



NEWS



HYT H2 in Gold

## HYDRO HOROLOGIST

HYT signs exclusive partnership with Indonesia's luxury watch leader, Time International.

WORDS GILANG PRATAMA

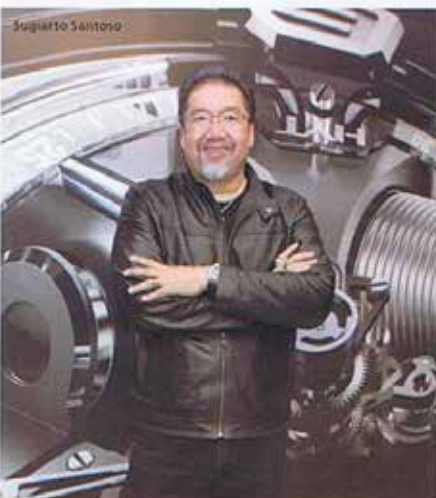
Launched in 2012, the Hydro Mechanical Horologists revolutionised the watchmaking industry with its game-changing fluid technology that merges mechanics and liquid in a timepiece to tell the time. D deservedly, it won the 2012 Geneva Watchmaking Grand Prize as the Best innovative Watch Concept (Grand Prix d'Horlogerie de Geneve). Two years and more than 50 points of sale worldwide later, HYT successfully opened its first subsidiary in Singapore and concluded its first partnership in Asia with the luxury watch retail giant, Time International.

HYT CEO Vincent Perriard said, "We are delighted to be partnering with Time International. We are familiar with Time International's operations even before the genesis of HYT and can testify to the quality and integrity of the brand. Danny is also a good friend and there is no one I would rather do business with in Indonesia." Irwan Danny Mussry, President and CEO of Time International, added, "We are very particular about which brands we represent, but HYT was an obvious choice for us. We admire the revolution they have brought to the watch industry and know they have much more in store for us. In the meantime, they are producing technical masterpieces that we are very happy to be retailing."



HYT presentation by Vincent Perriard

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HIGHLIGHTS

# QUEST FOR HYBRIDISATION

Crafting a movement out of machinery and liquid was almost a fantasy concept that until now exists only in the realm of science fiction. But HYT has finally managed to break the mold and turned fantasy into reality.

WORDS GILANG PRATAMA



HYT H1  
in Titanium black

**HIGHLIGHTS**

**T**he concept of a water clock is not exactly new. As early as the age of the pharaohs, humans had recognized the concept of time and the need to tell time using whatever material and technology were available to them now. Today, we have come a long way from the days of gazing the stars to tell which direction is which, from sticking a pole on the ground to be able to tell the time according to the direction of the sun; and from fashioning crude yet marvelously brilliant clepsydras or water clocks.

However, it has taken humans 3,400 years to finally figure out how to overcome the force of gravity and indicate time with liquid in a mechanical wristwatch. Many have dreamed of it – HYT has done it.

**THE PRINCIPLE OF H1: HYDRO MECHANICS**

The idea that led to the H1 was simple and consisted of two flexible reservoirs fixed to each end of a capillary. In one was an aqueous liquid filled with fluorescein, and in the other, a transparent viscous liquid. To keep them separated, the repulsive force of the molecules in each liquid, with a meniscus to mark the boundary between the two, is created.

There are two reservoirs at 06:00. What do they do? While the first compresses, the second expands, and it goes the other way around, resulting in the movement of the liquid in the capillary. As the hours go by, the fluorescent liquid advances. The meniscus, in the shape of a half moon, marks the breaking point with the other fluid in the tube, indicating the time. At 18:00, the fluorescent liquid comes back to its original position, going backwards. The secret that gets the reservoirs going? Two bellows made of a highly resistant, flexible electro-deposited alloy, each driven by a piston. And this is where watchmaking comes in to activate the hydro system.



While the basic idea is simple, realising it is highly complex. Led by Bruno Moutarlier, two teams worked together. On the watchmaking front were Jean-François Mojon and his supporting team at Chronode. Working on the fluid operation was Preciflex, the patent registration company created by the founders of HYT – Patrick Berdoz, Lucien Vouillamoz and Emmanuel Savioz. Supporting Preciflex was Helbling Technik, from the medical world, where fluid motion is used in certain treatments. An incredible human adventure that propelled two worlds in principle at odds with each other towards a new joint era – that in which a unique technology would rock not only watchmaking but also medtech, because the pump system would lead the way for brand-new applications in that field.

The mechanical movement is situated in the upper part of the watch, and propels a cam, which pushes the piston and activates the bellows. The main challenge lay in finding an interface between the mechanical movement and the hydro system in a closed, waterproof circuit – a task further complicated by the limited space available to house them both. They had to be assembled separately to keep them independent, and then made to operate simultaneously. This is a highly delicate modular integration, which involves other constraints, such as the installation of the dial in two parts, through the sides.

A special liquid that must obey a set of watchmaking specifications was developed for this purpose. The liquid must be homogenous in colour and texture, and be resistant to vibrations, shocks and temperature changes; not to mention that alterations in the long term won't happen. Finally, it has to have, unintuitively, foolproof water resistance. Up until now, seven patents have been registered for the technology and one for the design. This was a steep plunge into the unknown, which led to technical watchmaking feats bordering on nanotechnologies.



## HIGHLIGHTS

Hydraulic force means pressure. When the fluorescein-loaded liquid has done a complete round and gets to 06:00 – 18:00, the issuing pump compresses, while the bellows receiver expands, generating resistance and consequently an increased energy requirement. To fix this, Preciflex developed revolutionary bellows made from an extremely fine alloy and which are highly supple and resistant. They are in fact inspired by the sensors used by NASA and their design had to be adapted to watchmaking requirements. Their specially researched shape allows for the reduction of energy required for their compression, absorbs shocks and ensures rock solid waterproofing.

The process continues pretty much throughout all stages. During the entire development process, alongside the engineering, the amounts of liquid were the focus of great attention. Every microlitre counts, and the total volume in the closed circuit is extremely precise, as the system has to have a nanotechnology-worthy level of water resistance. Due to the unusual link between the crown and the liquid, a special time-setting system was designed in order to avoid the liquid moving around too fast and damaging the meniscus.

The taut, aggressive design by Sébastien Perret dictates the completely non-standard construction of the H1. The watch's three-dimensional façade looks nice viewed from the front as well as from the side or three-quarters through a sculptural 5mm sapphire crystal carved from the block, itself topped by a dome at 6 o'clock imposing its own rules. Particles of fluorescein spring from it, like sparks flying off the passing hours. The industrious pistons and bellows converge toward it. The apparently unstructured upper part of the watch dictates a geometric design composed of strata and reliefs. In the centre sits the minute regulator, overlapped by a spectacular small seconds display resembling a water wheel. At 02:30, a 65-hour power-reserve hand indicates the remaining energy available across three arcs of a circle. The notches in its caseband visually extend the applied baaignoire-type hour-markers, while the crown dovetails at 02:30, as is thrust against the case by its sturdy crown guard. This "monster" measures a gargantuan 48.8 mm in diameter and 17.9 mm thick and is the perfect timepiece if you crave attention. It does, nonetheless, sits impressively lightly and well on the wrist.



The V shaped  
bellows of HYT H1

**HIGHLIGHTS**



HYT H2 in titanium  
& white gold blue

**H2: TOUR DE FORCE**

Bolstered by the enthusiastic reception to its launch in 2012, in which the watchmaker won the 2012 Geneva Watchmaking Grand Prize as the Best innovative Watch Concept (Grand Prix d'Horlogerie de Geneve), HYT is continuing its immersion in the world of haute horlogerie and pushing the limits of hydro mechanics yet further with the H2. So what else can they improve on this already-absurd concept? Why, to further integrate fluidics into mechanical watchmaking, of course.

With the H2, the entire architecture of the hybrid movement has been redesigned, deconstructed, integrated, coexisted and enclosed. In a Hydro Mechanical watch, these are not just aesthetic elements, but rather key components.

Firstly, the bellows are positioned at 6 o'clock in "V" formation and rising, which clearly evokes the most outstanding achievements of automotive and aeronautical engineering. This optimises the integration of the interface that connects the watch mechanisms with the fluidic system. Mirroring the pair of bellows, the balance spring presides at midday on its black bridge, the dome marking the rhythm of life in this unique world. At 3 o'clock is a "H-N-R" crown position indicator, which brings to mind the gearstick of a racing car. It is counterbalanced by the presence of another hand, which is also original and exclusive to HYT, a temperature indicator. Once the watch is being worn, this function enables the user to accurately find out when the fluid has reached the optimum temperature range. In the centre, a minute hand, designed in stages to perfectly fit the structure of the fluidic system jumps after 30 minutes to avoid the bellows.

Like its predecessor, this piece boasts a diameter of 48.8 mm and a thickness of 17.9 mm, and a domed sapphire crystal. Housed in a black DLC titanium case with an intuitive fluidic display, the architecture is transparent and the fully visible movement accentuates the three-dimensional depth that is characteristic of the brand.

In terms of performance, the double barrel, visible through the back of the watch, offers an 8-day power reserve and the force required to orchestrate this mechanical feat. Cleverly using the visibility of the barrel spring, the power reserve is displayed in a truly innovative fashion via the openworked barrels. 