLaren Applied Technologies with double the capacity is introduced, rendering the current obligatory car change obsolete.

Advancing the development of electric mobility and inspiring people’s enthusiasm for it are two of the aims that the organizers of Formula E surrounding CEO Alejandro Agag have set. More and more automotive manufacturers and technology companies like Schaeffler are joining them in this pursuit, as well as visionaries like Virgin boss Richard Branson and stars like actor Leonardo DiCaprio, who is Chairman of the Sustainability Committee of the electric racing series.



Stars and starlets are present at Formula E races as well. Electric mobility and environmentally friendly motorsport are the topics on everyone's mind and for which Hollywood actors are happy to serve as ambassadors.

This is another reason why the still young Formula E is already a major event in worldwide media. Over 190 million people around the globe followed the previous season's races and qualifying sessions on 78 different channels. In Germany, Eurosport broadcasts every race live.

Unique as well is the interaction with the fans, who can get in touch with the drivers in the eVillage and can even compete with the Formula E drivers at the wheel of simulators. From January 5–7, 2017, there will be a world premiere: At the Consumer Electronics Show in Las Vegas, the 20 Formula E drivers will be lining up against ten fans in an eRace. With a one-million dollar cash prize, the race is the best-rewarded event in the history of virtual racing.

Viewers have an influence on the "normal" Formula E races as well. In the races, every driver only has a limited amount of energy (around 56 kWh) and limited output (170 kW) available to use. With the so called "FanBoost," an online voting for the fans, the most popular three drivers receive an extra portion of power, which makes overtaking easier.



Schedule

Formula E events 2016/2017

October 9, 2016	Hong Kong (HK)
November 12, 2016	Marrakesh (MA)
January 7, 2017	Las Vegas (USA) *
February 18, 2017	Buenos Aires (RA)
April 1, 2017	Mexico City (MEX)
May 13, 2017	Monaco (MC)
May 20, 2017	Paris (F)
June 10, 2017	Berlin (D)
July 1, 2017	Brussels (B)
July 15, 2017	New York (USA)
July 16, 2017	New York (USA)
July 29, 2017	Montreal (CDN)
July 30, 2017	Montreal (CDN)

* *Virtual non-championship race*



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