**Armin Strom Pure Resonance Sky Blue**

The unique piece for Watches & Wonders Shanghai offers a differentiated ability to consistently maintain a state of resonance represents nothing less than a redefinition of the practical limits for marine chronometer precision in a wristwatch.

**Clear Design**

In general, Armin Strom carefully maintains a pared-down approach that keeps the brand’s style of watchmaking focused on its essence. How concentrated that style may be, this special-edition head further in that direction, squarely placing emphasis on the watch’s most remarkable feature: the visible dual balances oscillating in resonance. The special blue dial and the matt hand decorated finish are highlighting the swiss German style of this timepiece.

The dial offers a “Kari Voutilainen hand Guilloché” subdial for time displays: Roman numerals dominate the off-center subdial displaying hours and minutes in white with steel hands, while a classic railroad track marks the exact minutes. The smaller subdial at 7 o’clock displays seconds using only a baton-shaped hand and a simple track. The Sky blue colored hand made Guilloché dial from Kari Voutilainen has a special lack finishing (Email à froid) in order to reinforce the unique look of the dial. The Bridges are decorated with succinct, eye-catching côtes de Genève, applied for the first time in straight lines. It's absolutely spectacular movement finishing is often overlooked as the hypnotic pulsation of its clutch spring and the synchronized motion of its two balance wheels provide a mesmerizing distraction that invariably captures most of the attention.

**Technology in Service to Chronometry**

The reason for this watch’s improved chronometry can be found in the straightforward approach to the movement: the fewer functions a timepiece must perform, the better it can concentrate on accuracy. In other words, with no superfluous functions this watch can focus fully on providing the time in marine chronometer precision. The time displays receive their portioned energy from the lower regulator, while the upper regulator remains in place to create resonance.

“My primary objective was to improve chronometric precision via the consistent maintenance of a resonance state. But that consistency was also a prerequisite to sustain a kinetic spectacle on the dial side of our watch. With a great deal of time and effort, our technical and aesthetic ambitions were both ultimately achieved.” - Claude Greisler, Co-Founder and Master Watchmaker

**Classic Size**

The outward design of the Pure Resonance perfectly reflects the purity of Caliber ARF16. It is housed in a slim 42 mm white gold case with reduced lugs and crown and practically no bezel, though the characteristic lip at 6 o’clock remains – an homage to the ability of Armin Strom to customize any of its watches as well as to founder Armin Strom, who offered this space to clients for personal engraving (and it can still be used for that).

This special edition of the Pure Resonance looks and acts just like a “normal” three-handed watch. And this remains in line with the philosophy of Armin Strom as a brand: just good, proprietary mechanics presented in an impeccably finished and interesting way. The Pure Resonance Sky Blue is limited to 3 pieces.

Technical specifications: Pure Resonance Sky blue
Reference: PUR-3214

Indications:
Movement : hours, minutes, seconds

Movement: Armin Strom manufacture calibre ARF16
Manual-winding, patented resonance clutch spring, 2 mainspring barrels
Regulating system: two independent regulation systems connected by a resonance clutch spring
Power reserves: 48 hours
Dimensions: 34.40 mm x 7.05mm
Frequency: 3.5 Hz (25,200 vph)
Finishing: base plate and bridges are decorated to the highest quality level
Jewels: 38
Number of components: 206

Case: White gold
Sapphire crystal front and case back with antireflective treatment
Diameter: 42.00 mm
Height: 13 mm
Water resistance: 50m

Dials: Sky blue colored hand guilloche by Kari Voutilainen
Hands: polished steel

Strap: delivered with a black alligator strap and stainless-steel double-folding clasp.

Edition: Limited to 3 pieces

Price: Swiss Francs 74,000. - (without TVA and taxes)

 **What is resonance?**

Any body in motion causes vibrations in its surroundings. When another body with a similar natural resonant frequency to the first receives these vibrations, it absorbs energy from it and starts vibrating at the same frequency in a sympathetic manner. For example, a trained singer can hold a note causing a tuning fork tuned to the same frequency to vibrate.

For the oscillators of a watch movement to be able to synchronize with each other, they have to be closely tuned. Imagine a small child trying to synchronize steps with an adult: he or she is unlikely to synchronize for more than a few steps as the systems are too dissimilar to resonate.

Or imagine yourself pushing a child on a swing: the child and the swing make a natural pendulum, which will have an inherent natural frequency (speed of swing back and forth). If you push at the wrong frequency (too fast or too slow) then you are likely to block the motion and slow the swing down; however, if you push at or near the natural frequency of the swing then you will increase the amplitude (distance the swing moves) of the child/swing system.

In horology, the phenomenon of synchronized motion has fascinated watchmakers since the time of Christiaan Huygens (1629-1695). Huygens, inventor of the pendulum clock, was the first to discover the resonance of two separate pendulum clocks, which he logically surmised should keep slightly different time. When hung from a common beam, however, the pendulums of the adjacent clocks synchronized; subsequent researchers confirmed that the common wooden beam coupled the vibrations and created resonance. The two pendulums functioned as one in a synchronous manner. In the eighteenth century, Abraham-Louis Breguet demonstrated his mastery of the physics with a double pendulum resonance clock.

An outside shock slowing down one of them increases the speed of the other one by the same amount; but both will strive to get back in resonance, averaging and minimizing the effects of the outside influence as they find their rhythm. What was true for Huygens’ and Breguet’s clocks is just as true for Armin Strom’s wristwatch.

The advantages of resonance are threefold: 1) stabilizing effect on timekeeping, meaning better accuracy; 2) conservation of energy (think of a professional cyclist riding in the shadow of another cyclist in a racing situation); and 3) reduction of negative effects on timekeeping accuracy due to outside perturbation such as shock to the balance staff, which in turn keeps the rate stabler (better accuracy).

While the advantages of resonance have been known for centuries, only a handful of clockmakers and watchmakers have created timepieces deliberately and successfully exploiting the phenomenon of resonance, including Antide Janvier (1751-1855) and Abraham-Louis Breguet (1747-1823).

And, now, Armin Strom.

**Armin Strom today: Serge Michel and Claude Greisler in partnership**

Children born in the same year growing up in a town like Burgdorf (population 15,000) are likely to know each other, either through school, family, or mutual friends. Such is the case with Serge Michel and Claude Greisler, who grew up in the town where Armin Strom, famous for his watch skeletonization skills, had his watch shop and workshop. When the plastic Swatch watch was launched, having been developed and produced in the nearby city of Bienne, Serge was hooked and started collecting Swatches, following in the footsteps of his father, who is also a watch collector. It was a passion that would continue throughout his life. But while Serge went on to study marketing, Claude decided to become a watchmaker, first attending the watchmaking school in Solothurn before specializing in the restoration of vintage and complicated movements at the CIFOM technical school in Le Locle, concluding his studies there with a specialization in movement development.

Both Serge and Claude had known about watchmaker Armin Strom from a very young age. Serge not only remembers peering through the window of his store to look at the watches, but also the fact that Armin Strom was a local celebrity known for travelling far and wide to deliver his watches to customers. Claude had also known about Armin Strom from an early age, since his parents owned an optician’s shop right next to Armin Strom’s store in the historic centre of Burgdorf. In Serge’s case, Armin Strom became a family friend and at convivial dinners the talk would often turn to watches and watchmaking. It was hardly surprising, therefore, that the family friendship evolved into a business relationship in 2006 as Armin Strom was considering how to ensure the future of his name and reputation.

“I was convinced that this is a fantastic opportunity to maintain this tradition of skeletonizing watches and develop it for the future, and my family agreed,” says Serge. “That was back in 2006, but at the time we didn’t really have the knowledge about watchmaking. We had the passion, but we needed someone who was an expert on the watchmaking side of things, which is where Claude comes in. He joined me in 2007, and we started to set up the brand Armin Strom and change the direction from purely handmade skeletonized watches to a fully equipped manufacture, which we are today.”

For Claude Greisler, it was like a dream come true. “When Serge first called me and talked about taking the brand to the next level with a factory and taking the brand over from someone from the same town as us, it was the perfect mix. Armin Strom had always been interested in the mechanics of the movement, so to be able to take this philosophy forward was a fantastic opportunity.”

The core element in the vision of the duo was always to consider the movement as the very heart of the watch, which meant that the company would need to be a manufacture to produce its own movements. “This was not just a question of designing our own movements,” explains Claude, “but being able to take exactly the kind of brass that we wanted and the type of steel that we wanted to make the best possible plates, bridges, screws and pinions that we could and to do the electroplating and finishing, as well as the assembly, all in-house.”

**Armin Strom: A fully integrated manufacture**

While Armin Strom is a vertically integrated complete horological manufacture, no new watch movement would ever have seen the light of day were it not for Claude Greisler, who puts ideas such as the one for the revolutionary Mirrored Force Resonance movement down on paper before they are transferred to computer-aided design programmes to start modelling the movement. Like so many things at Armin Strom, all of this is done in-house, with the dimensions calculated down to a precision of one micron to provide the inputs for the machines that will eventually produce the smallest of components.

At Armin Strom, the majority of components in the movement, with the exception of the escapement and balance spring, are produced in-house. Small round components like screws, pinions and gear wheels are produced by profile-turning machines, which gradually whittle away long steel or brass rods from the side to cut teeth or axles. Larger components such as base plates and bridges are produced from brass on CNC machines, which are capable of machining along multiple axes consecutively using different tools for different operations, moving the component using robotic arms.

Particularly small and delicate components, such as smaller bridges, levers and springs, are produced using wire erosion. This involves threading a wire that is not much smaller than a human hair through a tiny hole in the metal. An electrical current running through the wire reacts with a solution in which the entire working plate is dipped, thus “eroding” minuscule amounts of the metal. This allows particularly delicate operations to be carried out while maintaining the structural integrity of the metal. In fact, Armin Strom does not produce any of its components by stamping because of the stresses that this places on the metal.

Once the raw components are manufactured, they are engraved, bevelled, polished and decorated with circular graining or Geneva stripes by hand before moving to the in-house electro-plating department. Here, all steel and brass components are first given a gold plating before a layer of nickel is added to prevent corrosion and harden the surface. After cleaning, the parts are then dipped in other electroplating baths to give them their final color such as rhodium, ruthenium or rose gold. It is only thanks to its mastery of electroplating techniques inside its own workshops that Armin Strom can allow customers to choose preferred colors for the coating on different components.

Only then can the individual components of the movement be passed on to the watchmaker for assembly. After setting the jewels into the base plate and bridges, the watchmaker adds the gear train and mainspring. After the escapement and balance wheel are positioned, the movement finally comes to life… only to be completely disassembled, cleaned and dried before being re-assembled and lubricated. After several days of testing the precision, the watch is finally ready.