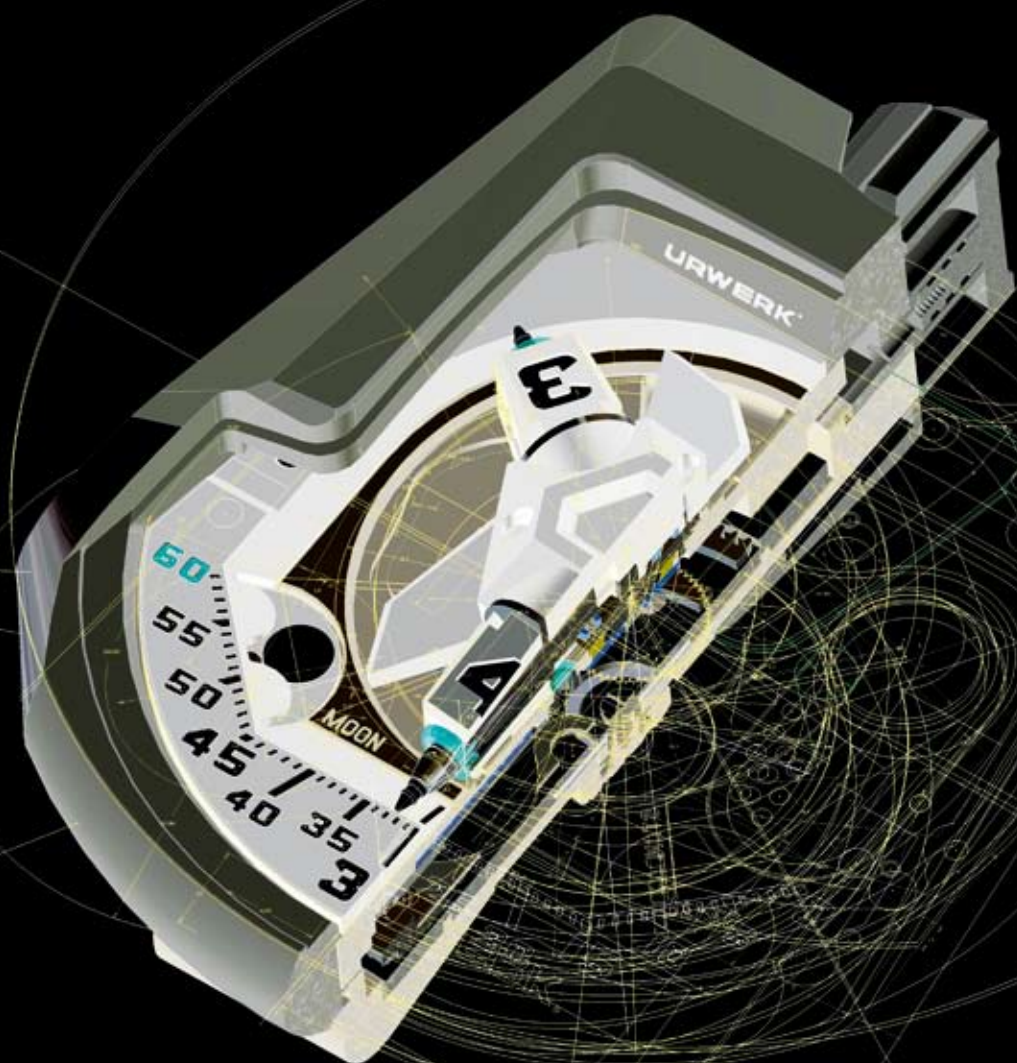


Regulating Time: Urwerek Style

words by JP Calimbas



As yet, the watchmaking community has barely come to grips with the Urwerk UR201 series of watches – it has only been about a year and a half since its debut and connoisseurs and critics alike have not run out of superlatives nor have come to fully grasp the genius involved in bring it to life – when out of nowhere, the Demigods of the industry let loose with another masterful creation, the twin turbine equipped Urwerk UR202. No, you don't have to flip onto the cover of this periodical to check if you got our car magazine C! just to make sure this article isn't about a turbocharged vehicle; and yes, forced induction has truly made its

way into a wristwatch, albeit one with as much soul and heritage placed into it to rival any Italian automobile. Urwerk founder Felix Baumgartner (whose very first spoken word as a child was Ur, the Deutsche word for clock) and designer Martin Frei made sure of that.

Before getting into the 202's innovative winding system regulated by compressed air, a quick review (extensively featured in Calibre 03) of the amazing Urwerk movement is in order. This only serves to heighten the importance of the turbine system.

To be able to bring a complication such as the one found in the 202, similarly ►

“THE UR-202 IS ARGUABLY THE WORLD’S FIRST AIR-DRIVEN TIMEPIECE...IT MAY ALSO BE THE ONLY ONE OF ITS KIND IN THE FORESEEABLE FUTURE.”



TRYING IT ON FOR SIZE
During our visit, we were given three 202s to play with....Of course, Felix Baumgartner had one eye on us the whole time

onboard the 201 is what elevated the status of the men behind Urwerk to what it is today. It also serves to emphasize how fortunate are the privileged few (really privileged in the sense that you can almost count the pieces made for each of the desirable models with your fingers, never mind their six-figure price tags) who have one in their possession.

The patented Revolving Satellite Complication with telescopic hands that is an Urwerk signature design resides within the UR202. This visually striking concept displays time using telescopic minute hands operating through the middle of three orbiting and revolving hours' satellites. The telescopic minute hands precisely adjust their length to follow the three sectors marking the minutes: 0-14, 15-44, 45-60. Simultaneously, three satellites indicating the hours allow the 60-minute scale to be read over a 120-degree arc, allowing for easy reading of the dial.

The idea behind the retracting needle marking the minutes was obvious:

without its ability to retract, the needle would jam against the side of the case. The easier option would have been to expand the size of the watch substantially but that would make for a watch that goes against the sleek proportions that Baumgartner and Frei envisaged hence, the decision to create a kind of needle that extend and retract as it traces the line of the minute track.

The luminous, minute hand that emerges from inside the satellite constantly changes length over the irregular arc of the minute track, invariably maintaining a constant distance from the luminous minute markers. Then, precisely at the 60-minute mark, the telescopic hand instantly retracts without fanfare.

The variable length of the minute hands is controlled by "transporters". These transporters - one for each minute hand - allow the telescoping hands to adjust their length as they follow the vectors of the minutes scale. One end of the transporter follows a cam simulating the path of the

three vectors, while the other controls the length of the minute hand.

Collectively, the satellites and telescopic needles are an integral part of the carousel assembly, together with the transporters and cams. This is where extreme precision and tight tolerances are necessary. All of the components that make up the carousel's intricacies have to be machined and finished to an exacting 1/1000 of a millimeter. The inside dimension of the carousels where the transporters work is 0.905mm, giving a clearance of just 0.005mm. The minutes are shown over three straight-line segments: each 15-minute side has a length of 8.3mm while the central 30-minute segment is 16.6mm. When they are not passing across the minutes, the hands retract to their minimum length of 1.8mm. The cam's shape was designed by plotting 380 points of reference to ensure that the minute hands extend and retract to the precise length. The transporter measures 0.895mm (thickness) and the lubricating surface treatment is 0.005mm, ▶

thus making the total thickness of the transporter 0.900mm.

To ensure that the delicately balanced and finely tuned mechanical parts of the Calibre UR7.02 are given an extra measure of protection became the next obsession for Baumgartner and Frei. For this, they turned to a technique used as far back as the 18th century, a time when clockmakers were using air friction to regulate the speed of chiming clocks. Fast forward to the present and after countless hours perfecting the system, URWERK have taken the traditional idea of using air friction and refined it to control the rate of automatic winding. The traditional rotating vanes of the past have been replaced by cutting-edge miniature twin turbines - miniature air compressors - which can be seen spinning on the back of the watch.

The UR-202's twin turbines are coupled with the winding rotor. According to the position of the selector lever, the turbines act as shock absorbers. In normal activity they cushion sharp movements of the rotor. This reduces wear and increases the lifespan of the movement. Totally self-contained within the waterproof case, air flows from under the turbines and is channeled up past them via a sapphire plate and down through holes that lead to a tiny air chamber. A three-position selector switch controls the level of air compression the turbines generate. By selectively regulating the amount of air escaping from the turbines, it increases the air pressure and slows down the turbines and the winding rotor. The selector positions are continuously variable to suit any given circumstance but the three principal positions are as follows: normal activity, where the turbines spin freely; vigorous activity, where the air pressure generated by the turbines reduces the winding rate by approximately 35%; and extreme activity, where the turbines and rotor are fully blocked.

The UR202 is the world's first watch whose winding rate is governed by fluid dynamics. Unsurprisingly, it is mounted on one bearing the Urwerk name as minds behind the brand continue to defy the limits of watchmaking that the world saw as finite. **calibre**

FAR RIGHT: The 3 position selector switch on the caseback regulating the amount of air flowing from inside the case

BELOW: Felix Baumgartner and Martin Frei

