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# MOTOR SPORTS

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## 1 Introduction

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2022 was the third season of motor sports held under the shadow of the COVID-19 pandemic. Despite this situation, most categories were able to hold a normal calendar of races and spectator restrictions were lifted for many events during the season. As a result, World Endurance Championship (WEC) and Formula 1 (F1) rounds were held in Japan for the first time in two years and attracted big crowds. Another major topic of interest was the return of the World Rally Championship (WRC) as a Rally Japan event for the first time in twelve years, with this year's round being held across Aichi and Gifu Prefectures. After the experience of the COVID-19 pandemic, it was important to attract racegoers in the same numbers as before the pandemic and hold exciting events with spectator appeal.

At the same time, environmental initiatives to help realize sustainable motor sports stepped up another gear. Outside Japan, all world championship events are making steps to adopt either hybrid or electric vehicles, and organizers in many categories are moving to reduce the number of tires that can be used. Similarly, inside Japan, the organizers of Super GT and Super Formula conducted tests of carbon-neutral fuels. Environmental initiatives are picking up momentum in Japan, including moves to consider hosting a Formula E event in the country. One novel category of motor sports is esports. The International Automobile Federation (FIA) hosted international esports events and many other competitions were held in Japan, demonstrating the undeniable and rapid expansion of the esports market.

In many events, title races came down to the final round of the year. Japanese manufacturers had successful international seasons, with Toyota winning titles in two separate world championships and Honda using its technological expertise to help win the F1 constructors' title.

In motorcycle racing, more world championship events were held than in the years before the pandemic. In MotoGP, Yamaha led the title race until the middle of the year. Suzuki, who announced their intention to leave the sport this season, also won several victories in the latter part of the year. Japanese riders competed successfully in many classes in 2022.

## 2 Car Racing Trends

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### 2.1. Trends in Japan (Table 1)

In Japanese motor sports, restrictions on the number of spectators were gradually removed and all categories held something close to a normal season. World championships such as F1, WEC, and WRC all held Japanese rounds, providing potential impetus for a growth in the number of motor sports fans.

Japan's two largest championships announced the NEXT50 and Super GT Green Project 2030 initiatives laying out the future vision of Super Formula and Super GT. Environmental initiatives for motor sports are unlikely to attract popular support unless these initiatives follow national government-led measures and policies, such as in Europe. With these two visions, the first steps have been taken toward realizing sustainable motor sports.

#### (1) Super GT (Fig. 1)

Due to the effects of the COVID-19 pandemic, the rounds of the 2022 Super GT series that were due to be held outside Japan were cancelled. As a result, the season consisted of eight rounds held at six circuits, unchanged from 2021. Two rounds were held at Fuji Speedway and Suzuka Circuit, with one round apiece being held at the Okayama International Circuit, Sportsland Sugo, Autopolis, and Mobility Resort Motegi. Although the lines of movement of entrants and spectators remained separate to help prevent the spread of infection, limits on the number of spectators were lifted and other restrictions were also relaxed.

**Table 1** Details and Results of Major Car Racing Categories in 2022

Category	Outline of races	Outline of vehicles	Participating Japanese manufacturers	2022 champions		Remarks		
				Drivers	Manufacturer			
World championships/FIA championships	F1	22 rounds (circuits: Bahrain, Spa-Francorchamps, Monza, COTA, Suzuka, etc.)	Dedicated race cars (formula) 1.6-liter V6 turbocharged engines + energy regeneration	—	Max Verstappen (Oracle Red Bull Racing)	Oracle Red Bull Racing		
	WEC	LMH LM-GTE Pro	6 rounds (circuits: Sebring, Spa, Circuit de la Sarthe in Le Mans, Monza, Fuji, Bahrain) Dedicated race cars (hypercars and prototypes) 2 WD (HVs may be 4 WD) HVs: free engine design + energy regeneration Non HVs: free engine design	Toyota	Sébastien Olivier Buemi Brendon Hartley Ryo Hirakawa (Toyota)	Toyota		
				—	Alessandro Pier Guidi James Calado (Ferrari)	Ferrari		
	Rally	WRC class	13 rounds on general roads (Monaco, Sweden, Croatia, Portugal, Italy, Kenya, Estonia, Finland, Belgium, Greece, New Zealand, Spain, Japan)	4 WD cars based on commercially available vehicles Max. 1.6-liter turbocharged engines + HV systems + energy regeneration	Toyota	Kalle Rovanperä/ Jonne Halttunen	Toyota	
	FIA Formula E	16 rounds on specially designed courses in cities (Saudi Arabia, Mexico, Italy, Monaco, Germany, Indonesia, Morocco, the U.S., the UK, Korea)	Dedicated race EVs Power units: motor-generator unit (MGU) (linked to rear axle, during race: 200 kW, maximum power: 250 kW) Batteries: standardized	Nissan	Stoffel Vandoorne (Mercedes)	Mercedes		
Cup	WTCR	16 rounds at 8 venues (circuits: Pau-Ville, Nürburgring Nordschleife, Hungaroring, Aragón, Vila Real, Vallelunga, Anneau, Bahrain, Jeddah)	FWD cars based on commercially available vehicles 1.75- to 2.0-liter turbocharged engines Premium blended bio-gasoline fuel (E15) mandatory	Honda	Mikel Azcona (Hyundai)		Teams' title: BRC Hyundai N Squadra Corse	
International series	Super GT	GT500 class	8 rounds (circuits: Okayama, Fuji, Suzuka, Suga, Autopolis, Motegi) Dedicated race cars Race cars with the same silhouette as commercially available GT cars 2.0-liter inline 4-cylinder turbocharged engines	Toyota Nissan Honda	Kazuki Hiramine Bertrand Baguette (Nissan)			
		GT300 class	FIA GT3 vehicles (modification not permitted) JAF-GT300 (unique modifications permitted based on commercially available vehicles) JAF-GT300 MC (mother chassis) Balanced competition created via performance adjustments	Toyota Nissan Honda Subaru	Kiyoto Fujinami João Paulo Lima de Oliveira (Nissan)			
	DTM	8 rounds (circuits: Imola, Norisring, Hockenheim, etc.)	FIA-GT3 cars based on commercially available vehicles	—	Sheldon van der Linde (BMW)	Audi		
	IndyCar	17 rounds on oval circuits (Indianapolis, etc.), road courses (Mid-Ohio, etc.), urban courses (Long Beach, etc.)	Dedicated race cars (formula) 2.2-liter V6 twin-turbocharged engines E85 fuel (blend of 85 % ethanol and 15 % gasoline)	Honda	Will Power (Chevrolet)			
Japanese championships	Super Formula	10 rounds (circuits: Fuji, Suzuka, Autopolis, Suga, Motegi)	Dedicated race cars (formula) 2.0-liter inline 4-cylinder direct-injection turbocharged engines	Toyota Honda	Tomoki Nojiri (Honda)		In three rounds, two races were held at the same event (Fuji, Suzuka, Motegi)	
	Super Formula Lights	17 rounds (circuits: Fuji, Suzuka, Autopolis, Suga, Motegi, Okayama International)	Dedicated race cars (formula) 2.0-liter inline 4-cylinder direct-injection NA engines	Toms (Toyota) Tomei Engine	Kazuto Kotaka (Toyota)			

**Table 1** Details and Results of Major Car Racing Categories in 2022 (Continued)

Category	Outline of races	Outline of vehicles	Participating Japanese manufacturers	2022 champions		Remarks
				Drivers	Manufacturer	
Japanese championships	JRC 8 rounds on general roads (Shinshiro, Karatsu, Tango, Takasaki, Hokkaido, Takayama, Kumakogen)	Commercially available vehicles Divided into 6 classes (JN1 to JN6) based on displacement and layout (4 WD, 2 WD).	—	JN1 Heikki Kovalainen/ Sae Kitagawa (Skoda) JN2 : Katsuya Nakahira/Masahiko Shimazu (Toyota) JN3 : Genki Takeuchi/Satoshi Kimura (Subaru) JN4 : Shintaro Nishikawa/Takashi Motohashi (Suzuki) JN5 : Tomoyuki Amano/Yukiko Inoue (Toyota) JN6 : Takayoshi Ebihara/Satoshi Kageyama (Toyota)		
Other	Dakar Rally Held in Saudi Arabia. Total length: 8,375 km Start: Ha'il, finish: Jeddah	Dedicated race cars and prototypes Commercially available vehicles and dedicated race vehicles (trucks) NA gasoline engines or turbo-charged diesel engines An electrified vehicle class was added in 2022.	Toyota Hino	Nasser Salih Nasser Abdullah Al-Attiyah/Mathieu Baumel (Toyota)		



**Fig. 1** Super GT: Calsonic IMPUL Z



**Fig. 2** Super Formula Champion: Tomoki Nojiri (Team Mugen)

In addition to the normal race length of 300 km, three longer races (two at Fuji and one at Suzuka) of 450 km were also held. This gave fans the chance to see races determined by factors such as fuel efficiency, tire control, driver changes, and other aspects of team strategy, as well as just speed. Longer races are also planned for 2023. The organizers of Super GT also introduced various measures to appeal to fans, such as real-time onboard video streaming from selected vehicles and live videos transmitted to the smart phones of spectators at the circuit.

Due to the impact of the COVID-19 pandemic, the 2020 rules are scheduled to remain in place until 2023. In that year, as part of efforts to help achieve carbon neutrality, both GT500 and GT30 classes plan to adopt carbon-neu-

tral fuels. After round 8 in Motegi, vehicles were able to take part in voluntary driving tests using the proposed fuels.

The season champions in the GT500 class were Kazuki Hiramane and Bertrand Baguette of Team Impul, and the GT300 class was won by Kiyoto Fujinami and Joao Paulo de Oliveira of Kondo Racing.

## (2) Super Formula (Fig. 2)

With the objective of expanding opportunities for drivers to shine and for fans to offer support, Super Formula introduced weekend doubleheaders at three events, enlarging the calendar to ten rounds, three more than the previous year. The temporary measure introduced from 2020 to help prevent the spread of infection by deciding the championship based on the five best results of each



**Fig. 3** Japanese Rally Championship JN1 Class:  
Heikki Kovalainen Driving a Skoda Fabia R5

driver was scrapped. Instead, the qualifying format was reduced from three phases to two and a free practice session was reintroduced on the Friday of the double-header events.

In addition, as part of Super Formula's measures to reduce the environmental impact of the series, the total number of tires available to each team was reduced and, with the cooperation of Toyota, Honda, and Yokohama Rubber, tests were started toward the introduction of cowls manufactured from plant-derived natural materials, tires using sustainable materials, and carbon-neutral fuels.

The series was won by Tomoki Nojiri of Team Mugen for the second successive year. Team Mugen took its second crown by also winning the manufacturers' title for the first time.

### **(3) Super Formula Lights**

Super Formula Lights is a national championship unique to Japan. Celebrating its third year in 2022, many teams announced reshuffled lineups compared to 2021 with a larger proportion of rookie drivers than in previous years.

Eighteen rounds were held at six events featuring a total of twelve cars and fifteen drivers. The races were fiercely competitive up to the very last event. Super Formula Lights lived up to its reputation as Japan's feeder series for formula racing with five different drivers winning races, including two rookies, and three different drivers taking the checkered flag in the Masters' class.

### **(4) Japanese Rally Championship (Fig. 3)**

The 2022 season consisted of a total of eight rounds, six on tarmac and two on gravel. Events were gradually opened to spectators after the restrictions imposed during the COVID-19 pandemic. In recent years, the top JN-1 class has seen competitive races between drivers of the Skoda Fabia R5, Toyota GR Yaris, Subaru WRX STI,

Mitsubishi Lancer Evo, and the like in different categories (FIA Rally2/R5, Group N, and JAF RJ vehicles). Since these vehicles were competing at greatly different weights, performance adjustments were introduced in 2022 that added up to 50 kg to the minimum weight of the vehicle depending on the ranking of the vehicle in its class as an attempt to even out vehicle performance. This approach will be further emphasized in 2023, which will also see the introduction of a new JAF-authorized JP4 class of vehicles. With Rally Japan returning as a WRC event for the first time in twelve years, there are also moves to allow the introduction and participation of FIA-authorized vehicles, accelerating the internationalization and competitiveness of vehicles taking part in the Japan Rally Championship.

### **(5) Super Taikyu Series**

The Super Taikyu Series started in Japan in 1991 as an event primarily for cars based on mass-production models, and has a distinguished history as Asia's largest pro-am race series. It is a team sport that has developed through both cooperation and competition between professional drivers and amateurs that want to experience the lifestyle of a racing driver.

Participants in races enjoy friendly competition while emphasizing fairness and putting safety first. In addition to placings in races, the focus of the Super Taikyu Series is to help the motor sports community to develop and grow. One interesting trend for 2022 is the progress being made toward sustainable races with the participation of seven vehicles in the ST-Q class powered by hydrogen or carbon-neutral fuels.

The 2022 series was held over seven rounds, including the Fuji Super TEC 24 Hours, which saw the participation of 56 teams and around 300 drivers across nine classes.

## **2. 2. Trends outside Japan (Table 1)**

Following on from 2021, official FIA world championships were held in the F1, WEC, WRC, Formula E, and World Touring Car Cup (WTCR) categories. It was also the first year under new F1 and WRC regulations, the final year of the second-generation of Formula E cars, and the last year of the WTCR.

Two major trends occurred in 2022: the introduction of hybrid power units in the WRC and the ending of the WTCR. As a result, all official FIA world championships in 2023 will feature competition between hybrid or electric vehicles.



**Fig. 4** F1 Champion Driver Max Verstappen (Oracle Red Bull Racing)

Esports, which attracted a great deal of attention due to the impact of the COVID-19 pandemic held official F1 and WTCR competitions that attracted many viewers and helped to expand the popularity of motor sports with a totally different fan base.

**(1) FIA Formula One World Championship (F1) (Fig. 4)**

Although a total of 23 rounds was originally planned for the 2022 F1 World Championship, the Russian Grand Prix that was scheduled for February was cancelled due to the invasion of Ukraine, reducing the calendar to 22 races.

This year's technical regulations made major changes to the chassis aerodynamic design, allowing a large proportion of downforce to be generated by ground effects at the chassis floor. In contrast, power unit (PU) development was frozen in 2022, effectively preventing the adoption of newly developed parts between 2023 and 2025. In addition, the bioethanol ratio of the fuel was increased from 5 to 10% (E5 to E10).

Max Verstappen won the Japanese Grand Prix, which was held for the first time in two years after its cancellation in 2021.

The 2022 driver's title was also won by Max Verstappen for the second successive year after fifteen race victories over the course of the season. Oracle Red Bull Racing won its fifth constructors' championship and first for nine years since 2013.

**(2) FIA World Rally Championship (WRC) (Fig. 5)**

In 2022, Rally Japan appeared on the calendar of the WRC for the first time in twelve years. The season consisted of thirteen rounds as originally planned, with works teams from Toyota, Hyundai, and Ford. Although Toyota missed out on a win in round one, it steadily accumulated points from round 2 and maintained a lead



**Fig. 5** WRC: GR Yaris Rally1 Hybrid



**Fig. 6** WEC: GR010 Hybrid

from that point onward, clinching the manufacturers' championship after round 12. Toyota's Kalle Rovanperä won six races, including three straight from round 2, becoming the youngest ever champion driver at only 22 years of age. Rally Japan attracted over 90,000 spectators and raised expectations for a surge in the popularity of all rallying, including the Japanese Rally Championship as well as the WRC.

**(3) FIA World Endurance Championship (WEC) (Fig. 6)**

The WEC in 2022 consisted of a total of six rounds, with Peugeot joining the 2021 lineup of Toyota, Alpine, and Glickenhaus from the fourth round. Toyota won four races, including the 24 Hours of Le Mans, taking its fourth successive manufacturers' and drivers' championships. It extended its Le Mans winning streak to five years. Ryo Hirakawa, who only started competing in the WEC this year, was one of the champion drivers. 2023 promises to be an even more exciting season, with Ferrari planning to take part alongside entrants from Porsche and Cadillac under the Le Mans Daytona h (LMDh) regulations of the IMSA SportsCar Championship, as well as the 100th anniversary of the 24 Hours of Le Mans.

**(4) World Touring Car Cup (WTCR) (Fig. 7)**

Unchanged from the previous year, the WTCR was



**Fig. 7** WTCR: Honda Civic TCR



**Fig. 8** FIA Formula E: Nissan's Sebastien Buemi

contested under TCR touring car rules by front-wheel drive cars based on commercially available vehicles equipped with mass-produced turbocharged engines. Drivers' and teams' titles were awarded. In 2022, the FIA e Touring Car World Cup (FIA ETCR) fought between electric vehicles based on the TCR regulations was also held jointly with WTCR races at three events. Due to cross-border restrictions and controls, the COVID-19 pandemic created serious difficulties in holding races other than in Europe where most teams are based. More stringent balance of performance (BoP) rules applied individually to competing vehicles also prompted some teams to drop out. As a result, it was decided to bring the curtain down on the WTCR at the end of the 2022 season after five years. When this article was written, no announcement had been made about a possible successor FIA touring car series.

#### **(5) FIA Formula E Championship (Fig. 8)**

This was the eighth season of Formula E to be held as an official FIA world championship. The 2022 season saw the participation of eleven teams, one less than 2021, and twenty-two drivers. Although Audi and BMW decided to drop out, both companies agreed to continue supplying powertrains. Including these two companies, a total of nine manufacturers took part in 2022. Following on from the previous season, races started at the end of January



**Fig. 9** Final Round of the JEGT Grand Prix

in Saudi Arabia. Sixteen races were held, including Mexico in February, Italy and Monaco in April, Germany in May, Indonesia in June, Morocco, the U.S., and the UK in July, and Korea in August. This, the eighth season, was the fourth and final year of the second-generation rules. The third generation of rules will be introduced from season nine, featuring a new chassis and a powertrain mounted in the front and rear.

#### **(6) Trends in Esports (Fig. 9)**

2022 was a year in which motor sports-related esports made rapid progress. Outside Japan, FIA held the international 2022 FIA Motorsport Games Esports Cup. Participants in this event were selected in a national qualifying event called the 2022 FIA Motorsport Games -ESPORTS- Japan Qualifier Produced by JEGT, which was held as a JAF-authorized competition. In addition, the FIA Gran Turismo Championship, which was first held in 2018, was rebranded as the Gran Turismo World Series and held as a standalone Gran Turismo event. Inside Japan, the National Prefectural Competitive Esports Championship was held in Tochigi. Following on from the previous year, this event attracted a large number of participants in the motor sports category. In addition, the JEGT Grand Prix offered the largest prize in Japanese esports of 5 million yen (around 34,000 U.S. dollars), providing evidence of the expanding esports market.

### **3 Motorcycle Racing Trends**

Table 2 lists the status and results of the main categories of motorcycle races held inside and outside Japan in 2022.

As motorcycle racing emerged from the shadow of the COVID-19 pandemic, 2022 saw an uptick in the number of races held compared to the previous year. Feeling just like a pre-pandemic season, 2022 was a year of exciting races.

**Table 2** Details and Results of Major Motorcycle Racing Categories in 2022

Category		Outline of races	Outline of vehicles	Participating Japanese motorcycle manufacturers	2022 champions		
					Riders	Manufacturer	
World championships/FIM championships	Road races	MotoGP	Competition for position by racing around a circuit (approximately 110 km).	Dedicated bikes for MotoGP with 4-stroke max. 1,000 cc engines	Honda Yamaha Suzuki	Francesco Bagnaia (Ducati)	Ducati
		Moto2	Races are held in different countries and the total of points awarded at each race determines the annual standings.	Dedicated bikes combining a 4-stroke 765 cc commercially available engine and bodies developed by each constructor	—	Augusto Fernandez (Kalex)	Kalex
		Moto3	MotoGP is the highest class.	Commercially available or dedicated racing bikes with a 4-stroke 250 cc engine	Honda	Izan Guevara (GasGas)	GasGas
	Superbikes	Same competition style as road racing, but uses a three-heat system of three races in each round.	Bikes with a commercially available max. 1,000 cc engine (2-cylinder bikes are permitted a max. displacement of 1,200 cc.)	Honda Yamaha Kawasaki	Alvaro Bautista (Ducati)	Ducati	
	Endurance	Road races in which teams compete for position with two or three riders alternating stints on a single bike over an extended period of time (from 3 to 24 hours).	Bikes with a commercially available max. 1,000 cc engine (2-cylinder bikes are permitted a max. displacement of 1,200 cc.)	Honda Yamaha Suzuki Kawasaki	Josh Hook Mike Di Meglio (Honda)	Yamaha	
	Motocross	MXGP	Competition for position on a motocross (unpaved dirt or sand) track that lasts for 30 minutes + 2 laps (two-heat system).	Dedicated motocross bikes with a max. 4-stroke 450 cc or 2-stroke 250 cc engine	Honda Yamaha Kawasaki	Tim Gajser (Honda)	Yamaha
		MX2	Races are held in different countries and the total of points over a year determines the standings.	Dedicated motocross bikes with a max. 4-stroke 250 cc or 2-stroke 125 cc engine		Tom Vialle (KTM)	Yamaha
	Supercross	Competition for position on a specially prepared motocross course inside a stadium that lasts for 20 minutes + 1 lap. Races are held at different tracks mainly in North America and the total of points over a year determines the standings.	Dedicated motocross bikes with a max. 4-stroke 450 cc or 2-stroke 250 cc engine	Honda Yamaha Kawasaki	Eli Tomac (Yamaha)	Honda	
	Trials	Competition to complete set courses within a time limit without touching the ground.	Dedicated trials bikes (no displacement restrictions)	Honda	Toni Bou (Honda)	Honda	
	Japanese championships	Road races	(JSB1000)	Competition for position by racing around a circuit. Races are held at different tracks and the total of points over a year determines the standings.	Bikes with a generally commercially available max. 1,000 cc engine (2-cylinder bikes are permitted a max. displacement of 1,200 cc.)	Honda Yamaha Suzuki Kawasaki	Katsuyuki Nakasuga (Yamaha)
ST1000				Bikes with a generally commercially available max. 1,000 cc engine (scope of permitted modification restricted, sole tire supplier)		Kazuma Watanabe (Honda)	
IA1 (Motocross)		Highest class of the All Japan Motocross Championship. Competition for position on a motocross track lasting for roughly 30 minutes. Races are held at different tracks and the total of points over a year determines the standings.	Dedicated motocross bikes. IA1 class: dedicated motocross bikes with a maximum 4-stroke 450 cc or 2-stroke 250 cc engine	Honda Yamaha Kawasaki	Toshiki Tomita (Yamaha)		
IA Super (Trials)		Competition to complete set courses within a time limit without touching the ground. Highest class of the All Japan Trial Championship.	Dedicated trials bikes (no displacement restrictions)	Honda Yamaha	Tomoyuki Ogawa (Honda)		
Other	Dakar Rally	Held in the Middle East (Saudi Arabia). Total length: 8,000 km	Dedicated rally motorcycles (prototypes) 2-stroke max. 450 cc engines	Honda Yamaha	Sam Sunderland (GasGas)		



**Fig. 10** Winner of the Final Round of the 2022 MotoGP: Alex Rins (Suzuki)



**Fig. 11** FIM Endurance World Championship: Team HRC, Winner of the Suzuka 8 Hours

The Road Racing World Championships were competed over twenty rounds both inside and outside Europe, even more than the number of races before the pandemic.

In the MotoGP class, the defending champion Fabio Quartararo (Yamaha) led the way, but was overtaken by Francesco Bagnaia (Ducati) who won seven races over the course of the season starting in the mid-point of the year before emerging as champion for the first time. This was Ducati's first title in fifteen years. Although European manufacturers had a particularly strong year, Alex Rins of Suzuki won two races in dramatic fashion at the end of the year for Japanese manufacturers, despite Suzuki deciding to leave the sport in 2022 (Fig. 10).

In the Moto2 class, the championship was won after a tight year-long battle by Augusto Fernandez (Kalex) with four wins. The Japanese rider Ai Ogura (Kalex) won three races, including at Motegi, but could only finish second in the standings. The motorcycle racing world is looking forward to seeing what he can do next season.

The Moto3 class features a high number of Japanese riders. With the field tightly bunched, Izan Guevara (Gas-Gas) achieved the most consistent record of wins, taking home seven first place trophies on the way to the championship. Of the Japanese contingent, the most successful riders were Ayumu Sasaki (Husqvarna), who won twice and finished fourth, and Tatsuki Suzuki (Honda), who finished seventh.

The Superbike World Championship (WSB) features bikes based on mass-market models. The 2022 title was won for the first time by Alvaro Bautista (Ducati), who saw off the challenge of the defending champion Toprak Razgatlioglu (Yamaha) and the previous champion Jonathan Rea (Kawasaki). This was Ducati's first manufacturers' championship for eleven years.

In the All Japan Road Race Championship, Katsuyuki



**Fig. 12** Motocross World Championship: MXGP Class Champion Tim Gajser (Honda)

Nakasuga (Yamaha) again demonstrated overwhelming dominance by winning every race in the JSB1000 class on the way to his eleventh championship. The ST1000 class, which places strict limits on the scope of modifications, was won for a second successive year by Kazuma Watanabe (Honda).

In the FIM Endurance World Championship, the dual-national F.C.C. TSR Honda France team took third place at the season opener at Le Mans and third again at the 24 Hours of Spa. After a difficult race at Suzuka where the team finished tenth, the season came down to the wire at the 24 Hours of Bol D'or in a battle with the rival Yoshimura SERT Motul team (Suzuki). After overcoming various issues, the team finished fourth, enough to win their second title and first in four years. The Suzuka 8 Hours, which was held for the first time in three years, was won by Team HRC (Honda) for the first time in eight years (Fig. 11).

The MXGP class of the Motocross World Championship was held under the pre-pandemic format. The 2020 champion Tim Gajser (Honda) took the riders' title for the fourth time and the first time in two years, his fifth world title overall including the MX2 class (Fig. 12).

The 2022 AMA Supercross Championship was won for the second time by Eli Tomac (Yamaha) after moving





**Fig. 13** Supercross Championship: 450SX Class Champion Eli Tomac (Yamaha)

teams in a fierce fight with Jason Anderson (Kawasaki) in which both riders won seven races (Fig. 13). This was the first championship for Yamaha in the premier class of motocross racing for thirteen years.

In the more junior 250SX East Rider class, the Japanese rider Jo Shimoda (Kawasaki) took fourth place. Taking this impetus into the subsequent outdoor season, Shimoda then finished second overall in the 250 cc class of the AMA Pro Motocross Championship.

The All Japan Motocross Championship was taken by Toshiki Tomita (Yamaha) by winning eight out of the sixteen heats. This was his first IA1 championship. The winner of the IA2 class was Jay Wilson (Yamaha), who took fifteen out of sixteen heats for his first IA2 championship.

The FIM Trial World Championship was won again this year by Toni Bou (Honda), who showed overwhelming dominance by winning six out of the eight rounds for his unprecedented sixteenth successive title. The All Japan Trial Championship was won by Tomoyuki Ogawa (Honda) for the twelfth time. This was his tenth title in succession.

The Dakar Rally was held in Saudi Arabia. After twelve days of fiercely competitive racing in the unforgiving conditions of the Saudi Arabian desert, Sam Sunderland (GasGas) won his second title, and the first for team GasGas in this event.

As described above, the 2022 season of motorcycle sports both inside and outside Japan was boosted by efforts across the industry to create exciting series. Races outside Japan saw spectators return to the tracks at pre-pandemic levels. In Japan, however, although motor sports retain a certain popularity, now is probably the time to implement measures to further widen the fanbase. In addition, with European manufacturers beginning to dominate races outside Japan, 2022 demonstrated

the need for Japanese manufacturers to make greater efforts to secure more wins in global motor sports.

#### 4 Motor Sports Tire Trends

A recent trend in many forms of motor sports both inside and outside Japan is the adoption of sole tire suppliers to help reduce costs by increasing the severity of competition and to create equally competitive conditions. This has occurred in diverse world championship series including F1 and the WRC. In Japan, the top OK class of the All Japan Karting Championship has long regarded tires as a development opportunity for tire manufacturers. However, with tire manufacturers leaving the cart market, this series has decided to switch to a sole tire supplier in 2023.

In contrast, some categories of racing still retain multiple tire suppliers. The most representative example is Super GT, which welcomes an extremely high level of technological competition in various aspects, including the cars themselves. Tire manufacturers are invited to compete among themselves by developing and adopting various advanced technologies based on individual race conditions.

However, as a new trend that completely circumvents the merits of having a sole or multiple tire suppliers, initiatives are being gradually introduced to help realize sustainable motor sports. From the standpoint of the vehicle, this means the introduction of rules requiring hybridization and carbon-neutral fuels. Although still under consideration, it is likely that tires will be required to become more environmentally friendly through the conservation of resources or the like.

For example, Super GT has adopted regulations limiting the number of tire sets that can be used. This upper limit will be reduced by a further set from 2023. Similarly, the 24 Hours of Nürburgring endurance race is considering gradually reducing the number of tire specifications that can be used to half the 2022 level in 2025. In addition, a number of new regulations are being enacted to force teams in different series to compete using a lower number of tires. For example, restrictions on the number of tires that can be used have been applied in the Japanese Rally Championship, and the All Japan Gymkhana (JGC) series plans to impose restrictions on tire tread rubber characteristics correlating to wear resistance in 2023 (Fig. 14).

Restrictions such as these mean that tires must have a



**Fig. 14** JGC Series Tire: Dunlop Direzza  $\beta$ 11

long service life and be capable of responding to changes in conditions. Tire manufacturers are working together to save resources by emphasizing development to improve wear resistance, widen usage windows, and the like.

In addition, the use of tire warmers will also be prohibited in the WEC from 2023 to save energy. The organiz-

ers of F1 and the Nürburgring are also considering the same measure for races. In these racing categories, tire manufacturers will probably have to focus development on improving initial grip when tire temperatures are low.

It is highly likely that these trends will progress even more strongly in the future. Tire manufacturers are working to reduce CO<sub>2</sub>, integrate biomass into raw materials, and increase recycling throughout the entire supply chain of purchasing, transportation, development, manufacturing, sales, and use. Motor sports cannot remain aloof from this changing situation. In other words, race tires face the probability of having to switch from the use of scarce raw materials to naturally derived materials, as well as the adoption of recyclable materials in increasing proportions. In the near future, there is the prospect that tire manufacturers will have to compete based on the percentage of sustainable materials in their tires as well as on grip and service life.