Capirossi's trio, 25 ASIMO robots, 53 sumo wrestling rings and 20 Dance Dance Revolution platforms: welcome to the toughest circuit on brakes

The Japanese MotoGP according to Brembo

An in-depth look at premium class brake use at Twin Ring Motegi

Twin Ring Motegi will host the 15th race of the 2016 MotoGP World Championship from 14 to 16 October.
Inaugurated in 1997, the track is located in the hills surrounding the city of Motegi on Honshū Island, the largest island in Japan. The name Twin Ring comes from combining the English term Twin with the German word Ring to signify the presence of two tracks: an oval track and a road circuit. Naturally, MotoGP uses the latter, which stands out for having few fast curves and many slow curves that are interspersed with medium-length straightaways.
Right from its first World Championship debut in 1999, the circuit has always been considered among the most challenging on brakes due to the significant amount of curves taken in second gear and how difficult it is to cool down the discs between one braking section and another. The perfect surface provides good grip levels and improves the amount of braking torque discharged to the ground resulting in increased stress that the brakes are put under. That is the reason FIM regulations require the use of 340 mm discs.
According to Brembo technicians, who work with all of the MotoGP riders (Brembo is supplier to 100% of the premium class riders), Twin Ring Motegi falls into the category of very challenging tracks on the brakes. On a scale of 1 to 5, it earned a 5 on the difficulty index, the highest score possible, which is exactly what the tracks at Sepang and Motegi received.

Brake Use During the GP
11 of the 14 curves on the track require the use of brakes and as a consequence, the braking system is used during the course of the race for an average of 33 seconds every lap: from the starting line to the chequered flag, each rider uses his brakes for more than 13 minutes. The track contains 7 curves that are taken at less than 100 km/h, preventing the MotoGP bikes from reaching very fast speeds and thus reducing deceleration peaks: the average deceleration is limited to just 1.17 g. Totalling all of the force applied on the brake lever by one rider from the starting line to the chequered flag, the sum is more than 1.2 tonnes, which is equivalent to the weight of 25 ASIMO robots designed by Honda and exhibited at the museum located on site at Twin Ring Motegi.

The Most Challenging Stops
Of the 11 braking sections at Twin Ring Motegi, only one is considered highly challenging on the brakes, but 6 present mid-level difficulty and 4 are light.
90 degree Curve 11 is the toughest on the braking systems and the riders, who each apply 7.3 kg of pressure on the brake lever: after reaching 310 km/h, the bikes apply the brakes for 4.9 seconds to approach the curve at 82 km/h. During this time lapse, the bikes travel 245 metres, the same distance as 53 dohyō sumo wrestling rings placed one after the other.
Of the mid-level difficulty braking sections, Curve 5 is worth mentioning for the 6.7 kg load applied to the brake lever and Curve 1 because it requires the riders to brake for 4.6 seconds and 225 metres. Three times the bikes brake in under 50 metres: at Curve 6 the bikes decelerate from 200 to 183 km/h in 47 metres; at Curve 8 they go from 133 to 112 km/h in 41 metres and at Curve 12 they slow from 167 to 143 km/h in 40 metres, the same length as about twenty Dance Dance Revolution platforms.

Brembo Victories
The Japanese MotoGP has been held at Motegi since 2004 and bikes with Brembo brakes have always won: the first to take the victory was Japanese rider Makoto Tamada with Honda. However, the four winners of the Pacific MotoGP hosted at Motegi were also equipped with Brembo brakes. Statistics for the races held at Motegi are as follows: 7 victories for Honda, 4 for Ducati (of these, Loris Capirossi won 3 times in a row) and Yamaha, 1 for Suzuki. In the last five editions, Spanish riders took the top podium, but Marc Marquez has won here only when riding in the lower classes.