

CUSTOMER SUCCESS STORIES IN CRITICAL TIMES

Robot OT at Trek USA



“We at Trek have been using Holland Mechanics equipment to build wheels for almost 30 years and I have been personally involved with Trek wheel production for almost as long, so I can say that I know this Dutch company pretty well. In my early days at Trek, wheel design was not much of an issue. But anyone following the development of the bicycle over the last 10 years has seen incredible progress in wheel design, component design and materials technology. I know Trek is constantly working to produce the best performing wheels, while at the same time maintaining a tight control over costs and production standards. Trek has relied on Holland Mechanics to support our program by supplying wheel manufacturing technology that is versatile, reliable and can consistently deliver the required specifications.”

Jeff Bogstad, Manufacturing Engineering at Trek Bicycle:

“The OT addresses challenges to our production demands”

Currently Trek Corp. is building its Bontrager-branded wheels on three continents, almost exclusively with Holland Mechanics equipment.

“Due to some wheels’ design and component limitations we do assemble and true the top level Bontrager wheels by hand,” says Bogstad. “Except for more precise gauging, the hand built wheel process was little changed for decades. Last year Holland Mechanics announced development of a new truing machine, Robot OT Automatic Wheel Truing Machine or ‘Outside Truer’ (OT), with greatly enhanced capabilities over previous generations of equipment.”

“They told me that even the wheels that heretofore could be assembled by a hand build processes only, could be precisely tensioned and trued automatically by this new machine. I was sceptical but still interested enough to accept a demonstration with Bontrager wheel components. However, we were impressed by the thinking and technology utilized by the OT (in the demonstration). So much so that we have invested in this technology and are now using these machines to support the production of some of our top-level wheels. The OT addresses challenges to our production demands; flexibility, exacting process controls and reliability. We

can program hundreds of different wheels into the machine’s database and from then on it recognizes each different type of wheel and adjusts itself. The machine has a step-by-step operator

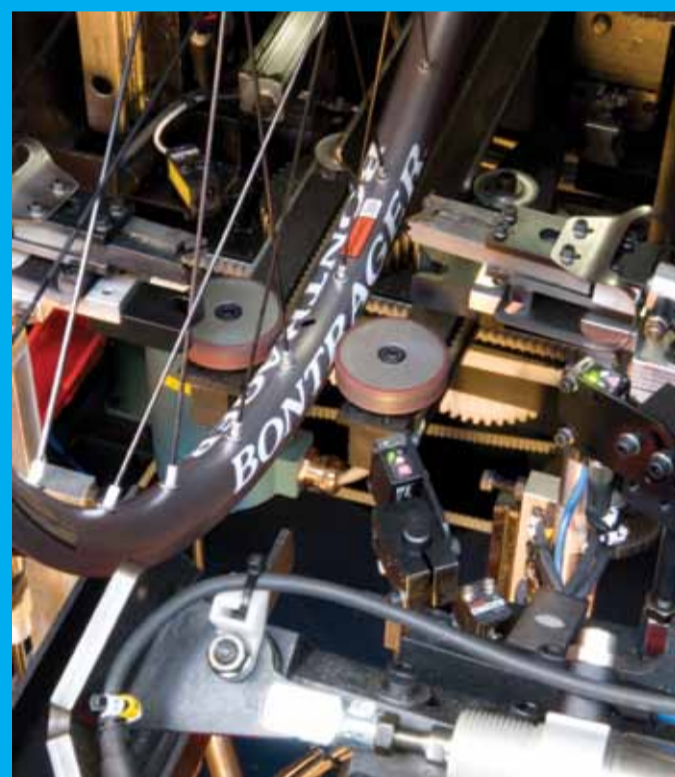
programming function, which allows us to set different sequences of measuring, tensioning, truing for different wheels, i.e.:

- A) Rough true at low tension,
- B) Raise tension for entire wheel,
- C) Precise truing,
- D) Raise tension for entire wheel again and
- E) Final Precision truing, in fact just about any combination of steps we want.”

Bogstad add, “Finally testing has shown that the machine consistently yields a wheel that meets our desired tolerances. There are still some Bontrager wheels that are assembled and trued entirely by hand,

From the editors

In these critical times it is nice to write about positive trends in the bike industry. Companies like Trek and Union are investing in two successful markets: Trek goes for Top-level wheels, whereby part of the handwork is taken over by our machines, and Union invests in our E-bike Line because of the increasing sales of E-Bikes. Even for this year industry experts expect for the E-Bikes an increase of 20 to 50%. As the price of the bikes are increasing, companies are changing over to “built to order” production where flexibility is a must. Interested? Read more in this edition of HM Today.



but now a large portion of our top-level wheels are processed through an OT truer. Every Bontrager wheel, machine or hand-made, is still finished and inspected manually, but the total costs needed to produce these top-level wheels has been reduced substantially with the OT Truer. I feel we have achieved the best possible combination. High-end technology from HM together with our craftsmen means wheels of exceptional performance and durability.”

Union invests in E-Bike line

The E-Bike brings success to Union. Union just invested in one full Holland Mechanics E-Bike Line inclusive quality Stabilizing and Rimtape application. Forecasters think that 1/3 of the bicycles sold will be E-bikes in the future. In the first half of 2009 in the Netherlands the total turnover of sold E-Bikes was the same as the total turnover of sold bicycles.



LACING & TIGHTENING MACHINES

The Lacing & Tightening machine is the most important machine for an efficient wheelbuilding process. The LT machines are first indexing the rim by a CCD camera system. This scanning system is so precise that the screwdriver is always positioned in the middle of the nipple hole. The Tight Lacing machines assemble the hub, rim, spokes and nipples. Holland Mechanics can offer you three types of lacing & tightening machines, SL, ISL and IL, and on all these machine we can offer you the optional QLet System.

1. SL The SL, Single Lacing, machine is available in Sensor and Camera Scanning. The Sensor scanning is less advanced and works good on equally punched rims. The most popular model is the SL-Cam, with the CCD Camera scanning, because every rim can be easily laced on this machine. The change over is done manually. All SL machines have the "Automatic Diameter Correction" and "Automatic Pitch & Offset Correction" which are both essential for the Tight Lacing process.

2. ISL The ISL stands for Intelligent Single Lacer. This is the lacing machine which changes over fully automatically. The ISL comes standard with our superior CCD camera scanning technique. The operator selects a specific wheel from the wheel database and the machine will automatically change over to that wheeltype.

3. IL The IL, Inline Lacer, is specially developed for E-Bike wheels and Inverted Nipples. The Tilt and Turn mechanism positions the screwdriver inline with the spoke/nipple. This so called "Angle Controlled Lacing" gives optimal grip on the nipple.

STABILIZING MACHINES

Wheel Stabilizing is a unique technology which is developed by Holland Mechanics. The Stabilizing units are applying a force on the spokes which results in better nipple seating, stronger spoke necks and more durable wheels. Holland Mechanics can offer you 3 different type of Stabilizing Machines:

1. HB Standard Stabilizing machine.

2. HT Stabilizing machine with integrated Rimtape application.

3. HL Stabilizing machine with integrated Nipple Locking application.



HUBFILLING MACHINES

The Holland Mechanics Hubfilling machines are installed in all sorts of bicycle factories. Especially the last years we see many Small and Medium sized companies investing in the HFS because of labour cost savings. The 4 spoke inserting units fill the hubs fully automatic in about 30 seconds.



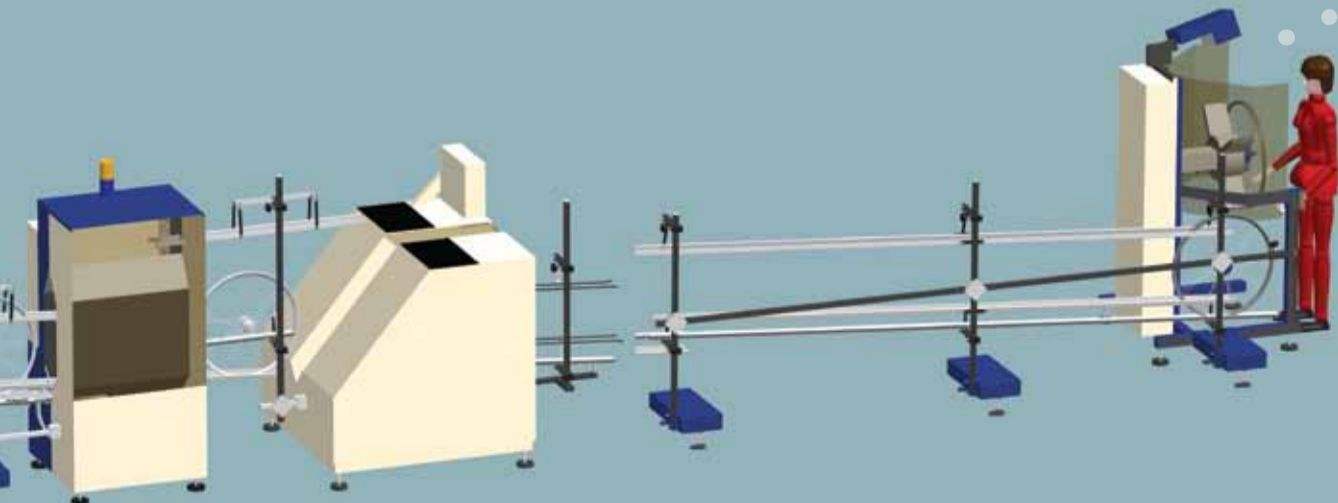
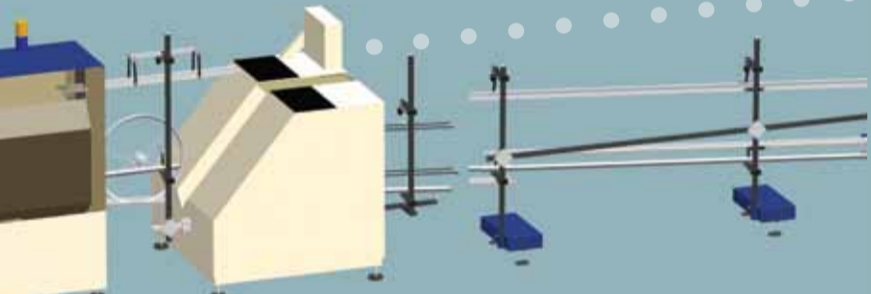
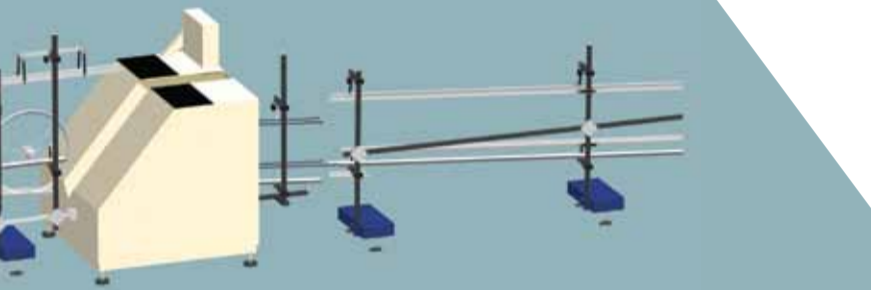
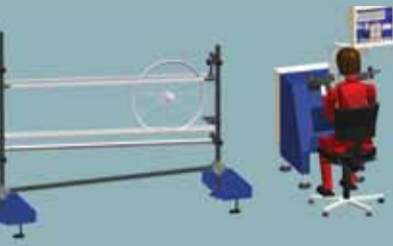
MODULAR LINE

FROM EN

TO FULL
BY HOLLAND

LINE EXTENSION

TRY LEVEL



LL LINE

MECHANICS



HAND TRUEING SOLUTIONS

Holland Mechanics has a lot of experience in wheel truing. For the professional hand builder we can offer two hand truing devices:

- 1. SMT Pro** The SMT Pro is the most advanced hand truing device on the market. The computer screen is showing where the height- and side deviations are and which spoke must be trued. It can also give instruction to the operator how many degrees he should turn the nipple. The Pro version is equipped with Stabilizing units and Auto-Hub-Clamps.
- 2. Villum** This truing jig is used by many professional wheel builders. From small specialist shops to large bicycle factories are all using this jig for truing or quality control. The Villum is unique because of it's simple interface and easy set-up.

TRUEING ROBOTS

The first Automatic Truing Robot was developed by Holland Mechanics in 1977. There are now three types of HM Robots on the market:

- 1. Robot DC** The Robot DC is the high quality Robot which is easily changed over by hand. The Robot has a wheel database where all the truing values of each wheel type are stored.
- 2. Robot SG** The Robot SG has a unique identification system, called Wheel ID, whereby each individual wheel is recognized and will be trued according to it's own truing parameters in the wheel database. The SG will automatically change over from wheel type to wheel type so no operator is needed.
- 3. Robot OT** The OT has the same functionality as the SG but the nipples are trued from the outer side. This 'Scratch Free Truing' process is a big advantage for coloured nipples and the OT can true the newest wheel designs with inverted nipples.



TYRE FITTING MACHINES

The TMC is a workstation where all processes for Tyre Fitting and wheel finishing is done (reflector assembly, valve assembly, automatic tyre inflation). Conventional Tyre Fitting machines do need re-truing after tyre fitting. The HM 4 point clamping system, whereby the hub is floating, protects the wheel from getting side deviations during tyre assembly, so no re-truing needed.



Are you ready for the 'One Piece Flow'?



Difficult economic times have put investments in cost-effective manufacturing methods in the spotlight. Some companies are finding creative ways to distinguish themselves from their competitors. Cutting costs through inventory reductions and lean production with 'smart' assembling machinery is one such example.

The bicycle industry is seeing rapid changes to the product assembly process. One of the leading issues in current assembly optimization is cutting costs – by reducing inventories of components and semi-finished products. Apart from the growing popularity of the build-to-order systems, the bike industry is also looking for ways to limit costs for semi-finished products. Manufacturers are too often confronted with incorrect sub-assemblies due to wrong components or inaccurate planning. These sub-assemblies carry high costs and require a lot of space in warehouses. The problem is often seen among wheel building.

When you manufacture or outsource 10,000 bicycles you have to stock 20,000 rims, 20,000 hubs, 720,000 spokes and 720,000 nipples. Just imagine how much

capital assets these stocks require. Such types of situations are a big reason for 'Just-In-Time' (J.I.T.) production. We have now seen a successful launch of the fully automatic Rimtaper, a smart combination of labour and logistics savings, an initial step in reducing the stock of semi-finished products, i.e. rim tape.

There is now a trend to integrate the wheel building into the overall bike assembly. The pre-assembly, as generally used in the bike industry, takes too much stock, space in the production hall, and makes the production process inflexible. Today's production planning is based on actual sales and less on pre-ordering. This has a major influence on the lining-up of the assembly line and more specifically of the whole process of wheel building. The truing robot is directly connected with the lacing and tightening machinery in order to create an ongoing 'wheel flow'. To fit tightly into the whole bike assembly process we have standardized the time necessary to build a wheel to the second. Of course, the production time varies depending on the type of wheel and components used. However, our truing robots can handle small series or 'One offs' in order to meet our

clients need to make small production series and even 'made to measure' bicycles.

In the high-end market segment a growing number of bicycles are made to order with the specifications adapted to the specific requests of the final customer. This development is accelerated by the online product configuration options such as this example at www.koga-signature.com, where customers can specify a bike to be built up exactly the way they want it. These bicycles can't be made on a traditional assembly line. They are not flexible enough to handle the wide range of parts and components necessary for small series and even unique models.

We have had over thirty-five years of experience in developing and building JIT wheel-building machinery, specifically for the bicycle industry. Our latest WID version recognizes the wheels automatically, while truing is done according to standards set in the database. The size of the production batch is irrelevant. Whether it's one unit or five hundred units, the robot self-adjusts, without any intervention by the operator.

Scratch Free Trueing



The DS Nipple can be trued from the outer side on the Holland Mechanics Robot OT. This way you do not see any scratches on the nipple. With today's multi color wheel design it becomes more important to use these new Holland Mechanics innovations. Next to the Scratch Free Trueing there are other benefits by using DS nipples together with the Robot OT:

- High Torque nipple design
- High Tension Driving System (Robot OT Direct Drive System)

SMT Pro-Truer



The SMT Pro edition is equipped with automatic hubclamps and the Holland Mechanics Stabilizing units. When you turn the wheel you can activate

the stabilizing function by using the foot pedal. Stabilized Wheels have three main wheel quality features:

1. Stress Relieving for longer spoke life
2. Improved Nipple Seating
3. Spoke Neck Strengthening

TCS Spoke



The professional wheelbuilders are convinced of using TCS Spokes for the manufacturing of durable wheels. Therefore the well known spoke and nipple manufacturer Sapim have taken this special spoke into production. TCS stand for Torque Control Spoke which means that the TCS Spoke is torsion stiffer than standard spokes. The square, just

above the thread, prevents the spoke from twisting during the tightening and truing process. Please ask our sales people how our Trueing Robots work with TCS Spokes.

www.usedbicyclerachines.com



For bicycle companies who are looking for second hand manufacturing machines Holland Mechanics has introduced the new website www.usedbicyclerachines.com.

On this website you can find a wide range of machines for the production of bicycles and bicycle components. Please contact us if you have a bicycle manufacturing machine for sale or if you are looking for a certain machine for your production at info@usedbicyclerachines.com.

Pay Per Wheel



The Holland Mechanics Finance Department has introduced a new way of financing your Holland Mechanics machines. The popular Rimtaper can now be installed in your factory on a "Pay Per Wheel" basis. Automatic rimtaping is becoming a standard in mid

and high-end bicycle factories.

HM QTape 1 reel = 1500 m = 750 rimtapes.

Villum



Holland Mechanics has decided to re-introduce the well known Villum Trueing Stand. Many professional wheelbuilders and bicycle factories are still using this perfect trueing stand. If you would like to order the new Villum for your wheelshop please contact us on sales@hollandmechanics.com