



HYT

PRESS REVIEW
2012 - 1/2

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« WATCH TIME »

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The New Watches

IHYT

WATER CLOCKS were the first complicated systems for measuring time. A millennium after they were invented, Confucius said that time flows away like the water in a river. The metaphor comparing flowing water to passing time is deeply ingrained in us.

Lucien Vouillamoz recognized this, and in 2002 he proposed bringing the water clock into the 21st century and putting it on your wrist. Many ideas are more easily said than done, and this proved to be one of them.

Over the next several years, the concept evolved into a system in which a small, flexible reservoir, or bellows, would be attached to each end of a thin, clear, circular tube that would fit inside a watch case. The bellows and tube would contain two different liquids - one colored, one clear. Where the liquids met, a line, or meniscus, would be visible. As one bellows compressed, the meniscus would move, like fluid being pushed through a needle by a syringe plunger. Put an hour or minutes scale next to the circular tube, and the moving meniscus could mark the passage of time. That is the basic concept behind the HYT H1.

With the concept in place, Vouillamoz needed a working prototype and patent protection. He called on longtime friend and serial entrepreneur Patrick Berdoz, who invested in the project and played an important role in its success. Over the next year, the HYT company came into being, as did a working prototype. (The company name can be pronounced either "hit" or as the three letters "H-Y-T." Asked what the initials stand for, we were told either "hydro-technology" or "hydro-time." The watch may be ready, but the finer points of the marketing effort are still being resolved.)

In 2010, Vincent Perriard joined HYT as CEO. Perriard is no stranger to extreme watchmaking. He was president of Concord when, in 2007, the brand introduced the C1 Quantum Gravity. It is a huge, avant-garde watch that gained fame in

horological circles for its unusual technological features.

To shepherd the project from prototype to production-ready timepiece, HYT recruited Bruno Moutarlier, the former industrial director for Audemars Piguet. Movement development was handled by Chronode - specialists in the design and construction of complex mechanical timekeepers. Its task was to create a traditional mechanical movement to handle the non-traditional task of pushing liquid through a tube.

Not surprisingly, realizing the project required solving several technical challenges. It also generated some new terminology. During our interview in Basel, phrases like "hydro-mechanical horology" and "fluidic-mechanical movement"

popped up. It's a good bet you won't find these terms in Berner's Dictionary.

The company had to adopt technology and assembly techniques from the aerospace, chemical and medical industries. For example, the two liquids could not mix or change consistency, nor could they leak or evaporate. Preciflex, a sister company of HYT, worked on the fluid operation with the support of Helbling Technik, from the medical instrument world. The clear and green liquids are in fact oil, water, and some additional chemicals HYT will not disclose. Though the bright green liquid has a fluorescent quality, it does not glow in the dark...yet. HYT is working on that. If green liquid is not your cup of tea, so to speak, don't worry - other colors will become available down the road.



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2012 - 1/2

To prevent leaks and evaporation, the system is manufactured to very close tolerances. The glass tube containing the liquid is blown by a machine to a tolerance of 1 micron. The material used to create the bellows was inspired by sensors used by NASA. The inner surface of the bellows is coated with gold to increase strength and flexibility. The liquid-handling system must be assembled in a clean room. Seven patents have been registered for the technology and one for the design.

A proprietary movement powers the display. The movement generates 0.7 Newton meters (Nm) of force, and is capable of producing 1.2 Nm, thanks to one of the most powerful mainsprings available. Chronode solved the problem of how to move liquid at a uniform pace by

replacing the hour hand with a snail cam that operates the pistons, which in turn compress the bellows. These bellows can be seen on the watch face above 6 o'clock. While the first compresses, the second expands, and vice versa, resulting in liquid moving in the tube.

All of this technology is contained in a case measuring 48.8 mm by 17.9 mm. The H1 displays hours, minutes and seconds in a regulator-style format. The meniscus between the clear and green liquids marks the hours. When the meniscus reaches the 6 o'clock position twice each day, it retreats back around the tube in retrograde fashion within a few seconds to continue displaying the hours. The hand below 12 o'clock displays the minutes. A small spinning wheel at 9:30

represents the passing seconds. A power-reserve indicator at 2:30 tracks the 65 hours of autonomy.

The H1 is not just a one-off effort. Models denominated H2, H3 and H4 are already in development and will be rolled out over the next three years. Total production for 2012 will probably be between 150 and 160 pieces.

The watch will be available this fall at four U.S. retailers in New York City, Los Angeles, Miami and Las Vegas. Prices are \$47,000 for the titanium version; \$49,500 for black DLC (diamond-like carbon); \$59,000 for titanium, black DLC and gold; and \$69,000 for all gold. Look for future models in steel and in composite materials. A black model with red liquid may also be produced. —M.D.



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www.watchtime.com/2012/04/hyt-h1



The back of the H1 and, below, exploded view of the movement

