

International Newsletter from Holland Mechanics Wheelbuilding Equipment Company BV

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The new Holland Mechanics HFS hub filler as it can be seen in daily use with several companies.

AS ACCURATE AS THE AMAZONIAN INDIAN'S PEASHOOTER

Hub Filling Station

The Holland Mechanics Hub Filling Station (HFS) has been put through its early development stages to such extent that the first batch has been delivered to launching customers. Like all complex movement coordination machinery, the HFS needs time to get bug-proof. The first couple of machines are now in use with the Rotterdam-based Multibedrijven (see: social workforce in The Netherlands) and Larcom Industries, also in the Netherlands. Another company on the outskirts of developments is Kynast, one of the bigger bicycle manufacturers in Germany.

The output of the HFS hub filler is now about 100 hubs (with 36 holes) an hour, and these productivity hours are in fact trouble-free. The input storage for hubs is related to the hub diameter, but counts at least 20 hubs. The output can automatically be loaded upon a "smart wheelbarrow", which can be wheeled towards the wheelbuilding machine, hubs in the right position for immediate use.

The hubs HFS can fill

The machine can cope with most types of hubs and current spokes. Whether a hub can be filled in the HFS can be established with an arithmetic formula (see box), a slide rule and a simple calculator. Hubs that cannot be filled mechanically are for instance hubs with different flange diameters, with spoke holes interconnected in pairs (like the ancient drum brakes) and hubs with a distance between the spoke hole centre and the flange outer diameter of more than 8 mm. Among this last category, notably, we find such current hubs like the Shimano Nexus internal-gear hub, but Holland Mechanics will certainly discuss the specific spoke hole positions of these hubs with Shimano to see whether they can eventually be made to fall within the HFS-range.

Two sizes

Once used, every type of hub will be stored in the HFS memory for future use. Thus, the operator can simply choose a known type from the machine's memory, which can carry a maximum of 256 different types of

hubs. A new hub's measures will have to be taken only once, and the hub will be defined by just two different parameters: the distance over the axle nuts, and the distance between the funnel which delivers the spoke and the hub flange should be adjusted first time by hand. The machine itself will take care of measuring the exact spoke hole diameter, the flange distance and the diameter of the spoke hole circle.

The spokes HFS can insert

HFS can cope with all spoke lengths suited for wheel sizes from 16" upward, with the exception of butted spokes and aero spokes. It is even possible to have the hubs filled to a certain pattern, for instance 3 out of 4 (and the last one for manual insertion during the wheelbuilding process). Furthermore, the HFS is built for ease of operation: the operator has just to see that the four spoke boxes have a sufficient supply of their respective spokes and that the hub storage has enough hubs. Giving the right instructions is a fool-proof routine, and then: GO!

Chinese delegation visits Holland Mechanics



A Chinese delegation of Mr. Zuo and Mr. Wang Zhong visited Holland Mechanics. Mr. Zuo's enterprise are manufacturing light motorcycles. Even in the country of the lowest labor cost the investment in mechanizing the wheelbuilding process can be profitable, in terms of higher output and more consistent quality of the product. Left to right: Mr. Jos van Velzen, sales manager with Holland Mechanics, Mr. Zuo Zong Shen, Mr. Jos van Doornik, president of Holland Mechanics and Mr. Wang Zhong, HM's China sales representative.

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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TAKE A FEW DAYS EXTRA: LOTS OF LEISURE

Holland: bicycling country

Visitors of Holland Mechanics can seize the opportunity to see Holland by bicycle - combining business with a couple of days sightseeing in the real Dutch way: by bike. We'd love to arrange your visit, tailored to size, starting with a rented bike to your personal size and wishes, and everything from maps to luggage transportation, hotels and rainwear. Make your visit unforgettable in this super-cycling country with the world's best road safety provisions for its 16 million cyclists. Visit the prettiest sites, see Van Gogh and other world-famous art treasures, rejoice good food and local spirits in places of historical and cultural interest, and do whatever else you might wish. Contact us if you want an additional cycle tour of Holland with your visit - we'll see to it!

Flat spokes



HM Robot wheel truing machines have a provision for the use of flat spokes. This little gripper holds the flat edge of the spoke in position when its nipple is trued. Main difficulty with the use of flat spokes, both with handbuilt and machine-built wheels, is that the spokes will tend to get out of their lengthwise plane on the nipple side. Unlike round-section spokes, the flat spokes have to be held in position during truing, because the friction between nipple and spoke will give the spoke end some torsion. Most handbuilt wheels, when in use, will see some spokes get out of plane. Correcting these without helping the wheel out of true is a very painstaking and time-consuming job. HM machine-trued and stabilized wheels can claim to keep their flat spokes better and longer in the foreseen wind-cutting direction, because an even spoke tension is monitored during the truing process and corrected accordingly. The resulting wheel has a far smaller spread in spoke tensions around the wheel. Flat spokes are used more and more in special race wheels, both for road race, track race and mountainbike race. HM machinery will of course not scratch the matt black anodized or black chrome fashion colour.

m a i l b o x

Titanium spokes

In HM's last issue we stated that Swiss DT has developed titanium spokes which were ready for consumer use at that time. We quoted DT that their DT Titanium MMC spoke was the lightest and supposedly most durable spoke on the market. Afterward, we received a letter from Jeff Enlow of MARWI U.S.A who rightly corrected us by stating that Union Fröndenberg USA (now Marwi USA) already had developed a titanium spoke in the summer of 1994. They have successfully manufactured and marketed this product to such an extent, Marwi feel, that others like DT felt the need for a similar spoke. According to Jeff Enlow the Marwi titanium spoke is also slightly lighter in weight than its Swiss counterpart.

Law suits

Holland does not have a tradition in law suits. Unlike some Anglo-American countries where suing for anything from hurt feelings to liability seems to be a national sport, in Holland you don't sue unless it's inevitable. For Holland Mechanics, the only topic we will sue consistently about any time we run into it, is infringement of our patents. Obviously, these are worth a lot more than a couple of cattle in case of outright copying of our inventions by others. Holland Mechanics is proud to be the owner of some twenty-odd worldwide patents, all about mechanisation in wheelbuilding and rim-making. The inventivity, the development work and the fee to get a patent attributed and deposited make it worthwhile defending our rights. We simply want to protect these against plagiarism. On the other hand, a law suit can establish the exact outlines of the extent of a patent better than any other instrument. That's why we sue, sometimes.

W H E E L - L O G I C



Standard or French position? Did

I miss something, Mr Holland Mechanics? No, nothing wrong with your sexual education. The caption above is about spoke holes in rims, and how they are positioned vis-à-vis the valve aperture. All modern rims have slightly offset spoke holes to accommodate for left hand and right hand spokes. Now, this sequence can start with either a right hand or a left hand spoke hole, starting at the valve. Standard is a first left hand hole in the running direction of the bike. The so-called French position starts with a right hand spoke hole in the running direction. Americans will also call this layout the European drill. As you may figure out, both types are a mirror image of each other, and lacing a wheel means a different start for both, if you want to obtain the biggest spoke gap over the valve hole, as usual. For hand lacers used to only one type (for instance, race mechanics) it takes some fiddling to break from their routine and do an incidental wheel (for their wife's commuter) the other way around. HM intelligent lacing machines spot the position of each rim entered in the machine, and instruct the operator accordingly.



The Campagnolo nipple screwdriver

In pre-HM times, a wheelbuilder used a nipple screwdriver which was often made of a discarded pedal: the axle housing was stripped, ground and polished as a handle. Of course, the most popular handle was the one made out of a Campagnolo pedal. The actual screwdriver was welded in an offset position to the axis of the pedal. The blade was then ground with a protrusion in its middle to pick up nipples from the box, and screw them onto the spoke ends. Standard 36-spoke wheels could thus be laced in less than 10 minutes, the absolute record being no less than 14 wheels in one hour!



More oldtimer practice

A rather special spoke pattern is seen in this drawing: the spokes come in groups of three, in which the central spoke is radial, and the other two cross the middle spoke in opposite directions, skipping one hole on the flange. It can be seen that this pattern requires a hole number which is a multiple of 6 (18, 24, 30 or 36 holes), and it was used in racing bikes around 1955. This fashion has the drawback that the spoke tensions of the radial and the crossing spokes are very different, and that truing such a wheel was quite a nasty job, because the action of the nipple spanner being far more direct on the radials than on the tangents. Nevertheless, the resulting wheels were favoured by a number of top riders in the Bobet era.

TOWARDS THE TOTAL-CONTROL CYBER-FACTORY

PMCS

The Production Monitoring and Control System by Holland Mechanics monitors the whole process, material flow, time lapse, stocks, and individual wheel quality (tolerances in wheel height and side deviation) on the computer screen under common and highly proliferic software: Windows 95. The first application of PMCS software, developed by Holland Mechanics, is called: *FloorView*. Additional functions can bring the wheel shop in direct control with the bike assembly shop and the central bookkeeping facilities. PMCS has been under development for a couple of years, and it is nearly customer-ready. In Holland Mechanics terms, that means that you can depend on the system for product monitoring. Being on the forefront, this system makes only sense for factories who have their production process as a whole already well in hand. It will help them to improve their efficiency. It will be clear that a sophisticated monitoring system like PMCS will need time and effort to get in tune with your company, and it is not a wonderbug that can help a starting factory. It won't help either in economies where, for instance, regular supplies or even electric current cannot be depended upon. Still, those companies who already joined PMCS in a try-out stage can clearly see the advantages of a one-screen overview replacing endless scrolls of paper.

Holland Mechanics is considering the development of a PMCS Light version, which would monitor a maximum of 8 machines, without additional functions as a competitive intermediate solution.

Holland Mechanics has developed a demonstration module which can be run on any Windows computer. Ask us if you are interested in the PMCS demo floppy set, or if you have particular technical questions about the possibilities of the system.



OUT OF WORK "Our workforce is better suited to the kind of work wheelbuilding is about"



Brass or aluminum? Today, most nipples are in brass, and the high end nipples are in aluminum. Steel nipples are getting derelict, although they are still made. Steel nipples have been favoured by racing mechanics in the 'fifties, because the steel nipple, tried by hand, did not have the tendency to loose its edges under fierce action. But manufacturing the steel nipple costs more in wear of taps and dies. Today, the brass nipple has won- in mechanised wheelbuilding the risk of rounding edges is virtually non-existent. The aluminum nipple is lighter, but more expensive. The various manufacturers have found ways to mass-anodize the aluminum nipples, so that they come in any colour matching the rim or the frame colour. Incidentally, aluminum nipples are not new: they have been made in France during the Korean war, when brass was scarce and the world market price soaring, due to the needs of the ammunition makers. Race mechanics boarded lots of these nipples when hostilities were over, and nipple makers returned to brass.



Sapim Poliax A new concept in spoke nipple is the Sapim Poliax. This nipple has a flat head with an evolvent curvature for best support on the rim wall under small angles. As hubs tend to get bigger, the spoke will get shorter and the spoke angle smaller. The Sapim Poliax has been developed with for instance electro-drive hubs in view.



144 spokes in one wheel! This funny bike, seen on last years' Intercycle show in Cologne, has wheels that cannot have been built with wheelbuilding machines, at least not tried by HM machinery. The spokes are definitely too near to each other in this 20" wheel: the HM spoke hand will not fit between spokes. HM machinery can cope with 48 spokes in a 20" wheel, as used for the most extreme BMX halfpipe jumpers. The stunning number of 144 spokes in one wheel as seen in this bike is useless: the weight of the wheel is far higher than necessary, and the hub has no strength left by the high number of spoke holes very near to each other. Under normal spoke tension, it is far from imaginary that the hubs will break along the spoke hole line. Still, it is an eye-catcher!



"We'll run out of work, with even the hub filling now be automatized," says Bert Ramakers* who is the general manager of the Maastricht (the Netherlands)-based Neocycle wheel factory, with a smile. Neocycle is a company that specialises in bicycle wheels. Any quantity, any specification, any tolerances you wish, and delivered at your doorstep on the day and the hour you need them, tyres fitted at the right pressure. At a competitive price. What makes Neocycle so special, is that its workforce consists of disabled people. Formerly, these so-called labor-yards only performed simple monotonous handcrafts, like assembly of wash pins.



The company goal of Neocycle is slightly different from that of an ordinary wheel factory: its main goal is to provide steady working opportunities for the disabled, whereas the ordinary factory's goal is to please the shareholders with a profit. Nevertheless, the ways to reach both goals appear to be remarkably similar: Neocycle has discovered that it can only survive and give work to its 125-strong workforce if it is offering competitive quality, competitive prices and unconditionally immaculate delivery.

"I daresay that our workforce is better suited to a relatively monotonous work like filling hubs, fitting spokes and tyres and deliver the right wheel to the right customer," says Ramakers, "our workforce have been

selected to do their job, that is: for many of them the very job they are doing is the top performance they can deliver. Some who ride a trolley could never operate one of our Holland Mechanics facing machines.

They cannot cope with unforeseen difficulties beyond their routine. So everything must go according to a very tight script.

The thing that makes our workforce so well-suited to the work, is that they accept this situation. I can say for all of them that they are very dedicated to their work, and they are proud of their performance. We have no more physical disease than a normal workforce because nobody ever takes a day off for lack of motivation. We do not have a monday workforce with a hangover. Some of them even hate weekends. They love to be in this treadmill, which is a safe environment for them."



"Needless to say, that we organised the whole wheel building process to a high degree of check and counter-check and traceability of any failures that might occur. I must say: Holland Mechanics has supported us enormously, both with the hardware and with our business processes. Rather than blaming failure on the distribution, on the parts or on the weather, I learned to apologise and repair. Now I hardly have to apologise any more, because our intent and our goal is to deliver one hundred percent perfect wheels. Making top end wheels started when Cannondale opened a European plant in the Netherlands. They were looking for a company that could build these wheels. Top-end wheels, that is. I made them an offer, I had to plead the hind legs off my donkey to get the opportunity to prove my point. As a social labour company we were considered to be a container wheel company. But believe me, with the right materials and the right equipment and the right operator at any step in the process, you cannot make better wheels than we do: monotony is the very hallmark of our workforce, and in quality terms you'd call it uniformity."

* Coincidentally, Bert's surname means Wheelbuilders in ancient Dutch (Ra = Rad = wheel)



Baan-4

Holland Mechanics has used the world-renowned ERP (= Enterprise Resource Planning) software by Baan Company of Barneveld, The Netherlands. This year, HM made a strategic choice by upgrading its ERP-software to the newest Baan standard: Baan-4. At this moment production, purchase of materials and services, sales and the complete financial accounts are handled with Baan Triton 2.2c software.

The conversion to the new Baan-4 software will take several weeks of preparation, and it will be ready for use on January 1st, 1999. One of the assets of this new software is that it enables HM to invoice its customers in Euro, and receive payments in various valuta.

Millennium Proof

The millennium jump will undoubtedly cause unexpected problems; pre-paid telephone cards will be at a loss, your microwave will not open after the two minutes you gave in, and your camera will print the wrong data on your pictures. A thousand-and-one small applications of data-carrying chips will be stuck, probably at small cost. Holland Mechanics has monitored all software in the machines it sells (and has sold), and we can state conclusively that no products provided by Holland Mechanics will be hampered by the turn of the millennium. Furthermore, Holland Mechanics has investigated its office software and internal informatics systems, like fax memories, telephone software, human resources management systems etc. These will require some minor adaptations which will be ready by the end of this year, that is one year ahead of the final date.



The Robot Second Generation wheel truing machine got a touch-screen instead of the usual control panel with an LCD-display. The touch screen is more than a cosmetic upgrade: it adds some surprising functions. The "frame" of the touch screen image contains a scanning system which detects the exact position of the operator's finger when he (or she) pushes the virtual button on the screen, and translates this in action, like the mouse and the computer screen. By using a computer system as an MMI (=Man-Machine-Interface), the number of functions is no longer related to the number of buttons on the control panel, but unlimited. For instance, the operator can get on-line help. The computer can be asked to show an instruction video. New software can be downloaded even through the internet. All software can be provided in any given language. The multi-language module is particularly easy for instruction of your operators. The Holland Mechanics service engineers speak several languages, but with an instant-reverse of the language used on the screen, it is much easier to instruct an operator in France, in Poland, in Russia, in China or in Arab countries: just point at the language switch, and your partner can follow the instructions in his own language. The control system runs under Windows NT, which is a reliable and stable system.



Other upgrades of the Robot are a touch-free measuring system with twin encoders (instead of one) and a new micro-processor system.

Holland Mechanics have closed their USA-based office (Chicago), because HM engineers and sales managers travel frequently to the US, and is considered to be "within reasonable distance" of HM headquarters in Holland, given the fact that telephone, fax and internet provisions are optimal, and travel times short. Holland Mechanics is planning a house show of its new machinery in the USA at the end of this year. At this show, the new HFS Hub Filling Station will be presented.



Our man in Central and Eastern Europe

Thomas Orłowski is a technical engineer who recently joined Holland Mechanics as an adviser for Eastern Europe. Mr. Orłowski is proficient in Polish, English, Czech and Russian. He can be reached through HM headquarters in Holland or by mobile phone.

25 year jubilee

Mr. H. Sudbrack will need no introduction for most colleagues in middle Europe. We recently commemorated the fact that Mr. Sudbrack has been a representative for Holland Mechanics for 25 years! Prosit, Herr Sudbrack!



Meet our after sales engineers:

We're realistic: you'll meet one of our after sales engineers from time to time, be it not too often!



Aad Stouten



Pieter van Dijk



Cor Roos



John Zwarthoed



Marcel Albers



Nardo Mimpin



Wonders Lin

MODERN AMERICAN WHEEL DESIGNER MR. ROLF

Spoke patterns



All standard HM wheel lacing machinery such as the SL and ISL wheelacers and the Robot wheel truing machines can handle other-than-standard wheel-building patterns. For instance, HM machinery is used for the production of Rolf wheels, in which spokes run from opposite flanges of the hub to two holes as near as possible to each other on the rim. HM developed a specially tailored-to-size nipple hand which fits between the two narrowly-spaced spokes. These can be used for Rolf Dolomite wheels, whereas Rolf Vector wheels (for road racing) have "invisible" spoke nipples trued from the rim bottom side.

Nipple with locking device

Recently, Alpina Raggi introduced their ABS (=Alpina Block System) nipple, which has an in-built plastic locking device in the nipple crown. Of course, these can be handled by SL and ISL wheelbuilding machines. Existing machinery only need a couple of simple adapters to be able to use the new nipple. The "ABS-kit" consists of the following parts:

- a special nipple block and pins
- a special screwdriver
- a new nipple basket system.

This basket can be used for other types of nipples as well, so it can remain on the machine after installation.

ABS
ALPINA BLOCK SYSTEM



1998 International Show Calendar

3 - 6 september	Eurobike, Friedrichshafen
9 - 11 september	Bicycling Australia Show, Melbourne
11 - 14 september	Interbike, Las Vegas USA*
16 - 20 september	Intermot, Munich, Germany
17 - 21 september	EICMA, Milan, Italy*
25 - 27 september	Bicycling Australia Show, Sydney
30 september - 4 oct.	IFMA, Cologne, Germany*
9 - 11 oktober	Norsykkel, Oslo, Norway
16 - 18 oktober	Cycling Moto Expo, Bydgoszcz, Poland
22 - 25 oktober	Bicykl '98, Poznan, Poland*
29 oktober - 1 nov.	Bilbao Cycle '98, Spain*
31 oktober - 2 nov.	CABDA World Cycling Expo, Rosemond, Illinois, USA
5 - 7 november	Japan International Cycle Show, Tokyo

* Meet us here!