

Wheels 2002 / 2003



Bicycles are a mass product, and mechanization of the production process is imperative. Not only to save labour cost, but, even more important, to guarantee the consistency of the product. Consistency is even the basis of the leading ISO certifications for manufacturers.

No wonder that hundreds of bicycle and light motor-cycle assemblers all over the world have already chosen for Holland Mechanics wheelbuilding equipment to build their wheels.

Holland Mechanics offers a complete range of wheelbuilding machinery, with hub fillers, lacers, stabilizers, a rim tape application machine, truing machines and tyre fitting equipment.

But what makes the Holland Mechanics approach so special is the versatility of the system. The wheelbuilding line can handle hubs with uneven diameter flanges, it easily switches from front wheels to rear wheels, it would automatically process all wheelsizes from 12,5" to 29", and true each wheel to the required tensions and preset tolerances.

Custom products

Today's customer in the world's leading markets wants a bike with an identity. He (or she) wants the right frame size in men's or women's specific design. He wants to choose his own saddle, options like a triple crank, and custom-made wheels with the hubs and the rims of his choice instead of the standard wheelset specified with the standard bike.

At the same time, specialist wheelbuilders are taking over the wheelbuilding task from the bike assembler. The specialist will build a series of 1300 identical wheelsets as easily as 100 one-off sets, 100 series of 12 sets, 100 sets with different diameter front and rear wheels, etc.

Holland Mechanics' hardware and software is built for flexibility and variety. That's why small series wheelbuilders and big bike assemblers like to choose Holland Mechanics as a partner for their wheelshop.

29" wheels

A new wheel size in today's bike fashion is the so-called 29" mountainbike wheel. The advantage over the standard 26" wheel is that it takes bumps and track irregularities easier, and rolls lighter. Theoretically, it would accelerate slightly slower, but this is in the order of less than 1%. The 29" wheel is advantageous for taller riders.

But it has got a price tag: it needs a different front fork with more space, the frame layout will be different, and larger in general (with a shorter stem). With similar crank length and shoe size, the rider must be placed backwards not to touch the front wheel. It will make the bike bigger, and the steering head shorter (which puts greater strain on the bearings, etc.).



The bike in the picture is a Gary Fisher/Paul Smith Special (Paul is a contemporary London mens' fashion king), it has Paul Smith graphics and Gary Fisher 29" wheels. Paul and Gary both rode one in a British charity ride.

From the editor

Any questions about issues in this magazine? Please send these to the HM Today editing team: Anecdotes on wheelbuilding in broadest context – historical, incidental, or in any sense instructive – will be rewarded when published in this magazine. Send your contributions to:

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China



Chinese bicycle manufacturers are well aware of the assets of mechanical wheelbuilding. Not the fact that the amount of manual labour required to build a wheel is what fascinates them, but the consistency of the product. That's why more and more Chinese manufacturers want to change to mechanical wheelbuilding. The very fact that mechanical truing improves consistency, is a clear asset for any factory that wants to attain ISO certification.

For Holland Mechanics, wheelbuilding is more than selling a couple of machines. For its customers, Holland Mechanics is always searching for new solutions, always ready to solve the odd problem, and the customer feedback is an important element in today's service and tomorrow's new developments. That's why Holland Mechanics always want to have tight relations with their customers.

Holland Mechanics have auto-translation programmes (Chinese, and a dozen of other languages as well) on all their monitored machinery. They have native Chinese speaking people for sales and service.

Now Holland Mechanics is building a factory in China, and is training staff for HM China Manufacturing. In a ceremony with the local authorities, HM commercial director Maarten van Doornik has symbolically dug the first shovel for the location of the new factory. It is located in the city of Yangzhou (1.09 million citizens) in Jiangsu province (for those who don't know the Chinese topography: Yangzhou lies on the Yangtze river, not far from the Yellow Sea).

HM will start transferring knocked-down machinery from Holland to Yangzhou, but in due time most of the hardware will be sourced in China, and machines will be built in the heart of the biggest bicycle country of the world.

1 Hub filling machines

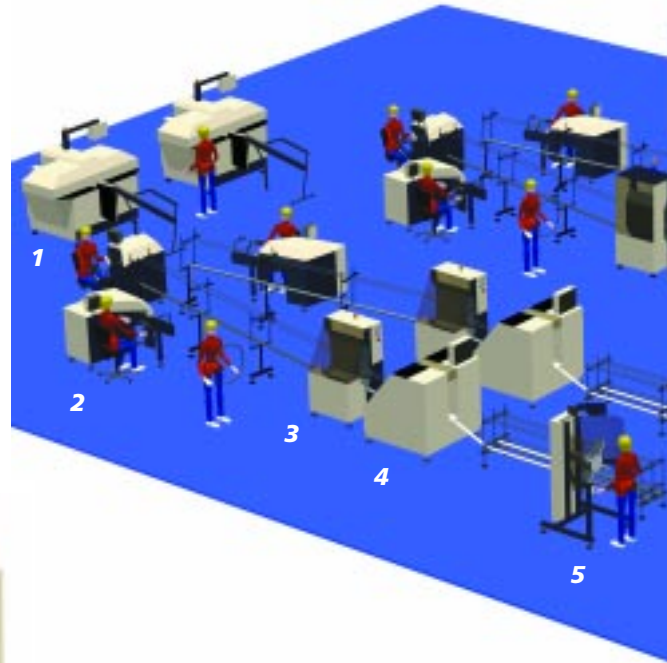
HFS Hub fillers come in two versions: the A-type (most versatile standard machine) and the B-type for hubs with an extremely wide border between the spoke hole and the flange outer diameter. This type of hub requires a special provision to let the spoke make the angle between insertion and passing the opposite flange.

Binding machine

Holland Mechanics has a neat little machine which tapes the spokes which are inserted in the hubs into two bundles for easy transport. Like the HM hub trolleys, they are helpful intermediates.



HFS Hub filler



2 Lacing & tightening machines

Holland Mechanics have a choice of four lacing machines, with increasing possibilities and versatility.

All machines work on the same principle: the operator implements the spoke pattern by directing each individual spoke towards the proper spoke hole in the rim. The machine feeds the nipple and screws it onto the spoke. Building a wheel means guiding 36, 32 or less spokes towards their proper place on the rim circumference. As an average, this operation takes about 1 minute. Even our most sophisticated lacer works on this spoke-by-spoke principle.

Basic Lacer

This basic machine is well-suited for huge series of uniform front and rear wheels with other-than-exotic rims.

SL Lacer

The SL Single Lacer is equipped with scanning technology: it scans every new rim put on the machine, and can lace it from memory, which makes it a very efficient tool to lace batches of different wheels (different wheel sizes). It can, for instance, process offset spoke bed rims.

SL Cam

SL Cam is a SL Lacer modified with a camera instead of a sensor, which is a more advanced scanning technology.

ISL PST

The ISL Paired Spoke Technology Lacer is the ultimate in lacing such specials as paired spoke technology wheels, wheelchair wheels, wheels with deep V rims both automatically scanned and adjustable.

CN-Inline Lacer

The CN Inline Lacer has a very versatile nipple application unit, which makes the machine suitable for big hubs in small-diameter rims, like electric hub motors, 12 1/2 inch wheels or light motorcycle wheels. In these wheels, the spokes make narrow angles with the rim bed. Of course, the machine has all the assets of the other single and intelligent lacers, and will store every type of wheel made in its memory for future use.



HL Locking compound applicator



HL Locking compound applicator

3 Quality applying systems

HB Stabilizer

A number of treatments can be performed between lacing and truing. Wheels with 3 or 4 crossover spoke patterns can best be stabilized to take out any room at the hub spoke hook side, and make spokes 'set' before they will be trued. On each side of the wheel, a number of spokes at a time will be compressed sideways and released during this treatment in the HB Stabilizer.

QLock applicator

The stabilizing machine can be combined with a HL Applicator of QLock locking compound at the nipples. Each nipple tends to unscrew when the tension is released even for a very short period. That means that when an ordinary bike wheel hits an unexpected bump (riding up and off sidewalk height differences) the rim pushes in and springs back within a fraction of a second. This will ultimately lead to uneven spoke tension, which shortens wheel life. Where locking devices in nipples were originally meant for high-end, high-tension wheels, Holland Mechanics have developed a module to apply liquid locking agent 'from the cask' for all types of wheels: the kind of hybrid and city bikes which are supposed to give years of troublefree daily use. For these bikes, wheel life is all-important. With QLock locking compound, wheel life can be enhanced in a cheap way and in huge series.

HT Qtape applicator: Rimtaper

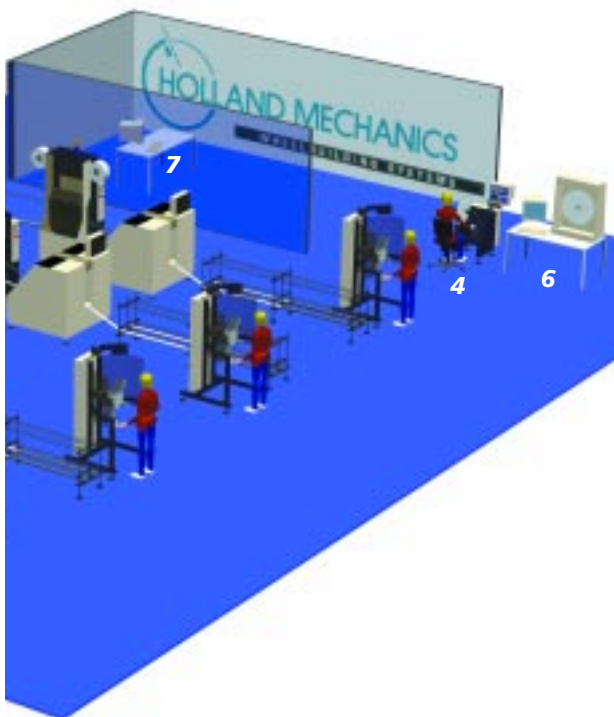
The stabilizing machine can be optionalized with a QTape® application unit, which applies the rim tape before truing (see separate paragraph).



HT Qtape applicator



ISL PST / SL Cam



SMT

4 Trueing machines

For trueing, Holland Mechanics has developed three different Trueing Robots (DC, DT and SG) and two Hand-Trueing devices (Villum and SMT).

The **Robot DC** is the standard trueing machine from Holland Mechanics. The DC is specially developed for the trueing of big series of wheels. The change over from one wheeltype to another wheeltype is done by hand within 3 - 5 minutes. The DC can easily true tightened wheels, new optional software makes it possible to true loose wheels.

The **DT** changes over automatically by selecting a wheel in the wheel database. The DTI will sense the right wheel diameter from 12,5 to the biggest commercially available (27" x 1 1/4, all 28" and 29") for both bicycles and light motorcycles.

The **SG Touch Screen** is a fully automated trueing machine which will true wheels from 16" to the biggest, and which can true single-handed (with paired spoke technology). It can handle flat spokes with an extra tool that grips the spoke just above the nipple and locks it so that it cannot rotate. There won't be torsion on the spoke.

Special grippers for black spokes prevent the spoke from having its black coating scratched.

Small nipple hands are optional for wheels with a minimum spoke distance of 1" (25,4 mm). The SG is the most versatile trueing machine by Holland Mechanics. Of course, it stores all data of wheels once trued in its memory for later use.

A special optional on the SG Trueing machine is the Tensiomatic® programme which measures each individual spoke tension after trueing. The spoke tension diagram is shown on the operator's screen as a graphic, which immediately shows if the tension of any spoke exceeds the upper and lower tension limits (which are presettable).

In this way, the makers of high-end wheels can formulate a spoke tension band which is checked for each individual wheel, and can be redressed by another trueing round. As such, the Tensiomatic is an integral part of the trueing process when the differences in spoke tension are a quality parameter.

Hand Trueing Devices

The Smart Truer (SMT) and the Villum are the two hand trueing devices from Holland Mechanics. These devices are used by many high-end wheelbuilders and large bicycle manufacturers to check and/or add the final touch. It can also be used in combination with a HM lacing &

tightening machine as the first step in automation. The SMT can true high end wheels within 0.05 mm height and side deviation and wheels where the machine cannot reach the nipples, for instance the inverted-type spoking with spoke heads in rims and nipples in the hub. It is also possible to make a printout of the wheel information and trueing parameters. This certificate can be shipped with the finished wheel.



SG Touch Screen

5 TMC Tyre Fitter

The TMC tyre fitter is built on flexibility, quality and ergonomics. Whether it is used to apply the rim tape or not (rim tape can be applied automatically), the fitting of rim, tyre and inner tube are arranged in such a way, that they don't require unnatural movements of the operator, and they discharge the upper and lower spine optimally. The nearly-vertical position of the wheel during tyre fitting has proven to be much less tiring than the formerly usual horizontal position. The most important advantage of the Holland Mechanics tyre fitting machine is that the TMC is clamping the rim on four points. This way the hub is free and the wheel will stay within the side and height deviations which were set in the trueing robot.

Holland Mechanics TMC2		Floorview RobotView	
Current information: Truing machine 3: 2008-08-08 10:11:00			20.7400 11.05 00
Order count	19451		
Required wheels	1478		
Production	435 8 10 12 13		
Idle time	23 8 00:00		
Average time	1:07		
Only trued		9.4	10.0000 10.0000
Data Load 10' news			
Parameter	Unit	Value	Process time 10 min
Data Load 10' news			
Detailed Machine Truing After Truing			
Height	8.20 mm	8.05 mm	
Left	8.40 mm	8.30 mm	
Right	8.40 mm	8.05 mm	

7 Floorview

Master your entire wheelassembly process by HM Floorview. Since there are more computers used in the HM wheelbuilding machines there is also a lot of information stored in these machines. We have made it possible to connect all the wheelbuilding machines and export the information to your desktop. Now you can manage your wheelshop from behind your desk or even outside your office through the internet. This way you have an overall view of the wheelshop and you can 'real time' see when and where a problem occurs. It is also possible to optimise your wheelshop and see where there is a bottleneck. Information on daily production per wheeltype, monthly production, total process time, average lacing times, lacing times per employee, trueing parameters, trueing times, etc is now 'real time' available.

6 Tensiomatic

Tensiomatic is our fully automatic spoke tension measuring equipment. To measure the tension of a spoke, there are hand tools like the instruments made by Hozan. The tool is perfectly suited to measure spoke tension in a bicycle wheel and as such it is used by race mechanics and wheelbuilding analysts. But the hand tool is time-consuming and not accurate. The Tensiomatic measures with a three point measurement both sides of the spoke. This way you can also calculate the bending of the spoke which is impossible to measure with the hand tools. Besides the accuracy the traditional spoke tension analyzers are also time consuming. One has to measure 32 spokes, take down the values measured and perform the analysis. Our Holland Mechanics Tensiomatic enables every serious bicycle manufacturer to do a more frequent check in a more efficient way. Companies who use this system are able to print out a certificate with the accurate wheelspecification and spoke tensions.



Tensiomatic

QLock locking compound for spoke nipples

Locking devices and compounds for spoke nipples have been introduced for high-end bicycles, where cost price is not too important, and locked nipples can be mentioned as a sales asset.

QLock applied during the stabilizing procedure when building a wheel is cheaper than special nipples with locking devices, of locking agent re-applied by the nipple manufacturer. A liter of locking compound is sufficient for approximately 100,000 nipples, or 1325 bicycles with 36 spokes in each wheel.

Locking compound hardens when it forms an airless seal between two metals. It ionizes the metal surface, and the metal ions cause the polymerization of the compound. So the compound should only be in contact with the metal of the treaded parts to be locked. The machine dispenser and the feeding needle are in plastic. The needle opening may sometimes clog by the metal ions the compound has taken up when in touch with the spoke and/or the nipple. The dispenser has a 1000-wheel storage, and will warn an hour in advance of running out.

Locking the nipple in this easy way is a most attractive proposition for all types of bicycles that are supposed to render years and years of daily commuting services without regular check of the wheelset. Making wheels more impact-resistant, it makes sense to lock the nipples with QLock.

Qtape® by Holland Mechanics



Qtape® is a revolutionary new rim tape. In itself an adhesive tape instead of an elastic closed circle is not new. But the way Qtape is applied gives this ultralight and strong polypropylene adhesive rim tape its assets over the traditional rubber or woven tape. Qtape is fitted by a machine developed by Holland Mechanics.

The automatized application of the tape not only saves labour, it is also faster than by hand. The machine applies Qtape before the wheel is trued, and it increases the capacity of the wheelbuilding line to up to 10%, depending on the type of truing machine. And the tape from the coil is cheaper than traditional rim tapes.

Cost is one aspect. But the enhanced quality of the finished wheel is probably just as important. The adhesive Qtape will stay in place, even in the long run and when a tyre is lifted off the wheel for repair or replacement. Qtape gives efficient protection to the tube, because the chance of damage to a tube on any irregularities in the rim bed is less. This makes the Qtape a particularly smart proposition for medium and low-end bicycles, where the main issue is reliability of the bike in daily use. Qtape is independent of the valve diameter, and will give a close fit for both Schraeder, Presta and car-type valves.

Like all Holland Mechanics machinery, the new machine is very versatile and reliable. It can come in the wheelbuilding process in combination with the stabilizer (between lacer and truing machine). It will handle 20"-28" wheels in any sequence (16" optional), and perform flawlessly. Double coils of Qtape can tape about 10,000 wheels, which is a stock of more than 50 hours.

Wheels® Laufräder by Roland

Roland Werke is a German company specializing in wheelbuilding, with a nominal capacity of 800,000 wheels a year. The company works as a supplier for bicycle assemblers, wholesalers and bicycle dealers who offer their customers the service of real custom-made wheels. The customer can choose, for instance, Suntour hubs with a Mavic rim and black DT Aero spokes. Or Campa with a Vuelta rim and Sapim spokes,

International Show Calendar

* and the shows where Holland Mechanics will be on exhibit.

2002

13-15 september	IFMACologne, Germany *
18-22 september	Intermot Munich, Germany
20-23 september	EICMA Bici Milan, Italy *
26-29 september	Int'l Cycle Show, London, UK
5 october	Interbike, Outdoor Demo, Las Vegas, USA
6-8 october	Interbike, Expo, Las Vegas, USA *
9-14 october	Roc Azur, Fréjus, France
22-24 november	Japan Int'l Cycle Show Tokyo, Japan
6-15 december	Bologna Motor Show, Bologna, Italy

2003

18-26 january	Brussels Motor Show, Brussels, Belgium
1-4 february	ISPO Winter, Munich, Germany
19-24 february	2-RAD, Zurich, Switzerland
19-23 february	International Motorcycle Show Barcelona, Spain
24-26 march	5th Cycle & Motorcycle CYMO, New Delhi, India
29 march-1 april	Taipei Int'l Cycle Show, Taipei, Taiwan *
6-9 may	China Cycle Show, Shanghai, China *
23-26 may	Auto & Motor, Parts and Accessories, Taipei, Taiwan
2-5 august	ISPO Summer, Munich, Germany
28-31 august	Eurobike, Friedrichshafen, Germany *



Big market demand for new Rimtaper, machines are build up in series of 6.

Qtape and French Valves

Qtape is adhesive tape that is laid by a machine, right in the middle of the rim bed and with a punched hole for the valve. With traditional rim tape and a narrow rim, bike manufacturers often opted for the french valve (which has a thinner stem and a smaller valve hole in the rim, because otherwise an elastic rim tape wouldn't be strong enough near the valve hole. Taking the tyre off (to mend a puncture), cyclists often discovered that the rim tape was broken on one or both sides of the valve hole, even with the thin, French valve. French valves aren't very popular on markets where you get both the Schrader, the French type and the car type valve. For French valves, one either needs a good mini pump or an adaptor.



SRAM wilt an Alex rim, etc. The trick is, that Roland uses Holland Mechanics intelligent lacers and truing machines which can build any given wheel from memory.

Operators and Technicians certified by HM



Holland Mechanics will learn the technician and/or operator of a machine how to start it, use it, solve minor problems, and specify new wheelparts the machine has to process. Operators get an Instruction Certificate when they master the machine. (The Instruction Certificate is without liability). Instruction can be done at the customers' place (for instance, after installation of a new machine) or at HM headquarters in Purmerend, Holland. Instructions generally take several days to get acquainted with the machine. Holland Mechanics can arrange housing and boarding.

Double Trail

The Holland Mechanics Floorplan for the wheelbuilding shop can be used free of charge, please contact one of our sales manager on sales@hollandmechanics.com for your free download. The FloorView software calculates the most economical machine layout for a given workshop room, or designs the ideal floorplan for a new workshop. A new module in the HM Floorplan is the application of a double trail between the lacers and the stabilizers and truing machines, which increases the buffer capacity between the units of a wheel assembly line. This double trail can be a useful and simple addition which enhances the mutual logistics between the machines.

Hand Analyzer

Checking the spoke tension on wheels can also be done with the hand spoke tension meter. This electro-mechanical instrument can be coupled to a computer, that will store all values measured in a database with the usual possibilities like graphs, diagrams, etc. The hardware suggested by Holland Mechanics is by Mitutoyo.