

RACECARD

2019/2020 MICHELIN FORMULA-E



**SATURDAY,
JANUARY 18**

ROUND 3

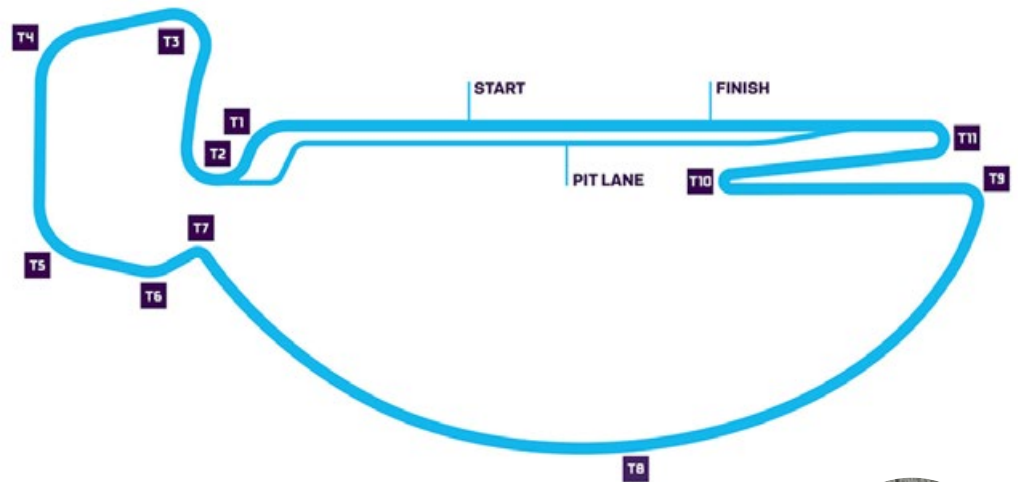
2019/2020 ABB
FIA FORMULA E
CHAMPIONSHIP

PARQUE O'HIGGINS
SANTIAGO,
CHILE



ANTOFAGASTA MINERALS SANTIAGO E-PRIX

3rd RUNNING



TIMETABLE

SATURDAY, JANUARY 18

8:00am	Free Practice 1	45 min
10:15am	Free Practice 2	30 min
12:00 noon	Qualifying	36 min
12:45pm	Super Pole	20 min
4:04pm	Race	45 min+1 lap
5:00pm	Podium ceremony	

THE CIRCUIT

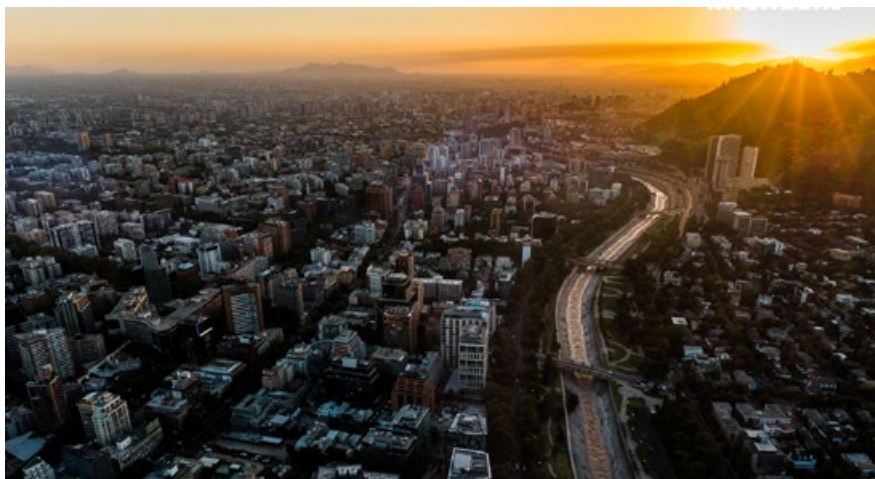
A BUMPY AND RELATIVELY ABRASIVE
CIRCUIT THAT TENDS TO HEAT TYRES
MODIFIED LAYOUT COMPARED WITH 2019



2.348KM

**11
TURNS**

ANTICLOCKWISE



THE 2019 RACE

WINNER
Sam Bird
(Envision Virgin Racing), 36 laps



POLE POSITION

Sébastien Buemi
(Nissan e.dams),
1m08.816s

FASTEST RACE LAP

Daniel Abt
(Audi Sport Abt Schaeffler),
1m11.263s

Extreme conditions with track temperatures in excess of 60°C and a degraded track surface





THE SANTIAGO E-PRIX AND SUSTAINABLE ENERGY

Chile was the first Latin American country to invest in renewable energies. It stands out today as the South American leader in the field.

Around 60 percent of the electricity needed to run Santiago's metro network comes from green sources

Santiago runs Latin America's biggest fleet of electric buses (200).



41 green energy projects are ongoing, including a solar-powered hydropower plant (600MW)

An additional 3,000MW of renewable energy will be available by 2023

MICHELIN FACT

Germany's Daniel Abt has posted more fastest race laps in Formula E (8) than ex-champions Sébastien Buemi (7) and Lucas di Grassi (6)



JÉRÔME MONDAIN,
Formula E Programme Manager,
Michelin Motorsport

THE CHALLENGE FACED BY OUR TYRES WHICH WILL BE TO COPE WITH A PARTICULARLY

ABRASIVE SURFACE.

"The track is identical to last year, with the exception of the chicane in the middle of the extremely long parabolic curve which has been dropped. Lap times will consequently be faster than in 2019 and that will add to the challenge faced by our tyres which will also have to cope with a particularly abrasive

surface. Last season, the air and ground temperatures reached as high as 40°C and 62°C – a record for the championship! About a third of the track is made up of rough, bumpy concrete, while the rest is recently-laid dark asphalt which puts a considerable amount of heat into the tyres."

MICHELIN & THE 2020 SANTIAGO E-PRIX

MICHELIN PILOT SPORT FRONT: 245/40X18 & REAR: 305/40X18



Developed specifically for the FIA Formula E Championship

The first 18-inch single-seater racing tyre

The first single-seater racing tyre capable of competing in dry and wet conditions

The first tyre capable of lasting an entire race meeting

Size (front/rear)	Front: 245/40 R18 / Rear: 305/40 R18
Width (front/rear)	245mm / 305mm
Tread width (front/rear)	240mm / 270mm
Side wall height (front/rear)	98mm / 122mm (i.e. 40 percent of tread width)
Rim diameter	18 inches
Weight (front/rear)	Front: 8kg / Rear: 10kg
Type of tread pattern	Asymmetric, non-directional
Usage	Circuits, street circuits, asphalt, concrete, wet or dry weather
Number of tyres taken to each race	192 (24 cars x 8 tyres)
Weight saving per set of four tyres	9kg for 4 tyres (season 6 vs season 1)
Embedded Michelin tyre monitoring sensors (TMS)	Automatic transmission of encrypted tyre





MICHELIN PILOT SPORT

THE REVOLUTIONARY
MICHELIN PILOT SPORT:
LIGHTER AND MORE ENERGY-
EFFICIENT THAN EVER

A REVOLUTIONARY RACING TYRE, IN MORE WAYS THAN ONE!

Developed specifically for the world's first all-electric single-seater motor racing championship, the new MICHELIN Pilot Sport is an exceptionally versatile tyre that was designed by Michelin Motorsport's engineers to cover the entire race day (free practice, qualifying, race), whatever the weather, as required by the technical regulations that govern the series.

Another exceptional characteristic of the tyre is its size. The MICHELIN Pilot Sport was effectively the first ever single-seater tyre to feature an interior diameter of 18 inches, a disruptive concept put forward by Michelin Motorsport and approved by the FIA (Fédération Internationale Automobile). The fact that 18-inch wheels have become a common

feature of road cars enables Michelin Motorsport's engineers and chemists to carry over the lessons they learn on the racetrack to everyday tyres, in keeping with the firm's 'track to street' policy.



The MICHELIN Pilot Sport (front: 245/40 R 18 / rear: 305/40 R 18) is tall and narrow in the interests of energy efficiency, which equates to longer range. Its low sidewalls also flex less, resulting in the generation of less heat, which in turn means reduced energy consumption, a valuable benefit for Formula E's latest-generation 'Gen2' Spark SRT 05Es.

The MICHELIN Pilot Sport is a connected tyre, too, thanks to an embedded RFID chip which facilitates tracking, from production through to recycling.



MICHELIN PILOT SPORT: THE WINNING TYRE RANGE



FRONT	Usage	REAR
Size 24/64-18 equivalent to 245/40 R18	Wet or dry weather	Size 27/68-18 equivalent to 305/40 R18
Side wall height 40% - 98mm	Type of tread pattern Asymmetric, non-directional	Side wall height 40% - 122mm
	Rim diameter 18 inches	

FORMULA E: A LABORATORY FOR INNOVATIONS LIKE MICHELIN'S CONNECTED SOLUTIONS, TOO!

The 2019/2020 FIA Formula E Championship sees Michelin introduce Michelin Track Connect. This unprecedented technology uses a Michelin designed and developed sensor embedded in its Pilot Sport Formula E tyres to monitor pressures automatically, with no human intervention.

The data it collects is transmitted directly to the FIA in encrypted form. **While the system addresses a requirement of the championship's technical regulations, Formula E will also allow Michelin to:**

- Incubate and develop connected solutions in extreme conditions for the benefit of current and future Michelin Track Connect customers,
- Extend its expertise in the realm of data acquisition and analysis with a view to applying it to other fields and responding to consumer and market demand.

Connected mobility technology fits perfectly with Groupe Michelin's approach to sustainable mobility.

**MICHELIN
TRACK
CONNECT**



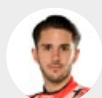
ENTRY LIST

AUDI SPORT ABT SCHAEFFLER FORMULA E TEAM AUDI E-TRON FE06

CHAMPION
2016/2017



N°11 Lucas di GRASSI (BRA)
Races: 60 Fasted race laps: 6
Victories: 10 Podiums: 31
Pole positions: 3



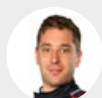
N°66 Daniel ABT (DEU)
Races: 60 Fasted race laps: 8
Victories: 2 Podiums: 10
Pole positions: 2



ENVISION VIRGIN RACING AUDI E-TRON FE06



N°2 Sam BIRD (GBR)
Races: 60 Fasted race laps: 5
Victories: 9 Podiums: 18
Pole positions: 5



N°4 Robin FRIJNS (NLD)
Races: 37 Fasted race lap: 0
Victories: 2 Podiums: 5
Pole positions: 0



BMW I ANDRETTI MOTORSPORT MW IFE.20



N°28 Max GÜNTHER (DEU)
Races: 12 Fasted race lap: 0
Victory: 0 Podium: 0
Pole position: 0



N°27 Alexander SIMS (GBR)
Races: 15 Fasted race lap: 0
Victory: 1 Podium: 2
Pole position: 3



GEOX DRAGON PENSKE EV-4

ROOKIE



N°6 Brendon HARTLEY (NZL)
Start: 2 Fasted race lap: 0
Victory: 0 Podium: 0
Pole position: 0



ROOKIE



N°7 Nico MÜLLER (CHE)
Races: 2 Fasted race lap: 0
Victory: 0 Podiums: 0
Pole positions: 0

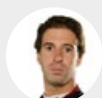


DS TECHEETAH DS E-TENSE FE20

CHAMPION
2017/2018
et 2018/2019



N°25 Jean-Eric VERGNE (FRA)
Races: 58 Fasted race laps: 4
Victories: 8 Podiums: 20
Pole positions: 9



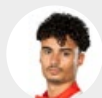
N°13 Antonio Felix DA COSTA (PRT)
Races: 56 Fasted race lap: 2
Victories: 2 Podiums: 5
Pole position: 1



MAHINDRA RACING MAHINDRA M6ELECTRO



N°64 Jérôme D'AMBROSIO (BEL)
Races: 60 Fasted race laps: 2
Victories: 3 Podiums: 9
Pole positions: 2



N°94 Pascal WEHRLEIN (DEU)
Races: 14 Fasted race laps: 2
Victory: 0 Podium: 1
Pole position: 1



ENTRY LIST

SANTIAGO E-PRIX

MERCEDES-BENZ EQ FORMULA E TEAM

MERCEDES-BENZ EQ SILVER ARROW 01



N°5 Stoffel VANDOORNE (BEL)
 Races: 15 Fasted race lap: 0
 Victory: 0 Podiums: 3
 Pole position: 1



ROOKIE



N°17 Nyck DE VRIES (NED)
 Start: 2 Fasted race lap: 0
 Victory: 0 Podium: 0
 Pole position: 0



PANASONIC JAGUAR RACING

JAGUAR I-TYPE IV



N°20 Mitch EVANS (NZL)
 Races: 39 Fasted race lap: 1
 Victory: 1 Podiums: 4
 Pole position: 1



ROOKIE



N°51 James CALADO (GBR)
 Start: 2 Fasted race lap: 0
 Victory: 0 Podium: 0
 Pole position: 0



NIO 333 FE TEAM

NIO FE-005



N°3 Oliver TURVEY (GBR)
 Races: 49 Fasted race lap: 0
 Victory: 0 Podium: 1
 Pole position: 1



ROOKIE



N°33 Ma QING HUA (CHN)
 Start: 2 Fasted race lap: 0
 Victory: 0 Podium: 0
 Pole position: 0



TAG HEUER PORSCHE FORMULA E TEAM

PORSCHE 99X ELECTRIC



N°36 André LOTTERER (DEU)
 Races: 27 Fasted race laps: 3
 Victory: 0 Podiums: 5
 Pole position: 1



N°18 Neel JANI (CHE)
 Races: 4 Fasted race lap: 0
 Victory: 0 Podium: 0
 Pole position: 0



NISSAN E.DAMS

NISSAN IMO2

CHAMPION
2015/2016



N°23 Sébastien BUEMI (CHE)
 Races: 58 Fasted race laps: 7
 Victories: 13 Podiums: 25
 Pole positions: 14



N°22 Oliver ROWLAND (GBR)
 Races: 16 Fasted race lap: 0
 Victory: 0 Podiums: 2
 Pole positions: 3



VENTURI RACING

MERCEDES-BENZ EQ SILVER ARROW 01



N°19 Felipe MASSA (BRA)
 Races: 15 Fasted race lap: 0
 Victory: 0 Podium: 1
 Pole position: 0



N°48 Edoardo MORTARA (CHE)
 Races: 24 Fasted race lap: 0
 Victory: 1 Podiums: 3
 Pole position: 0



FIA FORMULA E

DRIVERS' STANDINGS

		 SAU 22/11	 SAU 23/11	 CHL 18/01	 MEX 15/02	 MAR 29/02	 CHN 21/03	 ITA 04/04	 FRA 18/04	 KOR 03/05	 IDN 06/06	 DEU 21/06	 USA 11/07	 GBR 25/02	 GBR 26/02	TOTAL
1	ALEXANDER SIMS		7	28												35
2	STOFFEL VANDOORNE		15	15												30
3	SAM BIRD		26	0												26
4	OLIVER ROWLAND		12	10												22
5	LUCAS DI GRASSI		0	18												18
6	ANDRÉ LOTTERER		18	0												18
7	EDOARDO MORTARA		6	12												18
8	ROBIN FRIJNS		10	0												10
9	NYCK DE VRIES		8	0												8
10	DANIEL ABT		0	8												8
11	JAMES CALADO		0	6												6
12	JEAN-ÉRIC VERGNE		0	4												4
13	ANTÓNIO FÉLIX DA COSTA		0	3												3
14	MITCH EVANS		2	0												2
15	BRENDON HARTLEY		0	2												2
16	JÉRÔME D'AMBROSIO		2	0												2
17	PASCAL WEHRLEIN		0	0												0
18	MAXIMILIAN GÜNTHER		0	0												0
19	FELIPE MASSA		0	0												0
20	SÉBASTIEN BUEMI		0	0												0
21	NEEL JANI		0	0												0
22	OLIVER TURVEY		0	0												0
23	QING HUA MA		0	0												0
24	NICO MÜLLER		0	0												0

REGULATIONS

2019/2020 ABB FIA FORMULA E CHAMPIONSHIP

CARS (SINGLE-SEATERS)

- » Spark STR-05e / chassis: Dallara / battery: McLaren Applied Technologies
- » Maximum length: 5,200mm
- » Maximum width: 1,800mm
- » Maximum height: 1,250mm
- » Minimum weight: 900kg, including driver and battery and/or capacitor (maximum: 280kg)
- » Maximum power, electric powertrain: 250kW (335hp) for free practice and qualifying, 200kW (270hp) during races.
- » Gearbox: six speeds maximum
- » Only 1 MGU may be used
- » Allocation per race number: 2 electric motors, 2 gearboxes, 2 inverters and 1 battery pack for the season

TYRES

- » A single type of tyre (pattern and construction)
- » No mid-race tyre changes
- » Allocation of 4 new front tyres and 4 new rear tyres per race number per event
- » All tyres are returned to Michelin after every event
- » In the case of a puncture during a practice session, the use of a marked tyre is authorised
- » Can be inflated using air only
- » Minimum tyre pressures are checked before qualifying and before races
- » In the case of a 'Wet Track', tyre pressures may be adjusted in parc ferme
- » Tyres must remain visible in the team garages at all times
- » Tyres are identified by RFID chips
- » Tyre warmers not authorised

POINTS-SCORING SYSTEM

Race result: 1st, 25 points • 2nd, 18 points
3rd, 15 points • 4th, 12 points • 5th, 10 points
6th, 8 points • 7th, 6 points • 8th, 4 points
9th, 2 points • 10th, 1 point

Pole Position: 3 points

Fastest drivers in the qualifying groups: 1 point

Fastest race lap: 1 point
(if driver classified inside the top 10).



EVENT FORMATS

- » A **Shakedown** session of a maximum duration of 15 minutes + three laps may be organised the day before the race. Power is restricted to 110kW. A maximum of six laps per car.
- » **Practice:** Two practice sessions (45 and 30 minutes) in the course of the morning of Race Day. Maximum power: 250kW.
- » **Qualifying:** The drivers are divided into four groups of six cars as a function of their championship positions (or of the previous championship order in the case of the season's first race). Each driver has up to two flying laps (only one running at maximum power) to post a qualifying time. The six fastest drivers go on to take part in the Super Pole shootout. Maximum power: 250kW.
- » **Super Pole:** Start order is based on the times posted in qualifying, with the 'slowest driver' to lap first, etc. One flying lap only.
- » **Grid:** The six places at the front of the grid are reserved for the drivers who take part in the Super Pole session.
- » **Race:** Standing start. Maximum duration: 45 minutes + 1 lap. Use of two power outputs mandatory: Normal Mode (200kW / regeneration: 250kW) and Attack Mode (235kW / regeneration: 250kW).
- » **Attack Mode:** Power: 235kW (compared with 225kW in 2018/2019). The number and duration of Attack Mode activations is specific to each race and are notified at least one hour before the start. The cockpit halo lights up when a car is in Attack Mode.
- » **FanBoost:** A temporary 100kJ power boost (minimum: 240kW / maximum: 250kW) for five drivers chosen by a fan vote. To be activated once, but not before the 22nd minute of the race.

