

How to Wow



The Opus X features a display of time by modules for hours, minutes and seconds mounted on a platform. Continuous movement of the platform results in a full rotation every 24 hours. A 24-hour second time zone is indicated in the periphery.



This year Harry Winston celebrates the tenth anniversary of its Opus series. But let's face it, taking on the yearly challenge to create an ever more outrageous horological talking piece is anything but a breeze. So can the company still deliver and does the new Opus X make the grade?

Thomas Byczkowski



"As in all previous years, the call for the WOW factor was top of the list," assures Jean-François Mojon, this year's watchmaking wizard of Opus. But how to achieve this effect was completely up to Mojon and his team at Chronode SA - no easy task considering that Opus 9, designed and executed by Eric Giroud and Marc Widerecht, won the Design Prize at the Geneva Watchmaking Grand Prix last year. So what exactly could the complication specialists from Le Locle offer to top the 2009 *tour de force*?

Mojon's credentials for working with Harry Winston are sterling. The Swiss inventor earned his wings at the Swatch Group's research unit for LCD display manufacturing before moving on to become head of

quality control at IWC. He then turned to R&D for both A Lange & Söhne and IWC before setting up his own consulting and engineering company Chronode SA in 2005. Having worked on over 20 projects of similar scale in secrecy for the past five years, Mojon says that he is quite happy to finally be able to show the world what his team is capable of developing and producing.

Coincidentally, Mojon and his team had been experimenting with exactly the same idea of linear time-indication since 2008 - half a year before the Opus 9 was revealed - but as the Opus projects are handled with such secretiveness by Harry Winston, the Chronode team found itself walking up a dead end. The unveiling of Opus 9

at last year's Baselworld meant one thing for Mojon - he had to start all over again. Well, almost... Luckily, because Mojon's interpretation of linear timekeeping was based on a system of planetary gears rather than a rotating chain (as in Opus 9), he decided to stick to the initial construction, transforming just the mode of indication.

Mounting pressure

More pressure was added by the declaration of Harry Winston's new CEO Frédéric Denarp telling a journalist that the tenth Opus concept would "once again work its magic." Meanwhile the *breviers de travail* informed Mojon that his clients were expecting a rather modest approach to the overall look of the new Opus -



In a limited edition of 100 pieces, the Opus X features a mechanical movement with manual winding. The linear power reserve indicator can be seen through the case back.

The Opus X movement consists of 472 parts brought together to create an illusion of simplicity.



The Opus X has enough technical delicacies to make a collector's hands turn moist with desire

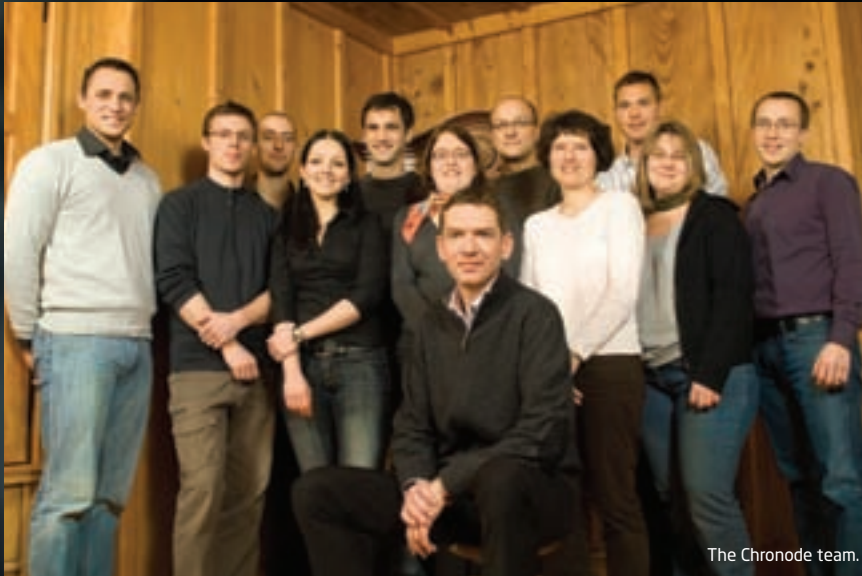
tipping a nod to the world's financial crisis -with most of the expected invention on the inside.

So that's where Mojon found himself a little over a year ago, along with his two designers - Le Locle based Antoine Tschumy, who had already left his stamp on the Opus 8 project and Gilles Antoniazzi from Neuchâtel - facing the almost impossible task of developing a not-so-flashy, budget-conscious new Opus, fit to celebrate the 10th anniversary of the line and with enough 'X' factor to knock customers off their feet. However, in the end, Mojon did deliver. The tall 43-year-old was dressed in a sharp black suit and open-necked shirt as he led the presentation at Baselworld in March this year. And he couldn't hide his smile as he, by way of explaining, turned the wheels of an oversized plastic prototype designed as an explanatory tool for the uninitiated.

The works

So, this is how Opus X works: As seems to be a must in the Opus series, there is no traditional dial with hands coming from the center. Instead time is displayed as a system of rotating indicators mounted on a revolving frame. Four sub dials at the points of an imaginary cross each show a specific part of the time - one the hours, the next the minutes and the third the seconds. The fourth is an arrow that points to the edge of the dial and, as the whole mechanism rotates around the dial once per day, the arrow shows the 24 hours of a second time zone. In reality, what might sound complicated isn't, when it is seen working. As the frame does a full rotation, the dials of each indicator turn in the opposite direction, making sure that in every situation the '12' and '60' are at the top meaning that the hands move around as normal, while rotating around the dial.

Mojon's team created the hand winding movement of the Opus X from scratch, an 11.2mm-high mechanic consisting of 472 parts and which bears enough technical delicacies to make any Opus collector's palms turn moist with desire. Albeit having had to rethink their whole concept of displaying the time, the team couldn't refrain from squeezing their initial idea of linear indication in to the power reserve indicator, which operates on a planetary gear train in which the diameter of the satellite wheel correlates to the radius of the crown wheel.



"We wanted to somehow bring in this beautiful and easily comprehensible indication, which follows a principle that is over 200 years old. This took up a lot of space, but delivered what is now seen as a V-shaped design of the movement," Mojon explains. The 72 hours of power reserve are delivered by one barrel, held back by a ratchet worth special mention, as it incorporates a precisely calculated spring that is executed by LIGA-technique, the super-modern method of creating complex 3D forms via a method developed in the 1980s by the Nuclear Research Center in Karlsruhe in Germany.

The slippery slope

Back on the dial, the main point of interest is, of course, the rotating frame that recalls the celestial mechanics of the solar system, functioning as a planetary gear train consisting of solar wheel, satellite wheels, and the frame to carry all of this, while each sub-dial tilts to follow the curvature of the sapphire glass. This mechanism brings with it another highly complex problem - invisible now that Mojon has solved it - namely that it might draw a lot of torque from the engine.

But according to Mojon, "the whole apparatus only takes up two percent of the torque delivered by the movement," as the light titanium frame, whose wheels are supported by rubies, moves very slowly. Additionally, Mojon and his team are renowned for the huge amount of mathematical research they put into a mechanism before beginning to work with prototypes.

While this method may take a bit more time in the first phase, ruling out a lot of possible mistakes on screen reduces costs by minimising the amount of prototypes the company has to build. In the case of the Opus X, Mojon's team did a lot of research on the teeth shape of the gears. "In the end," says Mojon, "we found out that we were better off using the normal shape of gears instead of chamfered teeth, even though the sub-dials and hands are inclined to the outside of the dial."

But another problem arose from tilting the indications. There were holes to be drilled into the titanium carrier that had to be at a certain angle. Usually laser measuring devices only function on a two dimensional basis and it took the team and its supplier three months to figure out how to measure and create the holes. In the end the supplier was asked to insert small metal axis into the holes, which could be measured with the given machines.

So did Harry Winston deliver? No, if one has been waiting for another exotic Lego-like brick with decades of delivery time. But yes, if the new Opus was intended to be a contemporary timepiece with a touch of the extraordinary and enough technology to make connoisseurs gasp in excitement. All in all the Opus X's cup is running over with top-notch technological ideas to turn the dials - but they are only visible if you know where to look for them. And the reason for Mojon's Mona Lisa smile at the Baselworld presentation of his Opus is that he knows all of the secrets. ☺