

HM TODAY



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THE BICYCLE: TRANSPORT OR LEISURE?

World of Wheels



Traditional bicycle markets are changing. Europe got 10 new member states, most of them with a bicycle industry. The new member states also mean a change for their own bicycle markets: if the EU brings the prosperity as promised, the new member states will see more cars, and more leisure bicycles.

Bicycle production changes, too. Production in China is booming. Low wages countries like Vietnam and Bangladesh get tax incentives to boost their bicycle production, and they are likely to become the mass suppliers for the world market. South America has a growing bicycle industry. At the same time, the mass production facilities in the west are dwindling. Several mass producers in Europe closed their doors.

Does it mean that the bicycle industry in Europe is at an end? None at all, it only means that the industry shifts towards other types of bikes, mostly high-end. Manufacturers are offering a variety in leisure bikes; they are making different models in small series. More likely; the manufacturer turns to custom-built bikes, bikes made on order. Their portfolio may contain 7000 wheels, 26" all-terrain wheels, folding bikes (sizes from 16"), maybe children's bikes, electric bikes with large hubs and small rims, bread-and-butter wheels or special spoke pattern wheels. Manufacturers may decide to build their own wheels, or source them from wheel specialists and wheel jobbers.

In both cases, what the wheel shop needs is versatility, and flexibility. The wheelbuilding equipment must be able to handle all kinds of wheels for bicycles and electric bicycles; all sizes, all types of hubs, all lacing patterns. To work efficiently with small series or a custom order system, it is essential that the wheelbuilding machines adapt automatically to another wheel program

without any need for time-consuming adjustment to wheel diameter, spoke pattern or spoke number.

Holland Mechanics works along those lines, too. We offer flexible solutions, for the mass producer and for the small manufacturer of high-end specials. "Dedicated to wheelbuilding", it is our pride to give each customer a custom advice. With more than 30 years of mechanical wheelbuilding experience, we know everything about spoked wheels, about components and wheel assembly. We know how failures occur, how they can be prevented, how technical wheel life can be extended for long-term customer satisfaction. And more than that: we know about costs, and we'll advise on a sensible build-up of a wheelbuilding line, new or used.

For small to medium sized wheelbuilders, an Intelligent Lacing & Tightening Machine often is a sound basis. The lacing & tightening machine makes wheels that just need a final trueing; the machine counts the windings of nipple on a spoke and yields a wheel with basic tightening and true. For small series, hand trueing is hardly an option. If possible, a trueing robot is better: it guarantees optimal consistency of production within the required trueing standards. Refinements like customized washer supply, pre-true stabilizing, mechanical application of rim tape and application of locking compound on the threads can be added to the line. We have hub filling machines that can handle most hub-and-spoke combinations and ergonomically-sound tyre mounting machines as well. Thinking about mechanical wheelbuilding, change of products and markets, changes to your existing lines: ask Holland Mechanics, our solutions will surprise you!

First Mechanical Bicycle Wheel Lacer

Holland Mechanics built its first mechanical wheel lacing machine back in 1970. The project got the code name CF, and the inventors tentatively offered their labour-saver to various bicycle factories in the Netherlands and nearby Europe.

The all-mechanical lacing machine had an automatic nipple feed and reduced the operators' work to bringing each spoke in front to the right spoke hole. The machine proved itself as reliable and very cost-effective, and during the first couple of years a total of no less than 900 have been sold.

The machine was born when the Dutch importer of English bicycles got complete knocked-down bicycles instead of fully-assembled. They had to build their own wheels. Outsourcing in those days meant jails and monasteries and it involved a lot of logistics and time management problems.

To overcome these, founding father Van Doornik and his dedicated technical engineer sat together and developed the lacing machine, on purpose. When the machine appeared to be a technical step forward, and, at least as important, a commercial success, the project was turned into what is now Holland Mechanics, the worldwide leading company in bicycle and motorcycle wheelbuilding technology. The first machine is still in full working order, the technology of lacing & tightening in one machine is still the same as today's highly sophisticated ISL intelligent lacers. This technology has proved to be the most flexible process for wheelbuilding, therefore we have more than 30 year experience in flexible wheelbuilding without separate tightening. The principle of the each-spoke-in-turn placement was never left by Holland Mechanics, but today's lacers will accept any rim size, and use laser technology to bring spoke and nipple together under the right angle, add washers (QLets), find their way through double wall & deep-V rims, handle all kinds of hubs (plain, roller brake, coaster brake, drum brake, gear hub, electro motor hub etc.). The HM "Lacing & Tightening" technology, which was developed in 1970, has proved to be the most flexible process for wheelbuilding.

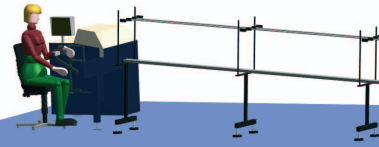


World of Wheelbuilding



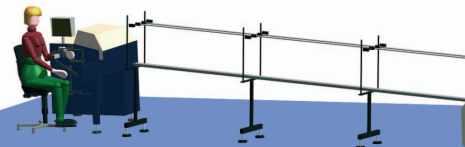
First Stage: Start up / Low volume

Introduction: Lacing and Tightening Machine: type ISL and Hand trueing jig: type SMT/Villum
Line: 1x ISL → 1x SMT/Villum
Efficiency: Lacing & Tightening process: 60 - 70 seconds
Quality: Optional Nipple Washer Feature for customized QLet fitting



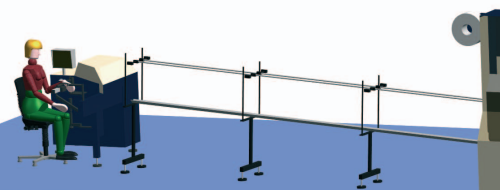
Second Stage: Increase of Productivity

Introduction: Automatic trueing robot: SG/DTI/DC
Line: 1x ISL → 1x SG / DTI / DC
Efficiency: Up to 350 wheels per 8 hour shift
Quality: Constant quality output



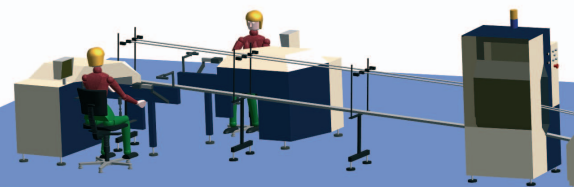
Third Stage: Production Flow inclusive efficient Tyre Mounting

Introduction: Flexible Semi-automatic tyre fitting machine: type TMC
Line: 1x ISL → 1x SG / DTI / DC → TMC
Efficiency: Operator TMC can supervise trueing process
Quality: TMC's 4 point rim clamping secures trueing tolerances



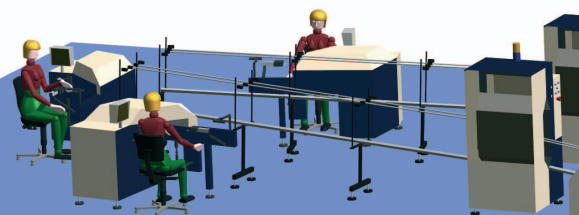
Fourth Stage: Optimum Efficiency and Wheel Handling

Introduction: Automatic rim tape supply: type HT & QTape
Line: 1x ISL → 1x HT → 1x SG/DTI/DC → 1x TMC
Efficiency: 2 reels up to 5000 wheels on various wheel sizes, time savings during tyre fitting
Quality: Optional stabilizing and self-adhesive rim tape always in center



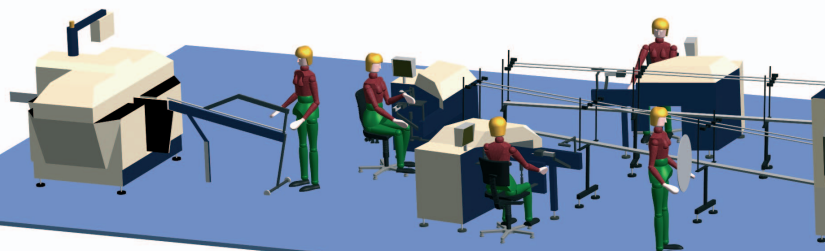
Fifth Stage: Production Growth and increased Wheel Quality

Introduction: Automatic nipple locking: Type HL & Q-lock
Line: 2x ISL → 1x HL → 1x SG/DTI/DC → 1x HT → 1x TMC
Efficiency: Second ISL increases production up to 650 wheels per 8 hour shift
Quality: During the stabilizing process every nipple is automatically locked for extra quality and wheel-safety



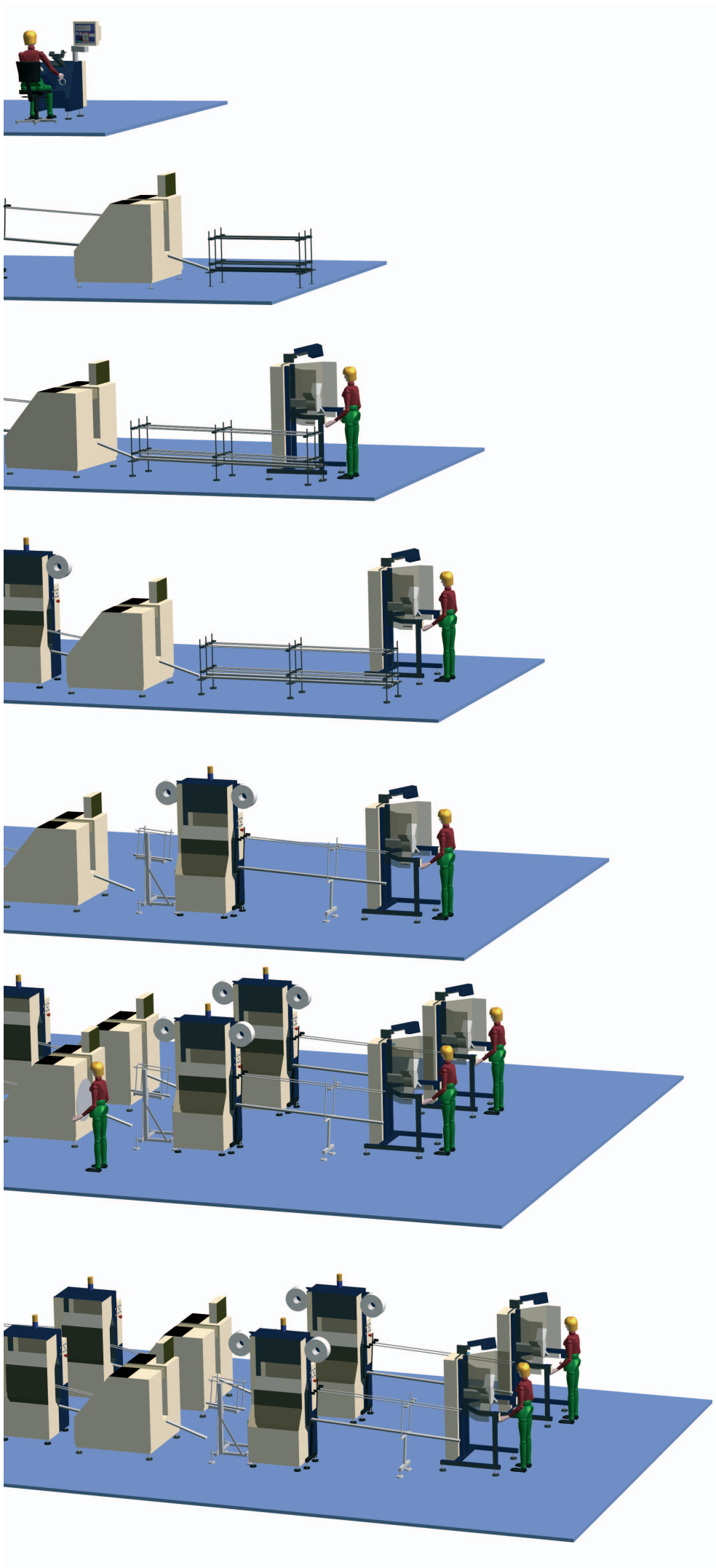
Sixth Stage: Production Growth

Line: 3x ISL → 2x HL → 2x SG/DTI/DC → 2x HT → 2x TMC
Efficiency: Optimisation of lacing & tightening machines and trueing robots, output up to 1000 wheels per 8 hour shift



Seventh Stage: Most optimal Wheelbuilding Line

Introduction: Automatic Hubfilling: NA-A/NA-B
Line: 1x NA-A/NA-B → 3x ISL → 2x HL → 2x SG/DTI/DC → 2x HT → 2x TMC
Efficiency: Hub filling +/- 30 seconds per hub, most efficient line 5/6 operators up to 1000 wheels per 8 hour shift (inclusive hubfilling)



Cost Savings versus Quality

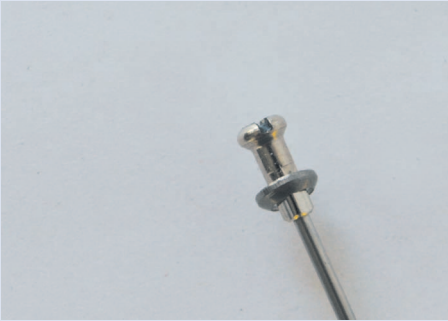
Companies always have to choose to reduce costs or to improve quality. Holland Mechanics, as an innovative company and a supplier to many worldwide wheeljobbers, rim making- and bicycle factories, has the obligation to introduce products which can do both “add quality and save costs”. Cost savings are reached because of automation, efficiency and sometimes component cost savings. The quality improvements are reached because we add high quality wheel components to the wheel.

QLets This tiny little nipple washer is a kind of layer between the rim and the nipple which reduces the friction of the nipple-contact on the rim. This reduction of friction results in an optimal “torque tension relation” for an automatic truing robot and the touch of a professional hand truer. Therefore wheels build with QLets have automatically a higher spoke tension and a better tension spread. The QLets also protect the nipple and rim from corrosion, it improves the nipple seating and it will reinforce the rim bed because the load will be spread over a larger area. QLets have all the advantages of eyeleted rims but you can use smaller nipple holes which will make the QLetted rim stronger. Also the automatic fitting of the washer during the lacing & tightening process makes it an efficient process. There is no time wasted during lacing and the QLets can be fitted on all kind of wheels, even on customer order.

QLock The QLock thread locking compound prevents nipples from loosening. With today’s special wheels and extreme wheel designs more and more customers have to lock their nipples. Also normal 36 spoked wheels from quality bicycle manufacturers are going to improve their wheels by adding special locking nipples, QLock or other methods to prevent nipples from loosening. Because of this trend in quality and special wheel design Holland Mechanics has developed the QLock Application System which automatically gives a drop of QLock on the nipple of an assembled wheel. The QLock Application System can also be equipped with optional Stabilizing Units which again improve the quality of the wheel. Full efficiency is reached because the QLock Application System stands inline between the Lacing & Tightening machine and the Truing Robot or after the Robot on customers request.

QTape QTape is an ultra light self-adhesive rim-tape. This rim tape is different than traditional rim tape because it is supplied on reels of 4 to 7 km which can do up to 5000 wheels. The QTape Application System (with optional stabilizing units) will automatically fit the rim tape on the wheel and stands inline between Lacing & Tightening machine and the Truing Robot or after the Truing Robot. Because of the automatic tape fitting and the strong and thin material, tyre fitting will be faster and easier especially with tight wheel/tyre combinations. Check how many different sizes of rim tapes you have on stock, than you know the added value of a 7 km reel which cuts the rim tape automatically at the right length!

Between nipple and rim: QLet



In the theoretical ideal wheel, the nipples are a perfect fit on the spoke ends, and the nipple head leans on the border of a perfectly-shaped hole in the rim, all spokes, all nipples and all spoke holes are identical.

Truing this theoretical wheel is just a matter of adjusting the spoke tension, friction between parts being no issue as it is identical all round the wheel.

Rim makers do their best to make smooth rim beds with smooth spoke holes. Spoke makers do their best to make well-matching spokes and nipples, and make the nipples smooth on the flange of the head that will be in contact with the rim, and a snug fit for the nipple spanner, hand held or mechanical.

The practice is different. The materials of the rim and the nipple are greatly different: the rim is in a specific aluminium alloy, and the spoke nipple is in brass or alloy. A groove to match the screwdriver is fraised in the nipple head. Sometimes, the grooves' sides are too sharp, and when truing the wheel, the spoke head, slightly offset, 'digs' into the softer alloy or carbon rim. The threading between spoke and nipple may be greased for a smoother fit, but often it is not. Friction resistance between the constituent parts of the wheel will interfere with the spoke tensions per spoke, and influence the forces that have to be applied by the truer (hand or machine) to get the wheel within the required tolerances.

As an even tension buildup is very important for the technical lifetime of the wheel, it is important to elim-

inate friction between its components. For the friction between spoke and nipple, there is basically only one solution: precise machining by the spoke maker. The spoke manufacturer is nearly always the same as the nipple manufacturer, so it is his technology and quality standard to make these parts fit, to indicate the maximum tension and torque. Manufacturers of quality spokes are aware of the imperative character of an absolutely consistent product, and all conform to ISO standards.

For the elimination of friction between rim and nipple head there is more than one possible solution. First of all: nipple head and rim hole should have a proper fit. For steep spoke angles, the spoke hole should best be dimpled, with a matching semi-circular nipple head. Of course, a dimpled rim is more expensive than a straight one. For high-tension wheels (racing, for instance), single or double wall rims with eyelets (steel or nicked brass) in the spoke hole give additional support to the nipple head, and as the material of the eyelet is harder than the rim material itself, the risk of 'digging in' is practically nil. A third method is the application of a washer between the nipple head and the rim wall. Holland Mechanics have taken up this old idea and developed it in accordance with today's technology. Calling it the QLet, HM made the washer as small as possible, with the right angle and wall thickness and matching the profile of the nipple head on the inside. QLets may be just the right solution for your specific wheelbuilding problems. Ask us.

Granville is a relatively young Belgian bicycle brand. Its 350 dealers sell around 30,000 Granville bicycles per year, often on custom order, to be built and delivered within 10 days, painting included. Their catalogue contains several dozens of models with a great variety in wheels.

Granville's wheelbuilder is Jefke. Jefke operates the newest Intelligent Lacing & Tightening machine with Nipple Washer Feature, and he keeps an eye on the all-automatic stabilizer with integrated rim tape application and the most advanced TouchScreen truing robot down his wheelbuilding line. On his own, Jefke laces up to 300 wheels per day with or without QLets, and has the survey over all following steps. Often there is time left, and Jefke may help fit the tyres, or work on the assembly line. Think of that: the complete wheel shop for 60,000 wheels operated by one hand! Granville owner Johan Huygens is proud of his investment in a HM wheelbuilding line: "It is quite an investment in those three machines, but seeing what it can do in terms of various wheels in an ever-changing sequence, and never missing a beat, I am very satisfied to have taken that decision. Of course, Jefke is a golden guy for the job: he can 'pull his own plan,' as we say in Belgium, which means that he can handle anything that comes his way by himself. My wheelshop never causes me worry; it just performs in a most natural way."

Europe: Productivity

Most actual economic topic today in most European member states is the productivity per capita. There are many examples where the trend towards less working hours per week is bent towards longer work, for the same wages. In most countries, retirement age is also rising. In Germany, the powerful Siemens technology firm got the IG Metall union on its knees demanding 40 instead of 36 hours per week, threatening the union to move 2000 jobs to Hungary. Daimler Benz followed suit. In the Netherlands, a similar measure by an office supplies company was turned down in court. But politicians support the employer's strategy in mild terms. To protect prosperity and the social system, the productivity must get better. One of the ways to raise productivity is to work longer. This credo will have its grip on European labour for the seven years to come.

Efficiency measures are another way to reach this goal. One of the latest main module in wheelbuilding technology Holland Mechanics has developed is the Hub Filler. It is right in time; many bicycle assemblers in Europe are buying hub filling machines. The advantages are obvious: the productivity is high, it is faultless, and there is never a delay due to illness or other indispositions.

Even in the new bicycle assembling countries in the Far East and eastern European countries that are not yet in the EU, the hub filler is an estimated tool in wheelbuilding.

2004 / 2005 International Show Calendar

date	event	location	HM appearance	booth number
2 Sep. until 5 Sep.	Eurobike	Friedrichshafen, Germany	✓	A5-109
11 Sep. until 15 Sep.	Australia Bicycle Show	Sydney, Australia		
12 Sep.	Expo Cycle Outdoor Demo Day	Toronto, Canada		
12 Sep. until 14 Sep.	ExpoCycle – Canada's Bike Trade Show	Toronto, Canada		
15 Sep. until 19 Sep.	Intermot	Munich, Germany		
16 Sep. until 19 Sep.	IFMA	Cologne, Germany	✓	U10/T11
17 Sep. until 20 Sep.	Eicma Bici	Milan, Italy	✓	Hall 04 / To4
6 Oct. until 8 Oct.	Interbike	Las Vegas, USA	✓	Stand 618
19 Nov. until 21 Nov.	Japan International Cycle Show	Tokyo, Japan		
24 Nov. until 26 Nov.	Guangzhou International Bicycle Exhibition	Guangzhou, China		
4 Dec. until 12 Dec.	Bologna Motor Show	Bologna, Italy		
14 Jan. until 23 Jan.	Motorcycle & Car Show	Brussels, Belgium		
6 Feb. until 9 Feb.	ISPO Winter	Munich, Germany		
12 Feb. until 13 Feb.	Bike.Market.Future Congress	Bremen, Germany		
4 Mar. until 7 Mar.	Taipei Cycle Show	Taipei, Taiwan	✓	to be appointed
14 Mar. until 17 Mar.	ISPO China	Shanghai, China		
15 Apr. until 18 Apr.	Taipei International Sporting Goods Show	Taipei, Taiwan		
4 May until 7 May	China Cycle Show	Shanghai, China	✓	to be appointed
13 May until 16 May	Auto & Motor, Parts & Accessories AMPA	Taipei, Taiwan		
3 Jul. until 5 Jul.	ISPO Summer	Munich, Germany		