XPRESS
THE NEWSPAPER FOR AMUSEMENT RIDES
MAURER SÖHNE
forces in motion
Since 1876

Amusement

November 2010

Dear Readers,

What are the innovations from Maurer Rides? What is worrying China's booming recreation industry? How do you put a Ferrari Spider on tracks? What technology involves both having fun and saving energy? What's the latest news on spinning or the LEDs for illuminated wheels?

Roller coasters, cutting-edge technology, and amazing ideas – that's what it's all about at Maurer Rides. Join us on our eight-page journey here in XPress. May the ideas here serve as a source of inspiration and creativity!

Jörg Beutler,
Managing Director Maurer Söhne

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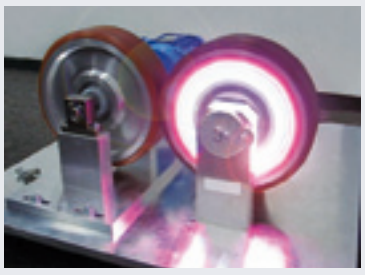


LED-powered FireWheels

Racetrack competition
on two parallel roller coaster tracks
Spectacular racing roller coaster for Aldar / Yas Island

IAAPA Attractions EXPO
Convention Center, Orlando, Florida, USA
16.–19. Nov. 2010
-Booth No. 4827

Abu Dhabi, UAE. **The entire amusement park is a sequence of superlatives – featuring the first roller coaster to simulate a race on two parallel courses in the Middle East. Four launch tracks and four magnetic brakes on each track offer excitement and a real-life racing sensation.**

The Fiorano GT Challenge will open on October 27, shortly after this XPress goes to print. By the time you read these lines, the roadster-themed coaster cars will already be running at full force; providing extreme lateral accelerations and race feeling galore.

Yas Island, a 25-square kilometer island located off the coast of Abu Dhabi, is the place where the Emirate is building its future. The whole project is created by Aldar, Abu Dhabi's premier real estate development, management and investment company. The included 5.5-km Formula 1 race course, built next door to the yacht harbor, celebrated its Grand Prix premiere in November 2009 – and is now being followed by a 25-hectare amusement park: Ferrari World Abu Dhabi. It's a place where everything revolves around the red sportster from Maranello, all of it covered by a massive red roof. It is the world's largest indoor amusement park and is – as is par for the Arabian desert – fully air conditioned.

Italian race feeling – now available as a roller coaster

Aldar chose Maurer Rides to build a brand new coaster especially designed for Ferrari World Abu Dhabi. It comes as no surprise that a high performance sports car served as theming blueprint for the Fiorano GT Challenge coaster – "It was particularly challenging to adapt the original look and feel of a roadster to the technical constraints of a roller coaster car," explains one of the MAURER engineers. Among the many challenges, the extreme lateral accelerations of the track might have been the most demanding ones – but in the end, passengers can enjoy a perfectly safe and smooth ride.

LSM stands for excitement

The course design is yet another one-of-a-kind attribute. In terms of technical features, the ride consists of two parallel courses, creating the first roller coaster race simulation in the Middle East. The ride lasts around 90 seconds with an outcome that is impossible to predict: different ride programs with varying launch speeds ensure that sometimes the one car is faster, sometimes the other.

It goes without saying that the cars don't cover the 1,050 meter course at a leisurely pace. True-to-original acceleration, braking maneuvers, and a sprint to the finish line give passengers a race-like sensation with maximum speeds of up to 95 km/h. Each of the two roller coasters features four LSM launch tracks for substantial propulsion. Four magnetic brakes on each track decrease the speed before the hairpin turns – which then returns with full impact into the home stretch.

Ferrari World Abu Dhabi

While extremes are certainly nothing new to MAURER engineers, they might have wished for more Bavarian Gemütlichkeit – a sense of comfort – in one respect: unpredictable sandstorms and extreme temperatures demanded all-out dedication while constructing the dual roller coaster on site.

Technical Specifications

- Capacity: 2 x 600 pph
- Length: 2 x 1,050 m (3440 ft)
- Height: 13 m (43 ft)
- Drives: 2 x 4 LSM launch tracks
- Magnetic brakes: 2 x 4
- Safety brakes: 2 x 1
- Max. speed: 95 km/h (60 mph)
- G-forces (launch, brakes): +0.5 g, –1.5 g
- G-forces (lateral): ±1.5 g
- max. a brakes: –1.5 g
- Ride time: 90 sec
- Number of trains: 2 trains
- Number of cars per train: 3

Upside down and backward!

XV 2000 G-Force for Iraq

It is considered quite a sensation when a new roller coaster is added to an amusement park in a country like Iraq – which is exactly where the next X-Car coaster from Maurer Rides is currently up and running.

A loop-lift and steep camelback are the defining elements of the installation in Kurdistan. The X-Cars take passengers on a 385-meter (1,260 ft), highly varied ride. The excitement and movement begin from the very start with the impressive, modern station that features a design-oriented construction at a height of 10 meters (33 ft). That height also has the desired side effect of keeping the braking system – which works magnetically – simple and affordable.

Up and down

The brakes are not necessarily something passengers are contemplating at the beginning of the ride, though. Immediately after departing the station, they race downward directly into the loop lift before heading into the vertical ascent back up to the extraordinary backwards roll: an inversion with –1 g, that is not for the fainthearted. And it is also not for leisurely sightseeing stops at the summit, either: with maximum speeds of up to 70 km/h (44 mph), passengers are then propelled down a steep loop figure before immediately heading back up to an unusually steep, high camelback. Another –1 g as well as ample airtime follow. This one-of-a-kind camelback and its distinctive shape also characterize the outward appearance of the G-Force roller coaster, making it an attractive eye-catcher for the park.

No time to catch your breath

That being said, X-Car passengers might not reflect on how the ride looks from the outside at that moment. With no time to catch their breath, they head into the Bended Cuban Eight before returning to the upside-down position. This thrilling combination with two additional inversions is based on an aerobatic flight trick, similar to the Humpty Bump maneuver in MAURER's ride at the Drayton Manor Park. The tracks resemble a large, standing figure eight bent in the middle by 180°. The spectacular finish then concludes the ride: a high-banked curve shoots through the loop lift with incredible momentum before returning back to the station.

The layout was kept compact and fits onto a "Boomerang" base area, for example. The overall ride lasts around 50 seconds. Its capacity is approximately 800 pph with the use of two X-Car tandems. The tracks can be subsequently expanded to 530 m (1,740 ft). These features define the ride in Iraq as a typical Maurer coaster: maximum ride enjoyment and success on a small space, all at realistic investment costs.

But cost was not the only focus for the owners of the family-run company. The utmost priority was to offer a high-quality ride that would guarantee success and become a particular attraction for younger visitors. After reviewing the European market in detail, the owners ultimately decided to go with Maurer. The resulting collaboration with our discerning client was extremely pleasant.

Technical Specifications

- Base area: 80 – 37 m (262 – 121 ft)
- Max. height: 22 m (73 ft)
- Station track height: 10 m (33 ft)
- Track length: 385 m (1,260 ft), expandable to 530 m (1,740 ft)
- Max. speed: 83 km/h (51 mph)
- G-forces: from –1.3 g to +4.2 g
- Ride Time: 50 sec
- Capacity with two tandems: 800 pph

XV 2000 "Dream Coaster" (Iraq)

Freizeitpark-Welt Interview

Hollywood Rip Ride Rockit

Maurer Söhne Managing Director Jörg Beutler sat down with us to answer several questions about the roller coaster development process, as well as Maurer Söhne's latest deliveries in 2010. And coaster fans will be happy to hear what is in store for the near future...

Freizeitpark-Welt.de: Which core competencies define Maurer Söhne with its long-standing traditions, and how many employees do you currently have around the world?

Jörg Beutler: Maurer Söhne's core competency is mastering the interaction of forces and movement of structures, which explains our slogan "Forces in Motion". Our two most important business units may differ from one another dramatically at first glance, but they are both based on precisely this expertise. First, we have our structural safety systems, which protect structures from harmful dynamic influences by absorbing forces and movement. As a global leader in the field, we offer products such as structural bearings, expansion joints, and earthquake dampers. Then, we have our amusement rides, which produce a ride experience through the optimum interaction of forces and movement. We also continue to develop and expand this expertise, such as through our non-profit foundation, which was founded with the sole intent of promoting fundamental research in the field. The Maurer Söhne Group currently employs around 700 people worldwide.

Freizeitpark-Welt.de: You design, produce, and ride stationary roller coasters at the highest level of quality. You must be the happiest people in the world – or does it simply become routine over time?

Jörg Beutler: Not everything can always be rainbows and sunshine in the industry all of the time. But it is true that working with roller coasters comes with an extraordinary number of positive factors. For me, the most important one is to be able to work creatively and to quickly realize new ideas. The icing on the cake is always when the first ride is simply and genuinely a lot of fun. Each project is different and that is what keeps the job exciting.

Freizeitpark-Welt.de: Many young roller coaster fans dream about a career like yours. What tips can you provide in terms of education and studies?

Jörg Beutler: One requirement that is more or less constant is a broad, well-founded technical education, as well as business and project management skills. My advice would be to gain as much practical experience as possible and to make an effort to develop a feeling for what is technically and financially possible, in order to learn how to correctly assess project risks. Previous exposure to the industry, whether in a business or an amusement park, can also be helpful.

Freizeitpark-Welt.de: Roller coaster fans around the world associate incredible experiences with the names Stengel and Schwarzkopf. What does Maurer associate with those names?

Jörg Beutler: Schwarzkopf is more or less our predecessor. In 1993, Maurer Söhne entered into the roller coaster business by acquiring BHS. BHS had previously manufactured for Schwarzkopf and later received consulting and support from him when track designs such as the Olympia Looping or the Lisebergbanan were built. We still use Schwarzkopf's large tube-bending machine even today, which is why we feel beholden to Schwarzkopf's creativity and inventiveness in a certain sense. Stengel is another pioneer to whom the roller coaster industry owes a great deal. Due to our own roller coaster development and XTRAC computation system, collaboration with the Stengel engineering firm takes place relatively rarely, but when it does, it is always a great pleasure.

High-tech coasters: Hollywood Rip Ride Rockit!

Freizeitpark-Welt.de: Your company's latest project is called "Hollywood Rip Ride Rockit", which towers directly over the entrance to Universal Studios Florida. Your coaster abounds with innovative technology – which new high-tech elements does Maurer offer its passengers?

Jörg Beutler: The coaster is extremely dynamic and varied – even despite the fact that the layout had to completely forgo any inversions at the park's request. Our X-Car was able to play off of its strengths and create entirely new ride designs thanks to its superior agility. The most impressive example is undoubtedly the non-inversion loop, a loop design that features a 180° twist during both the ascent and descent so that the car is in an upright position at the summit. Additional to a unique outward appearance, this ride element also offers a great deal of variety and a one-of-a-kind experience thanks to the transition between compression and airtime. The limits of what is possible had to be tested, both dynamically as well as statically. Since then, we have patented this maneuver and integrated it into a number of further layout designs as a highlight. There would be so much more to tell about the highest vertical lift ever constructed or the continuous station that allows passengers to comfortably get into the cars as they slowly progress through the station thanks to a synchronous conveyor belt. But the train's high-tech highlight is without a doubt the multimedia equipment found in the X-Car Music vehicles: integrated video cameras and colored high-performance lamps controlled by different lighting programs following each block brake and varying by car. They also feature 100-watt stereo sound in each seat: music can be individually selected from over 300 titles found on an iPod-like display. This music is also automatically put on the on-ride video DVD. The car is totally high-tech – even just the additional wiring it required weighed over 100 kg per car.

Freizeitpark-Welt.de: Your company holds an impressive tradition, and the entrance to your largest workshops certainly reflects that pride. Which highlights have been produced there?

Jörg Beutler: Thanks to our 130-year tradition and an approach that has been innovative since the very start, that list is long. We were building high-precision tracks for the hanging railway back the 1970s. We constructed a 100-meter tower for GROWIAN, the first large-scale wind power plant; built a 200-meter tower for a solar updraft tower in Spain; and provided massive, moveable dome structures for a mosque in Saudi Arabia. Many large-scale steel constructions such as Terminal II of the Munich Airport or the entire steel structure for the BMW Welt were produced in our larg-

est and oldest steel construction facility at our Munich site. Then, there is also the enormous expansion joints and bridge bearings for the world's largest bridges. In terms of roller coasters, highlights definitely include the mechanical effects for our spinning coaster at Phantasialand and the highly complex, amazing four-lane track with an over 40-meter span for our SkyLoops. The X-Car has been and will continue to be produced in a separate warehouse, but it still remains my personal favorite innovation.

Freizeitpark-Welt.de: Do you generally develop your own ideas that you present to your clients, or do you primarily work on behalf of the client in order to realize their ideas?

Jörg Beutler: New products are by and large based on our ideas, and new ride designs are predominantly created within our own company. The overall layout is then usually a result of intensive collaboration together with our clients. We are continually on the lookout for new ideas and try to incorporate suggestions from park planners, amusement parks, or roller coaster fans into our concepts.

Freizeitpark-Welt.de: The name Maurer Söhne not only stands for roller coasters, but also for structural engineering and structure safety systems. Which is your most important pillar?

Jörg Beutler: From a revenue perspective, our most important pillar is structural safety systems, followed by the amusement rides.

Freizeitpark-Welt.de: Which trends and innovations do you see for the future in the global roller coaster sector?

Jörg Beutler: Multimedia will almost certainly continue to be trendsetting. In general, I consider developments in the roller coaster sector nowhere near the end, and we have numerous new ideas ready that we are looking forward to realizing. The variety of different types will continue to increase.

2011: Launch Coaster for Bayern Park!

Freizeitpark-Welt.de: What upcoming Maurer projects can roller coaster fans around the amusement park world look forward to?

Jörg Beutler: We currently have a total of ten track designs set to be commissioned soon. The largest of those is our launch coaster in Abu Dhabi, in addition to three additional X-Car launch coasters. Then, there is also several SkyLoops and spinning coasters. A very exciting Maurer launch coaster will celebrate its grand opening next year in Bayern Park, located about an hour from Munich. Beyond that, we are also working intensively on our X-Train that features four X-Seats per row and for which the two outside ones can be designed as floorless seats. From this development, we anticipate an additional increase in the direction of our X-Car slogan of "Freedom on the tracks" and hope to equip a first installation with it as soon as possible.

Freizeitpark-Welt.de: Thank you for all of your in-depth, informative responses! We wish your company, your employees around the world, and especially you and your family all the best for the future. Please keep forces in motion!

Spinning Coaster Rainbow Park

Rainbow Magic Land in Valmontone near Rome

Rainbow Magic Land, an entirely new type of amusement park with an investment volume of nearly 200 million Euro, is currently being built near Rome. Maurer Rides will be represented in the fantastic park by two coasters: one X-Car launch coaster and one spinning coaster. Alfa3 is the company responsible for the overall project. More information about the park is currently available online at www.rainbowmagicland.it

Indoor spinning with an outdoor excursion

Fanciful and fantastic – the curve-filled new MAURER spinning coaster aims to enthrall and captivate. The indoor coaster is designed to slightly rob passengers of their sense of orientation and "kidnap" them along a 1,411-foot (430-meter) course that is filled with surprises. The first one comes right after leaving the station: a lift takes passengers up and sends them speeding on their way along the highly curve-ridden course, offering pure spinning enjoyment. The indoor atmosphere makes the overall experience even more dramatic – although it must be said the term "indoor" is a relative one when it comes to the SC3000, which features a panorama curve highlight that takes passengers outside. Once back inside, the ride continues to twist through the tight curves until the final kick: a second lift just before the arrival at the station.

The SC3000 at Rainbow Magic Land was constructed on a base area of 131 – 197 ft (40 – 60 m). Seven spinning cars twist passengers through an exceedingly tight layout. The coaster was delivered to the client as a ready-to-test product and is set to operate at a capacity of 850 pph when the park opens in spring 2011.

Technical Specifications

- Type: spinning coaster
- Capacity: 850 pph
- Track Length: 1,411 ft (430 m)
- Height: 56 ft (17 m)
- Max. Speed: 34 mph (58 km/h)
- Ride Duration: 75 sec
- Number of Cars: 7

Construction site of the Spinning Coaster

Outdoor launch

The structural steelwork is finished and the ride will be making its maiden journey in the coming days. Even at this early stage, the dimensions are already clear: at 2,461 feet (750 meters), the X-Car Launch Coaster will be one of the largest in its category.

The term "slow" can really only be used to describe the outdoor coaster once – right at the beginning. Following an initial reduced-speed section, the LSM launch accelerates passengers to a stomach-clinching 59 mph (95 km/h), followed by one attraction after the next. A camelback with three entire seconds of airtime leaves passengers holding their breath. A non-inversion loop at 115 feet (35 meters) directly over a lake requiring considerable coolness to still enjoy the view of the sparkling waters below. A helix and a heart roll on the home stretch offer a demonstration of Italian tenacity as passengers are spun around the tracks one final time.

The inspired course design combined with the individual X-Cars is a signature typical of a MAURER coaster: pure riding gratification with no downtime in agile X-Cars, as well as the uninhibited freedom of no shoulder restraints to confine the upper body. All in all, this coaster ride in the sunny south can truly be deemed an experience of unadulterated enjoyment.

Construction site of the X-Car launch coaster

Technical Specifications

- Type: X-Car launch coaster
- Capacity: 1,000 pph
- Track length: 2,461 ft (750 m)
- Height: 115 ft (35 m)
- Max. speed: 59 mph (95 km/h)
- Ride duration: 80 sec
- Number of cars: 5
- Launch: LSM with 0.8 g


SkyLoop "Abismo" (Parque de Atracciones, Spain)


X-Car Music "Hollywood Rip Ride Rockit" in action

Freedom on the tracks The X-Car turns five

In recent years, hardly any other vehicle has influenced the roller coaster world as much as the X-Car. A trendsetter in terms of design, technology, and ergonomics, it received numerous awards in all three of these categories. But particularly revolutionary was the unique and innovative seat safety system. Performing inversions without a shoulder bar for the first time ever gave an entirely new meaning to the statement "freedom on the tracks."

The X-Car is the embodiment of this new freedom. The term "revolution" is not so far-fetched, either, since it is far more than just a technical development. The X-Car offers passengers an entirely new kind of ride experience. Where shoulder bars used to offer constricting safety when it came to inversions or negative g forces, the X-Car now offers an entirely new kind of coaster experience on several well-known track designs allowing for an unrestricted torso.

Revolutionary roller coaster designs

The X-Car's success is also related to a masterful combination of its strengths with perfectly appropriate track layouts. The first location to push the X-Car into the spotlight had to be truly one of a kind. Thus developed the idea of the world's highest inversion: compact and innovative to the max. Out of that vision, the SkyLoop was born and quickly established itself as a unique attraction in the world. Since then, SkyLoop numbers five and six are being planned and will be ready to guarantee unforgettable experiences as of 2011. The new ride inspired the roller coaster designers to create new highlights by combining conventional roller coaster elements with the new X-Car.

For example, take a straight vertical lift and give it an arc, and you have got a loop lift that leaves passengers with their hearts heading towards their stomachs. The X-Car Coaster XV2000 has since been realized twice and has been thrilling coaster fans in both England and Iraq.

X-Car launch coaster loop

Yet another successful combination: launch technology in combination with the X-Car. For passengers, this idea takes off like a rocket. They experience the launch or additional thrust on the track as if it had come out of nowhere – and with a free upper body, the feeling is dramatically more exciting than when cramped in between two thickly padded shoulder restraints like our competitors' designs. Maurer Rides also combines the extreme agility of its X-Cars with particularly tight course layouts.

As individual vehicles – another special feature of the "freedom on the tracks" – X-Cars are also much more nimbly than conventional roller coasters. This allows for the creation of new, more fascinating layouts with tighter, steeper curves, and a more rapid sequence of different ride elements. In other words: very attractive coasters can even be built in small spaces. The first design of this kind, an extremely varied and compact coaster was opened at the Drievliet Family Park in 2007; the second is being built for Knight Valley, China, and is scheduled to open in 2011.

It goes without saying that the X-Car plays off its strengths, even in larger layouts. One example is the innovative launch coaster set to open at Rainbow Magic Land Italy (picture below) in 2011. Unique course designs, such as the Non-Inverted Loop and preceding dark ride sections, increase the excitement and turn the ride across the tracks into an unforgettable experience packed with numerous unexpected highlights.


X-Car Music "Hollywood Rip Ride Rockit" (Universal Studios Orlando, USA)

Operating efficiency: LSM saves and saves

But nowadays, good ideas alone are no longer enough for ensuring the success of new coaster concepts – they have to make economic sense, too. One aspect has already been mentioned: numerous attractive features packed into minimal space. Especially for smaller parks, there is a lot to be said for being able to position themselves with one particular highlight.

In addition to the space and purchase price, running expenses are another aspect of profitability – especially including maintenance and electrical power input. To make sure that the launch technology is attractive and economically realizable for all users, Maurer Rides uses modern LSM (linear synchronous motors) for the X-Car. Series-produced, well-engineered energy storage systems are now available that make it possible to continually recharge the energy needed for the launch, even for linear motor drives, thus keeping the power input low. The X-Car's LSM works with a connected load normal for conventional chain lift systems – with a considerably higher output of peak performance and enjoyment.

Individual music choice

"Fast and winding" – that used to be enough for a good roller coaster. Today, though, active individuals are used to being able to listen to their favorite music wherever they are and whenever they want. The response from the Munich coaster team to this was the X-Car Music. Here the X-Car set benchmarks and is currently the most highly developed roller coaster car in terms of multimedia. Since the summer of 2009, the "Hollywood Rip Ride Rockit" has been demonstrating what is possible with mind-boggling variety at Universal Studios Orlando in Florida. In addition to the integrated music choices, it also features the latest video and lighting technology. The coaster at Universal has the world's highest vertical lift and the first Non-Inverted Loop. These highlights mean a high level of enjoyment for a wide target group.

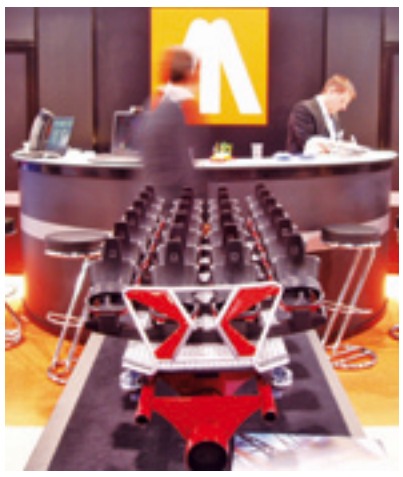

X-Car Music "Hollywood Rip Ride Rockit"

Multimedia and electronics everywhere

The Hollywood Rip Ride Rockit coaster's cars are high-tech vehicles filled with electronics and microprocessors – the basis for a wide range of individual equipment and combinations. The X-Car Music presents an entirely new dimension of customer design: each component, such as audio, video, or the LEDs, can also be installed separately. Moreover, many additional multimedia features may be integrated based on client specifications.

FireWheels and FlyingLaunch

Maurer Rides will be introducing another high-tech add-on in 2011 at the new extreme coaster "Freischütz" in Bayern Park: illuminated "FireWheels" that turn the extreme ride in the X-Car into an experience for passersby, too. High-performance LEDs guarantee an impressive spectacle, even during the day. The new technology is patent pending, yet surprisingly inexpensive.


Model of the X-Train

This is one area where Maurer Rides once again demonstrates that good ideas are the decisive criterion for success in the end. Another feature that will be debuted at the Freischütz is the FlyingLaunch: a unique system in which the operator can accelerate the train through the station for an additional round. This comes as a complete surprise to passengers as they expect the train to brake as it nears the station – instead, it speeds up over again. In the final round, the train flies through the station one last time before slowing down in the launch track and being smoothly pulled back to the station. Technically, this is realized by reversing the magnets' polarity. The braking energy is regained and transformed into power for the next launch. This is not only innovative, but also enables energy savings of up to 30%.

X-Train: the X-Car's bigger brother

But the X-Car as a single vehicle and its numerous advantages is by no means a sign of the end of roller coaster trains. The Munich-based designers' tradition in that field goes back much too far to reject the challenge of transferring the X-Car's agility and versatility to trains, too. This is why it is getting a big brother: the X-Train. The innovative vehicle features a capacity of 36 passengers distributed to four X-Seats per row. The result is an exceptionally powerful and fascinating machine whose floorless option also ensures new dimensions of freedom: it is "topless" like the X-Car, but floorless as well, giving wings to roller coaster engineers' imaginations for new layouts. Five years of the X-Car have led to a well-engineered system with several different versions, but as the X-Train demonstrates, the sky is the limit when it comes to roller coasters, new ideas are plentiful, and the years ahead promise to be exciting ones.

WELL BEGUN IS HALF DONE

The XL 1000 Coaster installed by Maurer at Drievliet Park, The Netherlands, the same model that will be built for Knight Valley Park, Shenzhen. Thanks to its LSM drive technology, riders are rocketed into the air with an acceleration from 0 to 70 km/h in 2". The pictures show some special elements and the revolutionary X-Car.

Maurer Söhne starts the new year with a triumphal entry into the Chinese market with three roller coasters.

Chinese market always offers interesting opportunities to leisure industry manufacturers. We had a confirm of this when talking with sales responsibles of Maurer Söhne, well-known German roller coaster manufacturer, who gave us the news of 3 orders they had secured from China for roller coasters to be delivered in 2010 and early 2011.

The first order for Maurer Söhne in that country was for a SkyLoop at the World Joyland park in Changzhou, a brand new amusement park set to open in late 2010. The thrill elements of the SkyLoop are the X-Car, the so-called 'humpty bump lift', the overhead ride, the 360°-screw and the vertical drop with a speed of 105 km/h, "but the decisive criterion for investors – said Mr Horst Ruhe, sales director of the company – was the reasonable investment costs. This type of coaster offers a high level of attractiveness, in terms of both look and ride experience, with minimal space requirements and investment. Besides it is also upgradeable."

The second order, this time for a SkyLoop and an X-Car Launch Coaster, was signed by The Shenzhen OCT East Co. Ltd. for their Knight Valley Park in Shenzhen, north of Hong Kong. As for this SkyLoop, the investors appreciated mostly the exhilaration feeling you get after the vertical lift with a dizzy height of approximately 50 m as the ride continues slowly in an upside down position and you seem to be falling out of the seat because only your lower body is secured and the upper body is free to move around. It is simply breathtaking.

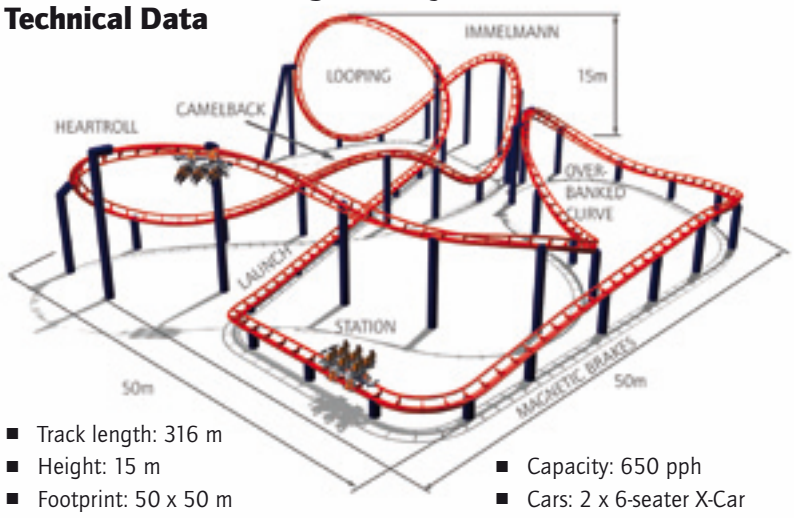
The SkyLoop for Knight Valley Park is going to be customized to the regional wind conditions and seismic loads in Shenzhen. During typhoons in fact the wind speeds can reach more than 200 km/h. That's why the coaster tower foundation will be extended from 5 x 4 m to 6.5 x 6.5 m. Scheduled for the end of 2010, the opening will be breathtaking. Right after the SkyLoop, Maurer Rides will build the first Maurer LSM Launch Coaster for China in Knight Valley.

This coaster, thanks to its LSM motor, catapults guests upward, accelerating from zero to 70 km/h in 2 seconds, and then takes them through a special-loop, an Immelmann turn and a steep camelback with a lot of air time, a half cuban eight, followed by a heartroll and a steep curve just before returning to the station. But packed excitement is just as much a trademark of Maurer Rides coasters as a 'soft' ride experience, which was also a major factor to obtain the contract of the Chinese coasters. A sophisticated manufacturing technique ensures a smooth ride.

Even the Launch coaster is built very compactly and is therefore economic too. Thanks to its integrated energy storage system, the required power output is limited to 125 kVA despite the spectacular skyrocketing launch, which will lower the operating expenses to a minimum.

Reprint Credit:
Games & Parks Industry magazine

Launch Coaster at Knight Valley Park, Shenzhen – Technical Data



- Track length: 316 m
- Height: 15 m
- Footprint: 50 x 50 m
- Speed: 70 km/h
- Capacity: 650 pph
- Cars: 2 x 6-seater X-Car
- Connected load: 125 kVA

SkyLoop at Knight Valley Park, Shenzhen – Technical Data

- Track length: approx. 150m
- Footprint: 55 x 6.5m (without station)
- Max. height (center of tracks): 46.20m (world's highest inversion)
- Overall height: 52m
- Cars: 2 x 6-seater X-Car, coupled to 1 tandem
- Ride time: approx. 60sec (without boarding and deboarding)
- Capacity: approx. 550 pph
- Max. speed: approx. 105 km/h
- G-forces: min = –1G; max = 5G
- Inversions: 2

The layout and thrill elements of the SkyLoop coasters that are going to be installed in China at Joyland park, Changzhou, and Knight Valley Park, Shenzhen. Among the others, the humpty bump lift, overhead ride and 360° heartroll (pictures from Skyline Park and Magic Springs).

THROUGH THE WOLF'S GORGE BY ROLLER COASTER

The birth of an epic launch coaster in Reisbach/Lower Bavaria

The Freischütz legend has already made its way into the realm of opera, but soon, the Freischütz ride will ensure that coaster fans from around the world know precisely where Reisbach is: in Lower Bavaria, not far from Munich, Germany. A coaster of epic proportions is currently under construction at the local Bayern Park: it is the first launch coaster in Bavaria and in a 400-kilometer-wide (250-mile-wide) radius.

Moreover, it has the most inversions of any coaster in Germany and of any catapult coaster in the world as well as being the first to feature a FlyingLaunch. The coaster can be called a masterpiece in terms of engineering, too: for the first time ever, braking energy will be recovered and reused for the next start. So-called supercapacitors are applied to ensure almost loss-free energy storage. Passengers enjoy all of these highlights in the multiple-award-winning MAURER X-Car, the one-of-a-kind roller coaster car without shoulder restraints for unmatched freedom even in inversions. In addition, it is also Germany's first launch coaster to feature the revolutionary X-Seats.

The Freischütz at Bayern Park will open at the beginning of the 2011 season. The location, a steep hillside, is spectacular in itself. The 480-meter (1,575 ft) track is being seamlessly integrated into the terrain; the highest point of 24 m (79 ft) above ground is up on the hillside, creating a breathtaking height of 35 m (115 ft) from the foot of the hill. Numerous crossovers, intersections, and overlappings create a fascinating attraction for spectators.

Exceedingly tight course layout

The coaster offers a continual switch between compression and weightlessness, and its many highlights turn the ride into an unforgettable experience. The 12-seater X-Car-Tandem with LSM launch is being fired out of the station to gain a maximum speed of 80 km/h (50 mph). The adrenaline rush for passengers is particularly intense because the launch goes directly up the steep hillside. But there is no time to catch one's breath: the top hat with a first inversion, a loop, a half-pipe combination with substantially banked curves, and a complete 360° heart roll follow immediately. After this the ride takes passengers through a sloping loop, a second 360° heart roll, and then into an extremely steep curve back into the station – only to launch over again.

FlyingLaunch and backwards return

The optional FlyingLaunch is hands down one of a kind: the operator has the choice of launching the train through the station for an additional round. For passengers, it is a moment of immense excitement as well as an unparalleled spectacle for waiting spectators. Yet another feature unique for this type of coaster is where it brakes: in the launch track. In the final round, the train first shoots through the station before being braked in the launch track and being smoothly pulled back to the deboarding position.

Technically speaking, braking happens by reversing the polarity of the magnets. The braking energy is recovered and converted into electricity for the next launch – a solution that is not only innovative, but which also saves energy and makes the Freischütz launch coaster the most energy efficient in its class. Supercapacitors – just think of it as some kind of oversized rechargeable batteries that provide intermediate power storage with minimal loss – have been used for the first time ever.

World record for Bavaria

The Bayern Park in Reisbach, Lower Bavaria, has always been known for family-friendly rides. The addition of the Freischütz now offers a full-blown record breaking coaster that leaves out nothing in the way of excitement and thrills. No other launch coaster in the world is featuring seven upside down positions (banking > 90°), nor does any coaster in Germany. So that as many visitors as possible can try the Freischütz adventure, two so-called BigBoy seats are available in the twelve-seat tandem, making the ride accessible to taller and heavier guests – and, like the other seats, all without shoulder restraints.

Poster of the „Freischütz" roller coaster (Bayernpark Germany)

Records and firsts

- World record: the most upside down positions for a launch coaster
- German record: coaster with the most upside down positions – seven ride elements with banking of over 90°
- Germany's first X-Car launch coaster: shoulder-restraint-free seats for inversions
- First launch coaster in Bavaria and the only one in a 400-kilometer-wide (250-mile-wide) radius
- World first: FlyingLaunch with the option of going for several rounds by accelerating through the station
- World first: braking energy recovery, conversion into electricity for the next start

Specifications and facts

- Type: X-Car launch coaster, outdoor
- Cars: 2 X-Cars, coupled to 1 tandem, 2 x 6 seats
- Track length: 480 m (1,575 ft)
- Height: 35 m (115 ft)
- Max. speed: 80 km/h (50 mph)
- Launch: LSM with 1 g


Rendering – X-Car Launch Coaster „Freischütz" (Bayernpark Germany)

Flying Launch: Full speed ahead for new ideas

Innovative ideas for small spaces

Roller coasters are a familiar and important part of amusement parks. Maurer Rides is known for its creative ideas that continually bring innovation to the tracks.

The latest proof: the new FlyingLaunch. Another full acceleration right when passengers expect the ride to end – that makes for a pleasant surprise: After all, they get to go one more round. The FlyingLaunch is individually controllable so that passengers never know what to expect, giving park operators the option of adding the bonus round depending on capacity.


Concept ; FlyingLaunch coaster – 750m (2460ft)


Concept; FlyingLaunch coaster – 150m (492ft)

The new FlyingLaunch principle is particularly interesting for compact coasters where the goal is to create the most entertainment possible on a tight budget. Maurer Rides has also intensified the experience by enabling the launch to be built vertically curved, a feature that inevitably hits all passengers in the pit of their stomachs: there's the initial element of surprise and then the acceleration that is even boosted by the curvature. Talk about being pressed into your seat.

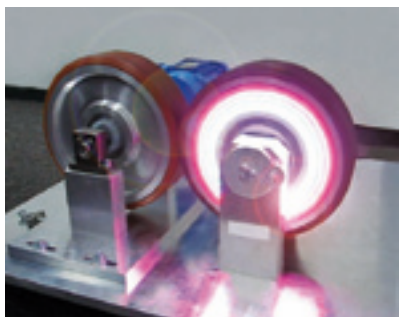
The possibility of launching on curved tracks also means that accelerations in a camelback, a loop, and many other ride elements become feasible. When used intelligently, an integrated FlyingLaunch intensifies any coaster. Maurer's layout examples prove that when it comes to imagination, only the sky is the limit.

But Maurer engineers wouldn't be who they are if they did not keep the aspect of cost in mind. The FlyingLaunch principle is suitable both for individual cars as well as for trains, enabling capacities of up to 1,000 pph. And the exceptional layout features of a well-engineered course design offer the added bonus of energy recovery. Consequently, energy does not have to be degraded using long braking tracks, but can instead be reclaimed and reused for the launch.


Concept ; FlyingLaunch coaster – 250m (820ft)

LED-powered FireWheels

The normal focus of a wheel test station may be the quality, but Maurer Rides is currently testing an entirely different, patent-pending effect: LEDs!



Test set-up of the FireWheels

Twelve "Power LEDs," as they are known, are located on the roller coaster wheels and feature such an intense luminosity that they even create dramatic effects in the light of day. The new wheels (patent applied) will be debuted on the Freischütz coaster at Bayern Park (see page 6). The LEDs used came from the automotive industry, and the required power is generated by the wheels themselves: working with the generator principle, the wheels' rotation is converted into energy, thereby making rechargeable batteries and related wiring superfluous. The illuminated FireWheels wheels can withstand up to 130 km/h (80 mph) at the test station, and endurance tests are currently being conducted.

Reorganization Maurer Engineering

Nothing is as constant as change – in order to be prepared for the future and to enable powerful, flexible behavior in the marketplace, our engineering division has been realigned:

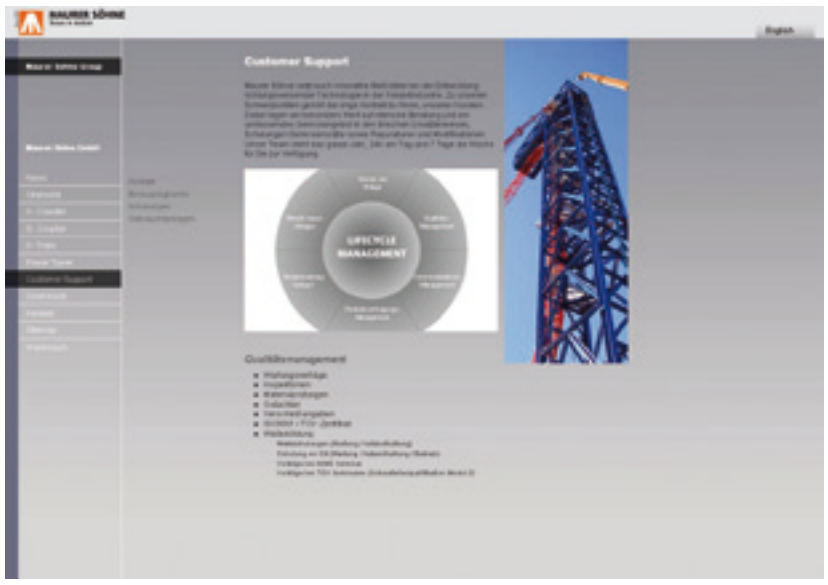
- Project management was strengthened to better meet future client demands within the scope of international projects, the goal being to provide even faster, more personalized client services with a comprehensive service portfolio.
- Development activities have been bundled and intensified to enhance innovative strengths and successfully set benchmarks. The objective here is to increasingly utilize worldwide expertise through open innovation concepts, and to subsequently realize those concepts in successful projects.
- Strategically important engineering competencies for the successful computation, construction, and worldwide realization of new, technically challenging coasters have been expanded and concentrated. The goal: to ensure the realization of exceptional designs in a short period of time.

New: MAURER Online Service

MAURER clients can now access a wide range of services online through the customer support login button found at **www.maurer-soehne.de**.

Their personal client number provides access to an individual page with relevant data and service bulletins about equipment operations, maintenance tips, and news from around the world. Orders can also be placed online.

Clients can receive their personal login data via e-mail from the Service Center at **ar-service@maurer-soehne.de**.



Screenshot ; MAURER's Online Service

COMPANY RUN: Maurer Racing Team

Maurer Racing Team

Maurer Söhne's slogan of "Forces in Motion" typically applies to engineering, steel, and structures. On July 22, though, it was human forces that were in motion in the form of 37 highly motivated runners clad in black shirts emblazoned with our slogan. For the third year, the Maurer racing team took part in the Munich company run around the Olympic Stadium. The starting signal for the 6.5-kilometer (four-mile) course was fired at 7:30 p.m. and sent more than 30,000 participants from 1,400 companies out on their way. Initially accompanied by hot temperatures and high humidity, racers were soon treated to a refreshing cool-down in the form of thunderstorms that arrived once they had crossed the finish line, just like last year. The showers in no way affected the athletes' high spirits, though, and the decision was made while still dripping wet with rain: the Maurer racing team will be back at the starting line in 2011.

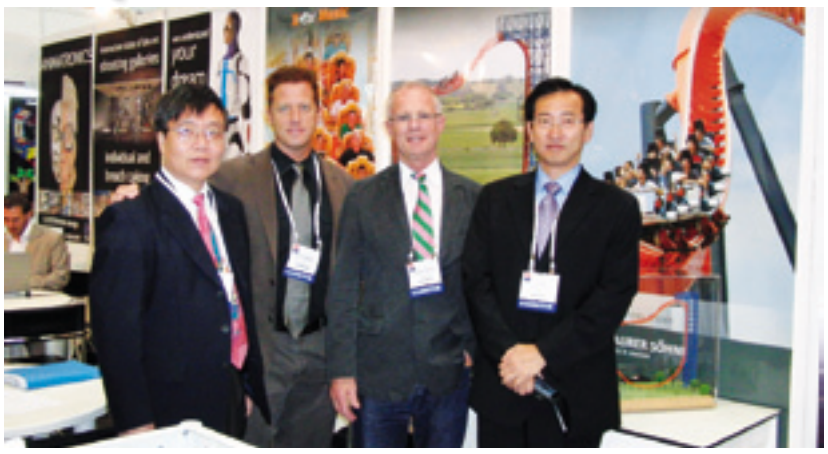
RAFTING TEAM

Forces in motion – Maurer's brave new rafting team

Two teams of eight Maurer Rides coaster specialists each recently headed down the Inn River through the Imst Gorge to test out an exhilarating ride of a slightly different kind: white-water rafting.

The Maurer motto of "Forces in Motion" truly lived up to its name with thrills, waves, swells, and fast-paced changes in speed and direction. The adventurous ride also offered numerous opportunities to display a sense of team spirit, both in exceptionally rough waters as well as calmer spots. Several team members took advantage of the latter to venture a voluntary dip in the freezing waters of the Inn – and promptly needed their coworkers' help to climb back into the rafts.

In excellent spirits, the troupe then fortified themselves with a barbecue accompanied by discussions about their upcoming wild rides, both those to be taken on the water and on a roller coaster.



Asia Expo – Kuala Lumpur 2010 ; Ge Li Feng (Maurer China), Steve Boney (Maurer Rides USA), Horst Ruhe (Maurer Rides), Jae Ho Song (STC South Korea)

Asia Expo – Kuala Lumpur 2010 ; Mrs. & Mr. James "Chip" Cleary (IAAPA), Steve Boney (Maurer Rides USA), Will Morey (Morey's Piers), Horst Ruhe (Maurer Rides)

Trade shows – news in brief
Fantastic turnout: thank you!

IAAPA – Las Vegas 2009 ; Hermann Bockhorni (Maurer Rides), Siegfried Fischbacher (Siegfried & Roy), Gottlieb Löffelhardt (founder Phantasialand), Horst Ruhe (Maurer Rides)

The most well-known trade show attendee at the IAAPA show in Las Vegas may have been Siegfried Fischbacher (Siegfried & Roy), but at the same time, he was just one of the many visitors. Throughout the years, MAURER's trade show booths have become more and more of a visitor magnet. At last year's IAAPA in Las Vegas, at the Deal exposition in Dubai or at the Asian Attractions Expo in Kuala Lumpur – never before that many prospects from all around the world visited Maurer Rides' booth. One point that we are particularly pleased about is that those contacts have resulted in numerous projects and contracts. We ascribe this to our intensive customer care and our innovative roller coaster developments. We would like to extend our heartfelt gratitude for the ongoing trust we receive to all visitors and customers.

Friction bearings and shock absorbers
for the garden above Singapore

Sands Sky Park at the Marina Bay Sands luxury hotel in Singapore is a rooftop garden with swimming pool, restaurants, and bars located on top of the three 55-floor-high hotel towers. The Park is supported by 17 bearings from Maurer Söhne and damped by a mass damper system with a vertical oscillating mass of 5,000 kg (11,000 lbs).

Marina Bay Sands – Sands Sky Park: spectacular project in dizzying heights with a high degree of engineering requirements

"Forces in Motion" is the Maurer Söhne Group's well-known slogan. And although for Maurer Rides this motion should generally be exciting and clearly visible, Maurer Structural Protection Systems often rather focus on minimizing movement. Still, that objective can be just as spectacular – as the project in Singapore proves.

Singapore's skyline has a new landmark: the Marina Bay Sands hotel, which opened its doors this past June. It features three 55-floor, 200-meter (656 ft) towers canopied by the Sands Sky Park measuring 345 _ 36 m (1,130 _ 118 ft). The roof has a 150-meter (490-foot) pool surrounded by a garden with 250 trees. The peninsula off the coast of Singapore is not only home to the luxury hotel, but also to a Las Vegas–style casino, an art museum, a theater, a shopping mall, conference facilities for up to 45,000 guests, restaurants, and night clubs. Maurer Söhne did not build a roller coaster here, but rather gave the spectacular Sands Sky Park both stability and movement.

Horizontal sloping

From an aerial view, Sands Sky Park has a slight crescent shape and protrudes far beyond the last hotel tower on one side. From an engineering standpoint, it is supported by three enormous steel discs, each located on top of a hotel tower. Two joints, invisible to guests, are located between the steel discs. These discs must be able to move horizontally in order to counterbalance wind, temperature differences, and oscillations. This is just as with any large bridge – only the dimensions were a little bit different in Singapore.

Response

Fax: +49 (89)32394-355

For more detailed information, please select one or more of the following options:

- ❑ MAURER FlyingLaunch
- ❑ MAURER LoopLaunch
- ❑ MAURER Spinning Coaster
- ❑ Maurer Racing Coaster
- ❑ MAURER X-Car Music
- ❑ MAURER X-Train
- ❑ MAURER SkyLoop
- ❑ Maurer Customer Support
- ❑ Other_____

❑ Please contact me

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Complete the form, cut it out or copy it, and fax it to Maurer Söhne!

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MAURER SÖHNE
forces in motion
Since 1876

Xpress – The Newspaper for Amusement Rides

Editor-in-chief: Torsten Schmidt
Authors: Unless otherwise noted, texts were written by Andrea Nagl, Games & Park Industry, Ralf Reifferscheidt, Torsten Schmidt
Layout: Hartmann + Hartmann GmbH, Augsburg