

FACT SHEET XXL Round 9/10

FORMULA E NEW YORK

SCHAEFFLER

July 15/16, 2017



Premiere in the “Big Apple”

With two races being held in Brooklyn’s Harbor District, Formula E is taking a spectacular turn onto the season’s finish straight



FIA
Formula-e
CHAMPIONSHIP

Innovative

Many details improved:
the ABT Schaeffler FE02

p. **8**



Historic

Electric mobility in
automotive design

p. **20**

Editorial



Jörg Walz
Vice President
Communications and
Marketing Schaeffler
Automotive

Arguably, when the Formula E idea was born hardly anyone would have suspected that the series would so soon be racing in the heart of one of the most spectacular and bustling metropolises in the world. But, actually, this is exactly the DNA of the first all-electric international racing series: to demonstrate

innovative high-performance motorsport amidst urbanity and to thrill spectators with modern electric mobility. I hope you'll enjoy reading this brochure, plus suspense galore at two races in the "Big Apple."

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Contents

- 2 Schaeffler and the FIA Formula E
- 4 2016/2017 race calendar
- 6 Modern mega metropolis: New York
- 8 FIA Formula E technology
- 10 ABT Schaeffler FE02 powertrain
- 12 Tech talk: Daniel Abt
- 14 #ProjectIce
- 15 Team ABT Sportsline
- 16 The drivers: Lucas di Grassi and Daniel Abt
- 18 Electric mobility at Schaeffler
- 20 Electric mobility in automotive engineering
- 22 The Schaeffler Group
- 23 Schaeffler and Formula E facts & figures
- 24 Info about New York ePrix

Videos



Racing for a reason



Down to the wire

Electrifying Team ABT Schaeffler Audi Sport

Welcome to the *fu* *ture!*

Electric, in the heart of cities, all over the globe – this is Formula E. Forget everything that you knew about motorsport, and experience the world of the first ever fully-electric international race series

Formula E offers a number of distinct motor racing specialties. The most obvious feature is that, unlike conventional internal combustion engines (as in the DTM) or hybrid drives (as in the WEC), Formula E race cars are one hundred percent electrically-powered. The development of the electric motor as well as the transmission and subsequent software is unrestricted. Schaeffler and the team joined forces to design the entire powertrain, and this successful combination laid the foundation for clinching the vice-championship in the second season. The energy for all teams comes from identical batteries weighing approx. 320 kilograms and positioned in the rear of the car.

A second special feature is that Formula E races are not contested on conventional, per-

manent race tracks, but rather on temporary courses set up right in the heart of major cities. So, rather than the fans having to travel to events, racing is brought straight to the fans. Competing in these unusual locations is possible thanks to the low noise level of the Formula E racing cars and their zero emissions. Even the electricity that is used to charge the batteries is generated at the track using a glycerine-powered Aquafuel generator.

Electrifying around the world

In the motor racing scene, the venues are unique and exotic: Hong Kong, Marrakesh, Buenos Aires, Paris, Berlin and New York are just some of the metropolises where the ePrix are held, with backdrops such as Les Invalides, the skyline of Kowloon or the Statue of Liberty.

The grid line-up is studded with interesting names, including Nelson Piquet Jr, Nico Prost, Nick Heidfeld and, of course, the defending champion Sébastien Buemi.

As the sole German team, ABT Schaeffler Audi Sport again tackles the series with its regular drivers Daniel Abt and reigning vice-champion Lucas di Grassi. The other nine squads include outright factory teams such as Renault, Jaguar and DS Virgin as well as other top international teams from China, the USA and India.

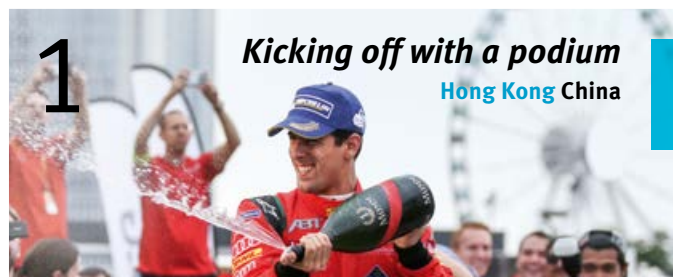
The Formula E format is clear and concise: The practice, qualifying and race are all run on a single day. The race itself takes about 50 minutes – with pilots coming into the pits at around halftime to switch cars. ■



Around the *globe*

On its ten-month world tour covering four continents, the Formula E race calendar features one highlight after the other. Four new metropolises – Hong Kong, Marrakesh, Montreal and New York – are playing host to a round of the fully electric racing series for the first time

1 **Kicking off with a podium**
Hong Kong China



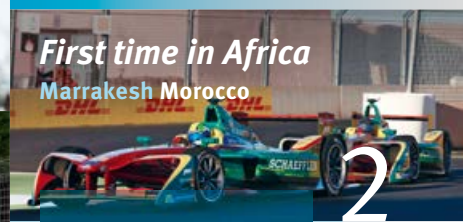
October 9, 2016
Lucas di Grassi made an almost perfect start to the new season with a second place finish – and this from second last on the grid. A tactical masterstroke.

3 **Pole premiere**
Buenos Aires Argentina



February 18, 2017
First pole position for Lucas di Grassi in Formula E – on seeing the checkered flag, he celebrates a third place. Daniel Abt, in seventh, again scores points.

2 **First time in Africa**
Marrakesh Morocco



November 12, 2016
Positions five and six at the African premiere of Formula E after a strong fight-back from Lucas di Grassi and a spotless race from Daniel Abt.

4 **Sensational win**
Mexico City Mexico



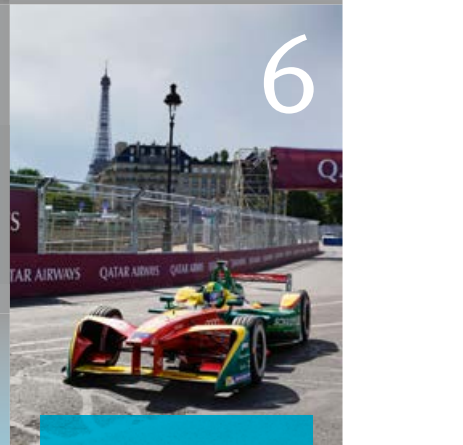
April 1, 2017
Grid position 15, last after one lap – and finishing as the winner thanks to a brilliant strategy. Lucas di Grassi makes motorsport history. Following a great battle, Daniel Abt still comes in seventh.

5 **The string of success continues**
Monaco



May 13, 2017
Third consecutive podium finish – in Monaco, Lucas di Grassi celebrates second place in front of sold-out grandstands. His teammate, Daniel Abt, in position seven, completes the good result for ABT Schaeffler Audi Sport in the principality.

6 **Lean diet**
Paris France



May 20, 2017
For the first time this season, both Lucas di Grassi and Daniel Abt scored no points. The drivers' and teams' classifications continue to reflect position two.



9 & 10 **City of dreams**
New York USA

July 15/16, 2017
This is the first time a FIA automobile race is held in the middle of New York... with not only one but two races – on Saturday and again on Sunday – in the legendary port district of Brooklyn.

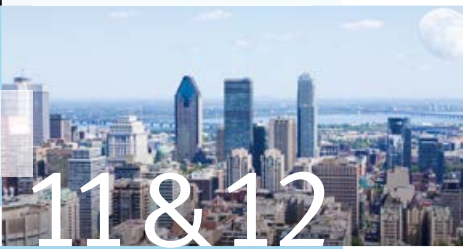
Points party Berlin Germany

June 10/11, 2017
The team scored 56 points in the two races, thrilling the spectators in Berlin-Tempelhof. Di Grassi (pictured) on clinching two podium places reduced the gap to leader of the standings Buemi by eleven points.



7 & 8 **Grand Finale** Montreal Canada

July 29/30, 2017
Just like in New York, Montreal hosts a double-header at the final weekend of the 2016/2017 season. The multicultural metropolis on the St. Lawrence River, where French is the official language, is crazy about motor racing.



Driver Ranking

P	Driver	Team	Pts
1	Sébastien Buemi (CH)	Renault e.Dams	157
2	Lucas di Grassi (BR)	ABT Schaeffler Audi Sport	125
3	Felix Rosenqvist (S)	Mahindra Racing	86
4	Nicolas Prost (F)	Renault e.Dams	72
5	Nick Heidfeld (D)	Mahindra Racing	63
6	Jean-Éric Vergne (F)	Techeetah	52
7	José María López (RA)	DS Virgin Racing	50
8	Sam Bird (GB)	DS Virgin Racing	47
9	Daniel Abt (D)	ABT Schaeffler Audi Sport	46
10	Nelson Piquet Jr. (BR)	NextEV NIO	33
11	Oliver Turvey (GB)	NextEV NIO	18
12	Mitch Evans (NZ)	Panasonic Jaguar Racing	16
13	Robin Frijns (NL)	MS Amlin Andretti	16
14	Maro Engel (D)	Venturi	15
15	António Félix da Costa (P)	MS Amlin Andretti	10
16	Jérôme D'Ambrosio (B)	Faraday Future Dragon Racing	10
17	Loïc Duval (F)	Faraday Future Dragon Racing	9
18	Esteban Gutiérrez (MEX)	Techeetah	5
19	Adam Carroll (GB)	Panasonic Jaguar Racing	4
20	Tom Dillmann (F)	Venturi	4
21	Stéphane Sarrazin (F)	Techeetah	2
22	Mike Conway (GB)	Faraday Future Dragon Racing	0
23	Ma Qing Hua (CHN)	Techeetah	0

Team Ranking

P	Team	Pts
1	Renault e.Dams	229
2	ABT Schaeffler Audi Sport	171
3	Mahindra Racing	149
4	DS Virgin Racing	97
5	Techeetah	57
6	NextEV NIO	51
7	MS Amlin Andretti	26
8	Venturi	21
9	Panasonic Jaguar Racing	20
10	Faraday Future Dragon Racing	19

CES: Schaeffler and Formula E in Vegas
Las Vegas USA

January 7, 2017
A successful premiere of a virtual Formula E race in Las Vegas that received worldwide attention: In the simulator race supported by Schaeffler, the Formula E campaigners were pitted against the ten best fans. Daniel Abt finished in ninth place.



New York, New York

The Statue of Liberty, Central Park, the Manhattan skyline, Wall Street – New York City is a city of superlatives. In terms of mobility, though, the “Big Apple” is confronted with similar issues as other megacities. An innovative idea is to provide some relief

The Globalization and World Cities Research Network (GaWC) in its most recent index of the world’s most important cities awarded the highest possible rating of Alpha++ to New York, making it the only one to have received it besides London. So, the 8.5 million residents, near-20 million in the metropolitan area and the 50 million tourists per year can consider themselves lucky. In New York, many people seek to enjoy a wide variety of activities in many different places. A well-functioning range of transportation is a requirement for this. In terms of local public transportation, the U.S. megacity deserves top ratings. The Subway is fast and air conditioned, and the fares are very low. Some 6,000 cars operating on 27 lines carry 4.5 million passengers per day back and forth between nearly 500 stations. The Subway’s counterpart above ground is an equally well developed system of bus services. Two million passengers per day use the 4,000 buses operating on 235 lines.

A classic in the streets and practically a symbol of the city is the “Yellow Cab,” a taxi that can be spotted by its unmistakable yellow color. 13,000 vehicles are registered with the New York City Taxi & Limousine Commission, which is an agency of the city’s government. Cab drivers have to take their passengers to any desired destination within the five boroughs of Manhattan, Brooklyn, Queens, Bronx and Staten Island as well as Nassau County, Westchester County and Newark Airport. The New York Water taxi, though, is more of a tourist attraction than a serious means of transportation, taking visitors on sightseeing tours of hot spots such as the Brooklyn Bridge and Statue of Liberty by ship.

Avoiding collapse

Like those in practically any big city, the public streets in New York are bursting at the seams from an avalanche of passenger cars. Accommodating more and more vehicles in less and less

space – Mayor Bill de Blasio views autonomous mobility as the solution to this major challenge. Small, electric vehicles that are practically in motion all the time are intended to help reduce petroleum consumption and CO₂ emissions, and counteract the scarcity of space. At the same time, they enhance the effectiveness and efficiency of mobility, as privately owned passenger cars are practically just parked 90 percent of the day. According to a survey, autonomously driven taxis would cover the same passenger transportation requirements with only 70 percent of the taxis currently needed.

Once upon a time ...

The traffic scenario of a big city, dominated by electric vehicles – the future of mobility

being worked on today was reality in New York as far back as 120 years ago. In 1896, silent, lightweight and, unlike horse-drawn carriages, odor- and emission-neutral, e-taxis would chauffeur tourists and residents from A to B. The vision of a clean city was a viable one at that time – albeit only until shortly after the turn of the century. The fleet of electric vehicles grew on a much larger scale than the required battery exchange stations, resulting in unreliable service. The cost-efficient internal combustion engine outstripped the electric motors.

A mega metropolis at its best:
50 million tourists visit
New York per year

\$ 90,000–100,000

of income per year are necessary to lead a normal life with some variety in New York, which makes the city one of the most expensive places to live in the world

\$ 2.50

is the fare per single trip on the New York Subway. Passengers pay with the “MetroCard,” a plastic magnetic stripe card

8 *manufacturing locations and three research and development centers are operated by Schaeffler in the United States*

High-tech for the race track

The ABT Schaeffler FE02 is a purebred racer packed with high-tech. While most of the components, including the battery and the entire aerokit, are identical for all contenders, Schaeffler and ABT have developed the entire powertrain

Tires

18-inch wheels with Michelin control tires (same tread as for production cars)

Brakes

Hydraulic dual-circuit braking system, adjustable brake force distribution

Steering wheel

Standardized steering wheel with paddles for shifting and recuperation, controls for various engine settings and a display for all key information

Battery

Developed by Williams Advanced Engineering, charging time: approx. 45 minutes

Aerodynamics

Adjustable front and rear wing

Suspension

Optimized suspension with increased stiffness and improved kinematics

Powertrain

Electric motor ABT Schaeffler MGU 01+, three-speed transmission

Chassis

Specification carbon fiber-aluminum chassis from Dallara

Dimensions

Length 5,000 mm
Width 1,800 mm
Height 1,250 mm
Weight min. 880 kg including driver

Power output

Practice and Qualifying 200 kW (270 hp)
Races 170 kW (231 hp) plus FanBoost



Video
The powertrain of the ABT Schaeffler FE02



Top team performance
ABT Schaeffler Audi Sport
is in contention for victory
in every race

Well *equipped*

The basic concept for the powertrain of the ABT Schaeffler FE02 remains identical to last year. For the 2016/2017 season, the engineers focused on improving many details

ABT Schaeffler Audi Sport heads off on the Formula E tour around the world with a powertrain that has been improved in many aspects. ABT Schaeffler MGU01+ – even the name makes it clear that the powertrain is based on the combination of the electric motor and transmission from the successful season two model; in ten races the two pilots Daniel Abt and Lucas di Grassi scored ten podium positions, three of which were victories.

Improved details

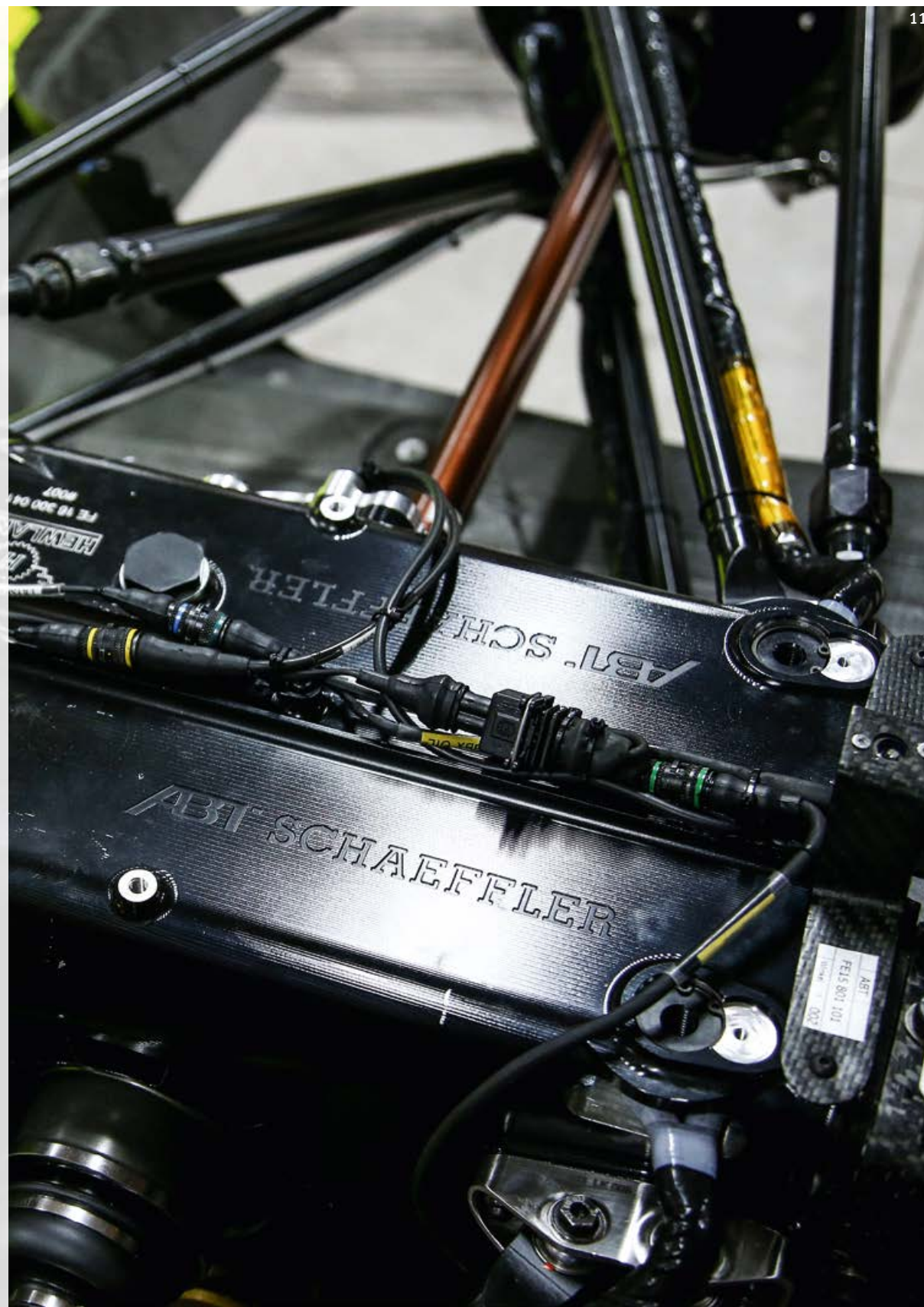
The engineers of the exclusive technology partner, Schaeffler, have focused on further improving the torque and drive efficiency. Moreover, the weight has been further reduced. The transmission features three gears and

1,470

kilometers have been covered by the team in the previous eight races of the season so far

has also been further optimized in its efficiency and gearshift times.

“We feel well equipped for the challenges of the third season,” says Prof. Peter Gutzmer, The Chief Technical Officer and Formula E project leader at Schaeffler. “In its first season, our powertrain played an important role in our many successes. So, it quickly became clear that we should not only continue to focus on our proven concept, but also to further develop all aspects of our components. I would like to thank all the engineers who have worked with complete commitment in parallel to our fight for the title, so that we stay competitive and are preferably winning in the future as well.”



Never without my camera

Daniel Abt is not just a suitable ambassador of the innovative Formula E motorsport series because he's strong on the power pedal of the ABT Schaeffler FE02, but because he's a "techie" off-track too. Here's a brief portrait

Home

For sure, it's where my family and friends are and that means it's not necessarily tied to a particular place. For me, home is where the people are that are important to me. And in my case, that happens to be the Allgäu region – even if I wouldn't mind a different place ... *(laughs)*

Friends

For me, the most important thing in life – and I can really get sentimental about that – is being surrounded by really good, close friends. People you can confide in, with whom you can have fun and who are there when things aren't going so well for a change. I think that's something we're all looking for. And I'm really happy to have a few good guys around me ...

Always packed in my suitcase

Clearly: my camera! What used to be just a hobby has since turned into a lot more. Now I wouldn't call my YouTube channel my second

line of work, but we take it seriously and we're working on it very professionally. I just enjoy taking my followers with me behind the scenes – by the way on Instagram and Snapchat, too. All these projects were inspired by the fact that there is so much more to show than what can be seen on TV. So we can bring people everywhere closer to the action around the clock and I can share my thoughts with them directly. This is more intense and personal than a "normal" television interview.

My favorite tech toy

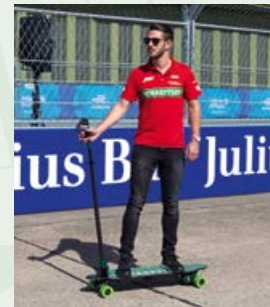
High on my list is my new drone, although I don't actually use it every day. My MacBook and my Sony PlayStation are even higher on my list.

From Formula E, this is what I'd like to have in my road car

In Formula E, we're currently showing how sporty electric power can be. Four of our e-motors – one on each wheel – that would be great.

SCHAEFFLER

Tech Talk



MEIN NEUER FREUND...!



From a road car, this is what I'd like in a Formula E race car

An air conditioning system would be nice now and then. In some races it gets extremely hot in the car.

In terms "mobility for tomorrow," what should Schaeffler invent in this pursuit?

A fully automatic drone that would conveniently fly you to any destination on Earth – that would be a great invention.



Spectacular statement against climate change



Eternal ice?
Formula E made a strong and spectacular statement in Greenland against global warming

In an unparalleled event, Formula E, Schaeffler and Lucas di Grassi have made a strong statement against global warming. In his Formula E car, the Brazilian turned laps on a glacier in Greenland

“Global warming is an issue that affects us all. The electric mobility can and will continue to play an important role against climate change in the future,” says Schaeffler’s CTO, Prof. Peter Gutzmer. “We regard Formula E with its innovations and new ideas as a driving force for mobility of the future and hence we were pleased to support this spectacular event.”

In conjunction with the Greenland government and environmental activists as well as teaming up with other partners such the Monegasque Prince Albert Foundation and the University of Southampton, the event required careful planning so that it could be implemented with the least possible input. Stunning images have attracted huge interest worldwide with around three million visitors on YouTube alone. The images also provided footage for a 48-minute documentary which was premiered on the occasion of the international climate change conference held in Marrakesh at the same time as the ePrix.



Lucas di Grassi
Formula E vice-champion in the ABT Schaeffler Audi Sport team (right) together with Formula E CEO Alejandro Agag



Unknown territory
The Formula E car is lowered onto the glacier

Global warming challenge

“The Greenland region is such a peaceful place. I was shocked to see how the landscape changes through global warming,” says Lucas di Grassi. “This experience gives me a completely new understanding of the challenge we face and what Formula E can contribute.” ■



#ProjectIce

A tradition of innovation



Hall of Fame
Success not only in single-seater racing

ABT Sportsline – the world’s leading tuner of vehicles from the Volkswagen Group and successful motorsport team in the DTM. Together with Schaeffler, the Allgäu-based squad enthusiastically tackles a new motorsport challenge in Formula E

ABT Sportsline is one of the most successful motorsport teams in Germany and Europe. Its history in racing dates back more than 60 years and began with initial victories scored by Johann Abt in the 1950s. The first recorded success took place in a dirt track race, followed by victories and titles in touring car, sports car and formula racing. 2009 has gone down in the company’s history as the most successful year to date: Timo Scheider won the DTM, Christian Abt the ADAC GT Masters in the Audi R8 and youngster Daniel Abt was victorious in the ADAC Formula Masters. Previously, in 2007, Schaeffler and ABT had jointly celebrated success as well: with the logos of LuK, INA and FAG

on his A4, Mattias Ekström won his DTM title number two.

Founded as a smithy in 1896, the ABT company has been continually developing ever since. Just one thing has never changed: the family still runs the company with about 170 employees and partners in 50 countries around the world. CEO Hans-Jürgen Abt now represents the fourth generation at the helm. For ABT Sportsline, the commitment in Formula E also marks a return to the roots, as the team celebrated success in formula racing as far back as in the early 90s – among others, with Ralf Schumacher in the cockpit back then. ■

Moments



1970

Johann Abt († 2003), father of Hans-Jürgen and Christian Abt, becomes European Touring Car Champion



2007

Sporting the logos of the Schaeffler Group, Mattias Ekström becomes DTM champion



2009

Christian Abt, Timo Scheider and Daniel Abt clinch three titles in a single year



2014

ABT and Schaeffler win the first ever Formula E race

A strong team in the *cockpit*

In Lucas di Grassi (32) and Daniel Abt (24) the squad of Hans-Jürgen Abt has its dream team filling the cockpits of the two Formula E race cars. The experienced Brazilian and youngster Daniel Abt are not only fast and technically adept but perfectly harmonize with each other off the race track as well







Lucas di Grassi #11

Highlights

- 2005 **1st** in Macau GP
- 2006 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
- 2013 **3rd** in Le Mans 24 Hours
- 2014 **2nd** in Le Mans 24 Hours, **4th** WEC
- 2015 **4th** in Le Mans 24 Hours, **3rd** FIA Formula E
- 2016 **3rd** in Le Mans 24 Hours, **2nd** FIA Formula E

Vita

- Date of birth** August 11, 1984
- Place of birth** São Paulo (BR)
- Domicile** Monaco (MC)
- Height** 1.79 m
- Weight** 75 kg

-  lucasdigrassi.com.br
-  [lucasdigrassiofficial](#)
-  [@LucasdiGrassi](#)
-  [lucasdigrassi](#)






Daniel Abt #66

Highlights

- 2007 **2nd** ADAC Kart Championship
- 2008 **8th** ADAC Formula Masters
- 2009 **1st** ADAC Formula Masters
- 2010 **2nd** ATS Formula 3 Cup
- 2011 **4th** FIA Formula 3 International Trophy, **7th** Formula 3 Euro Series
- 2012 **2nd** GP3 series
- 2013 GP2 Series
- 2014 GP2 Series, FIA Formula E
- 2015 **1st** in Le Mans 24 Hours (class), **11th** FIA Formula E
- 2016 **19th** ADAC GT Masters, **7th** FIA Formula E

Vita

- Date of birth** December 3, 1992
- Place of birth** Kempten (D)
- Domicile** Kempten (D)
- Height** 1.79 m
- Weight** 70 kg

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Race track >>> Road

An electric circuit

Motorsport has always been a driver of developments that subsequently make their way into production vehicles. This now applies to electrified powertrains as well. In the FIA World Endurance Championship (WEC) with Le Mans as its highlight, high-tech hybrid race cars are pitted against each other and in Formula E, all-electric single-seaters are. For Schaeffler, both racing series have become pioneering test beds for future technologies

“The commitments in the WEC and in Formula E have been helping us gain a better understanding of the environment and systems of electric mobility,” explains Prof. Peter Gutzmer, Schaeffler’s Chief Technology Officer. Be it in terms of systems knowledge, the development of new materials, recuperation (recovery of braking energy) or thermal management – these are important findings

which also advance the Schaeffler technology group aside from racing with respect to ideas, visions and technologies for networked mobility for tomorrow. Schaeffler has significantly increased the size of its development team for electric vehicle components and new mobility concepts within a short period of time and is working at full stretch on sustainable mobility solutions. Six examples ...



E-bike

On bicycle expressways, powerful pedelecs – with Schaeffler hardware and software on board – provide a particularly fast and eco-friendly means of transportation for shorter distances. Branded as SCHAEFFLER VELOSOLUTIONS, the company offers an extensive and innovative product range. See also: www.schaeffler-velosolutions.com

Electric car

Schaeffler’s electric axles (pictured) help make traffic noise in inner cities a thing of the past, moving forward with a wide product range from Herzogenaurach. In this context, Schaeffler has developed an innovative modular system for electric axles in various configurations and build levels.



Bio hybrid

The innovative and compact mobility solution for urban areas not only provides weather protection but, featuring four wheels including an electric pedelec drive, high driving stability and ample stowage space. In spring of 2016, Schaeffler unveiled this design and development concept that met with positive response around the globe.

E-board

In addition to its handy dimensions, this ideal means of transportation for short distances in urban areas boasts hydraulic brakes and a range of 25 kilometers. At CES in Las Vegas in January 2017, Schaeffler showcased this prototype. Integrated in the board is a battery that drives the rear axle via an electric motor. The e-board is controlled using a stick with an ergonomically shaped handle.



Robot taxi

Self-driving buses with integrated wheel hub motors (pictured) from Schaeffler could provide a means of demand-based zero-emissions short-range public transportation in the future. All the drive components except for the battery are completely installed in the wheel. They include the electric motor, power electronics, the brake and the cooling system. eWheelDrive makes all-new drive concepts possible.

Hybrid vehicle

Hybrid components will continue to make conventional IC engine based powertrains more efficient. Schaeffler offers solutions across the entire range of electrification potential – from the 48-volt hybrid to the plug-in hybrid for various mounting positions to all-electric axles that assist the IC engine or serve as the sole short-term source of propulsion.





1899 Electrifying beginnings

The car picks up speed. **The first car to exceed 100 kph:** the electric race car “La Jamais Contente” made by Camille Jenatton. That was 1899, the same year that the Baker Motor Vehicle Company began to build electric cars. Fully electric or hybrid drive from Ferdinand Porsche for the Lohner electric vehicle. The same idea with the Mercedes Électrique and Mercedes Mixte. Up to 1939, Detroit Electric models with more than a 100-kilometer driving range. Around the turn of the century there were **more electric cars on the road than combustion ones**. Only with the improvement of performance, range and gas station networks do petrol-powered vehicles take over.

1972 The limits to growth

Electric mobility means drive from a fixed electricity supply – trams, trains, trolley buses. But gasoline-power comes under pressure. The 1972 Club of Rome “limits to growth”: Finiteness of resources. **1974 oil crisis.** The industry responds with **rudimentary electric drives:** A BMW 1602 for the 1972 Olympics only has 32 kW (43.5 HP). In fleet tests, the electric transporters from Mercedes and VW, equipped with the batteries that were still very heavy in those days and with a capacity of approx. 22 kilowatt hours, merely had a range of 60 to 80 kilometers. And the electric models of Opel, Mercedes and VW in a large-scale project on the German island of Rügen are based on existing cars. This is the wrong path.



Fast currents

From the early alternative via public transport and back into the automobile: Electric cars have enjoyed a rapid history spanning more than 100 years and are only now coming of age



1996 Tailored for the future

Two things are needed: 1) A paradigm shift. In 1996, General Motors is the first major manufacturer to offer a car specifically designed for electric drive. Around 1,100 units of the EV1 are produced. Its cw value: 0.19. It reaches 130 kph with a range of around 250 km using 26.4 kWh from a nickel-metal hydride battery. 2) A technological leap, based on **lithium-ion batteries from Sony**. With these batteries, **Tesla joins** the car industry in 2008 with a roadster; 200 kph top speed, 350-kilometer range. In Japan, the Mitsubishi i-MiEV has been rolling off the assembly line since 2009. Today, there are many electric cars, and Schaeffler is a sought-after partner.

1997 Attractive alternatives?

The bridging solution comes from the **hybrid drive** using the combustion engine and electricity. Toyota makes the breakthrough in 1997: **The Prius is a million-seller.** Electric drive is also possible without a battery: hydrogen and oxygen generate electricity in a fuel cell that drives the car. In 2003, a Mercedes A-class F-Cell is the world's first fuel cell passenger car to go into small-scale production. Since 2015, Toyota has produced the hydrogen model, Mirai.



2009 Motorsport

The milestones of electric mobility in racing: In July 2009, the first victory for a McLaren-Mercedes with hybrid drive in Formula 1. In June 2012, the first Audi win with diesel-electric drive at Le Mans. **In September 2014, FIA Formula E is launched as the first race series with electric drive.** Schaeffler is one of the pioneers with the **ABT Schaeffler Audi Sport team**. June 2015 heralds the first overall victory of Rhys Millen's electric race car against petrol-powered vehicles at Pikes Peak. September 2016: World record for electric drive by Venturi with 549 kph in Bonneville.

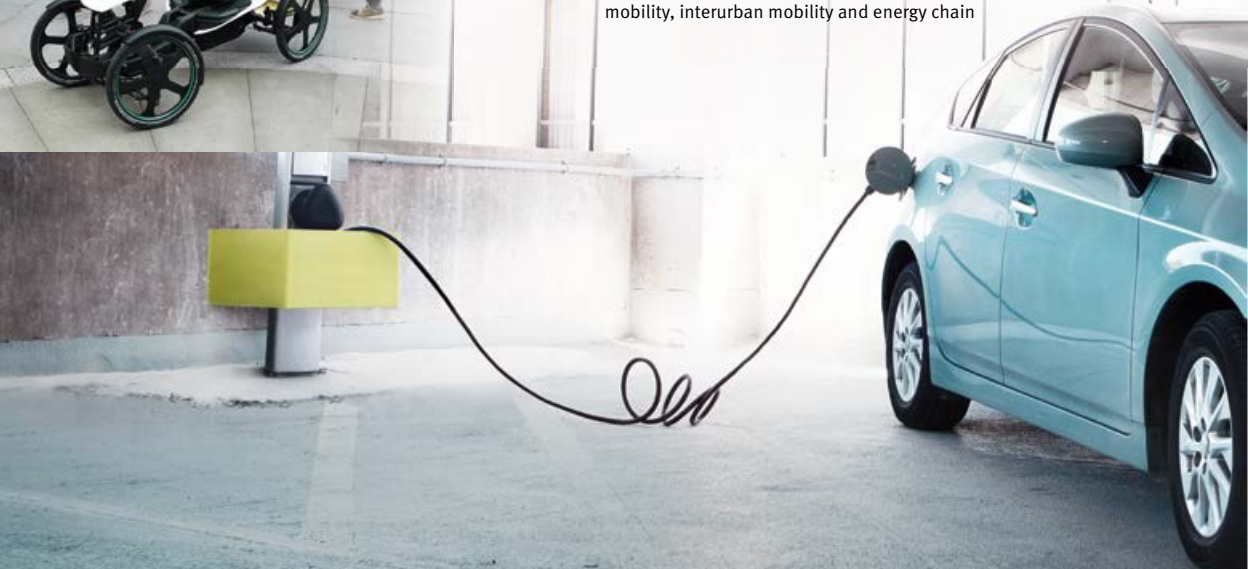


Mobility for tomorrow

For Schaeffler, innovation has been part of its corporate DNA since the foundation of the company. It is based on lateral and interdisciplinary thinking

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

Mobility for tomorrow Under this concept, Schaeffler concentrates on four focus areas: environmentally friendly drive systems, urban mobility, interurban mobility and energy chain



Compact info



#11 Lucas di Grassi

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#66 Daniel Abt

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ABT Schaeffler FE02

- **Aerodynamics** Front and rear wing adjustable
- **Electric motor** ABT Schaeffler MGU01+
- **Battery** Williams Advanced Engineering
- **Transmission** ABT Schaeffler, 3 speeds
- **Brakes** Hydraulic dual-circuit braking system, adjustable brake force distribution
- **Suspension** Optimized suspension with higher stiffness and improved kinematics
- **Weight** 880 kg, minimum (including the driver)
- **Dimensions** Length 5,000 mm, width 1,800 mm, height 1,250 mm



The ABT Schaeffler FE02 accelerates from 0 to 100 km/h in

2.9

seconds

200 kW
Power output in qualifying

170 kW
Power output in the race

56 kWh

of energy may be used by a driver per race

=

👤🏠 Two-person household (6 days)

❄️ Refrigerator, 150 liters (210 days)

💡 Light bulb, 60W (39 days nonstop)

📺 Television (15 days nonstop)

🍽️ Dish washing machine (70 wash cycles)

=

20,000
conventional AA batteries provide the same amount of energy

3

The 3 drivers with the most #FanBoost votes get 100 kJ more energy

1




FanBoost for second car

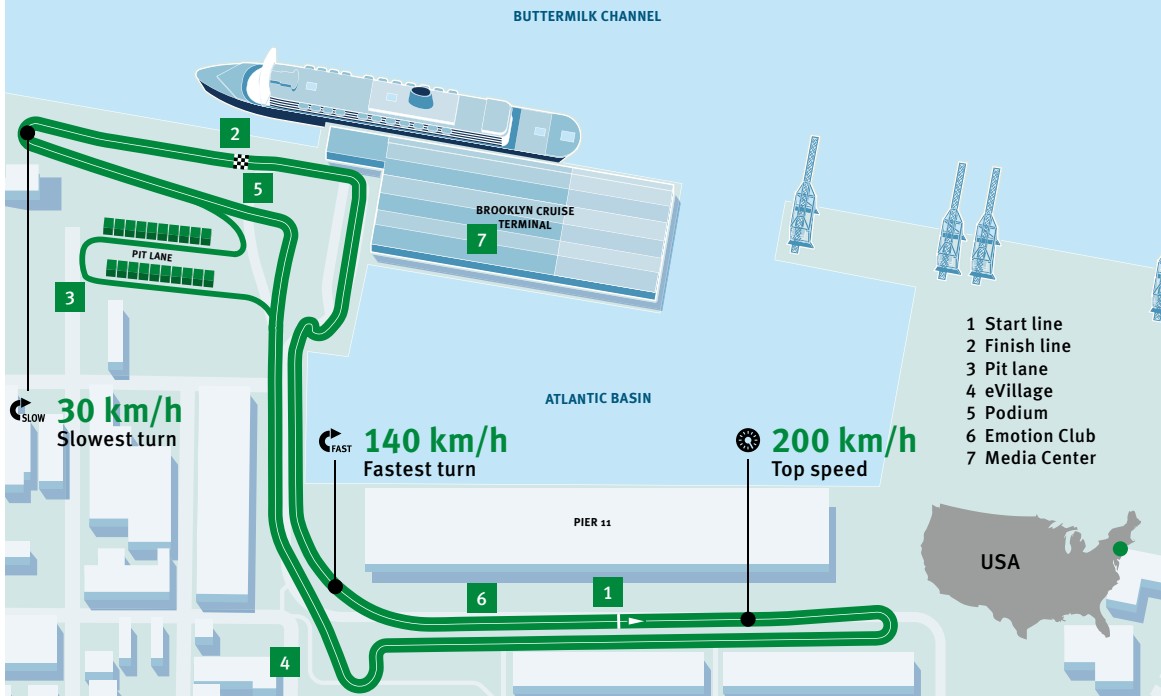
fanboost.fiaformulae.com

Schaeffler facts

- ≈ 87,000employees worldwide
- 13.3billion Euro turnover in 2016
- > 2,300registered patents in 2016
- 25,000active and pending patents
- 170locations in 50 countries
- 75factories worldwide
- 60Schaeffler components in automobiles worldwide (average)
- 17R&D centers worldwide

The race track


New York 



- 1 Start line
- 2 Finish line
- 3 Pit lane
- 4 eVillage
- 5 Podium
- 6 Emotion Club
- 7 Media Center

 **30 km/h**
Slowest turn

 **140 km/h**
Fastest turn

 **200 km/h**
Top speed

 **1,953 m**
Track length

Schedule





Saturday, July 15

- 08:00 – 08:45 Free practice 1
- 10:30 – 11:00 Free practice 2
- 12:00 – 12:36 Qualifying (4 Groups)
- 12:45 – 13:00 Super Pole
- 14:00 – 14:30 Autograph session (eVillage)
- 15:00 Driver parade
- 15:23 Pit lane open
- 16:04 Race (43 laps)
- 17:05 Podium ceremony
- 17:25 – 17:40 Press conference (Media Center)






Sunday, July 16

- 07:00 – 07:45 Free practice 1
- 09:00 – 09:36 Qualifying (4 Groups)
- 09:45 – 10:00 Super Pole
- 11:00 – 11:30 Autograph session (eVillage)
- 12:00 Driver parade
- 12:23 Pit lane open
- 13:04 Race (49 laps)
- 14:05 Podium ceremony
- 14:25 – 14:40 Press conference (Media Center)

Schaeffler

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Learn more about
mobility for
tomorrow