



# Faster, higher, more thrilling... High-tech contests of rides qualified to meet safety and user experience

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## 1. The psychology of roller coaster

Many people wonder why they ride these scary rides, but rides in theme and amusement parks around the world have constantly evolved. It is safe to say that the history of amusement ride manufacturers is older than that of automobiles. This is because manual mechanical rides such as merry-go-rounds and bicycles have been constantly developed even before cars equipped with internal combustion engines appear.

There are many roller coasters around the world that are beyond imagination, and most of them were first proposed by the Swiss company Intamin and the Dutch company Vekoma.

Formula Rosa, a roller coaster delivered in 2010 by Intamin to "Ferrari World," a theme park in Abu Dhabi, is the world's fastest roller coaster with a velocity record of 240 kilometers per hour. Like riding a Ferrari, you really can taste the thrill of reaching maximum speed in five seconds.

Kingda Ka in New Jersey, US—the fastest roller coaster in the world before Formula Rosa—was also developed by Intamin in 2005, recorded in the Guinness Book of World Records for its world-breaking height of 139 meters. It plunges straight down 100 meters, so the ride is not for the faint of heart. Ten

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Inversion Roller Coaster, located at Guangzhou's "Chemelong Paradise," is another one of Intamin's creations.

Surprisingly however, the level of fear induced in riding roller coasters varies depending on the boarding method or directing method, not the ride's actual height or speed. For example, the "Wicked Twister" at Cedar Point, Ohio, US, soars at 90 degrees in repeated vertical columns. Fire Hawk, also in Ohio, is characterized with riders having their head tilted back, while Six Flags' Firebird (formerly Iron Wolf) is a standing coaster. Takabisha of Fuji-Q Highland in Japan is perhaps fear itself, featuring a record-breaking descent angle of 121 degrees.



Figure 1. Formula Rosa, a roller coaster in Ferrari World, Abu Dhabi, is the fastest roller coaster in the world at 240 kilometers per hour

In addition, many wooden roller coasters evoke the feeling of early, traditional rides; delivered to Everland in Korea in 2008, "T-Express," was also designed by Intamin, and is currently the world's second-tallest wooden roller coaster.

People may wonder why they ride these scary rides but rides in theme and amusement parks around the world have constantly evolved. It is safe to say that the history of amusement ride manufacturers is older than that of automobiles. This is because manually-driven, mechanical rides such as

merry-go-rounds and bicycles have been continually developed even before cars equipped with internal combustion engines appeared.

## **2. Big company in the rides industry**

Intamin is a Swiss company founded in Bern in 1967 and has grown to be among the most important companies in the global ride industry over the past 50 years, producing all kinds of unimaginable rides including roller coasters, vertical rides, water park rides, and Ferris wheels. Intamin also produces various trams and elevators for visitors to enter the theme park. Robert Spieldiener established "Intamin Transportation" near Switzerland which recently even simulates rides using virtual images. Simulation rides found at theme parks such as Back to the Future and The Simpsons are Intamin's works as well.

Vekoma from the Netherlands, one of the two largest theme park amusement manufacturers along with Intamin, was founded in 1926 as an agricultural equipment manufacturer, switched to coal mining equipment in the 1950s, and switched again to becoming a coaster company after the golden age of mining ended. Vekoma created the world's first motorcycle-type roller coaster or suspended-looping coaster, and as of 2018, it has supplied 349 roller coasters around the world including the Hong Kong Observation Wheel and various 4D-type indoor rides, such as Madhouse.



Figure 2. A bike roller coaster 'Velocity' developed by Vekoma in Flamingo Land, England

Intamin and Vekoma compete with one another to be the first in the world in developing a wide variety of rides. Giant Drop, a milestone in theme park industries in the U.S., Canada, Japan, and Korea, was invented by Intamin in 1995. Intamin continues to invest heavily in R&D and thus created rides which have achieved 19 world records over the past 20 years from 1995 to 2016. It is creating new rides higher, faster, scarier, and more regularly, just as one expects to see the Olympic Games every four years. London Eye, London's specialty Ferris wheel, was the world's largest Ferris wheel before being eclipsed by the 165-meter Singapore Flyer, the 167-meter-high High Roller in Las Vegas in 2014, and the Arab Emirates' "Ain Dubai," which is 210 meters tall ahead of wheels created by Korea's Hyundai Engineering & Construction consortium.

As such, coaster rides are the core attraction of theme parks and are a convergence industry field that must meet high-tech, safety, user sentiment and profitability at the same time. It is an industry that cannot succeed simply because it boasts faster and higher technologies.

### **3. Growing Asian Market**

Asia, including China and India, is emerging as a new market for the theme park amusement facility industry based on its

huge population. In particular, Japan attracted global theme parks such as Universal Studios Japan and Disney Japan, and Japan is laying the foundation for successful domestic demand by acquiring Vekoma based on the success of the domestic market. Sansei Yusoki in Osaka, Japan, acquired S&S Worldwide, a Utah-based amusement facility company in 2012, rebranded as Sansei Technology, and announced that it would become the strongest player in the theme park ride industry in 2018. It supplies coaster rides to theme parks around the world as well as Disney and Universal Studios, Sansei's biggest clients.

Meanwhile, as the theme park industry grows, China also began to develop technology for its own rides imported from foreign companies, such as Golden Horse Technology Entertainment Corp. in Zhongshan, Guangzhou, and Zhipao in Hebei, Habuk Province. If China's theme park industry keeps growing in the future, such domestic companies in China will certainly try to dominate the global market by promoting theme park growth, just as they did in the automobile and semiconductor industry.

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