**INSIGHT MICRO-ROTOR SQUELETTE**

**With a stunning, skeletonised, in-house movement featuring superlatively**

**hand-finished mainplate and bridges in ultra-light, natural titanium**

This year marks the 15th anniversary of Romain Gauthier. It is fitting, then, that the Swiss watchmaker’s latest creation, Insight Micro-Rotor Squelette, calls on an area of craftsmanship for which he and his team have been heralded since the birth of the brand in 2005: hand-finishing.

By opening up and stripping down his high-end, time-only automatic calibre, Romain has created a truly contemporary skeleton watch that is a technical and artistic tour de force. Not only do the skeletonised, ultra-light natural titanium bridges and mainplate help to reveal the mesmerising mechanics of the in-house movement, they also provide the perfect platform for the Romain Gauthier *anglage* specialists to demonstrate their immense skills. For each Insight Micro-Rotor Squelette movement features as many as 250 hours devoted to *anglage* alone, that’s to say the bevelling, softening, smoothing and polishing by hand of the bridges and mainplate, in an extraordinary demonstration of watchmaking artistry.

Insight Micro-Rotor Squelette is available in a 42mm case made out of Carbonium®, a cutting-edge carbon composite sourced from aerospace-grade fibres that is light, mechanically resistant and catches the eye with its dynamic veining. This is a customisable “Manufacture Only” edition available exclusively via Manufacture Romain Gauthier. Insight Micro-Rotor Squelette is also available as customisable 39.5mm precious metal or titanium “Special Orders” through Romain Gauthier or its retail partners. To show the mouthwatering possibilities, Romain has created two Special Order examples, one in 18k red gold and another in 950 platinum.

**INSIGHT MICRO-ROTOR SQUELETTE IN DETAIL**

**Skeletonising Insight Micro-Rotor**

For either technical or aesthetic reasons, not every calibre lends itself to skeletonisation, and Romain Gauthier’s in-house movements are no different. *“If you skeletonised my first movement Prestige HM/HMS, there would be sizeable voids leaving little to see except the hair on your wrist, and that’s not ideal,”* says Romain. “*The open architecture of my Logical One means that if you opened it up even more, you wouldn’t necessarily be able to view more of the mechanics than what you can already see. However, my Insight Micro-Rotor jumps out as a natural fit for skeletonisation.”*

Insight Micro-Rotor is Romain Gauthier’s high-end, automatic timepiece of which the hour, minute and small second indications are powered by an in-house calibre boasting bidirectional micro-rotor made from 22k solid gold. Visible dial side and through the display back, this oscillating weight turns smoothly between two bridges, each fitted with a friction-minimising, wear-resistant ruby bearing. In whichever direction the micro-rotor swings, it winds a serially operating double mainspring barrel offering 80 hours of power at full wind. For Romain, the architecture of the arcing bridges, the position of the balance and micro-rotor, and the layout of the gears and barrels meant skeletonising this movement would really add something.

He says: *“As I worked on the design and explored potential executions, it became clear that skeletonising Insight Micro-Rotor would not leave awkward gaps, but would instead reveal previously hidden details and create new ones, making this movement even more expressive.”*

**Material decisions: Making the mainplate and bridges in ultra-light, natural titanium**

Romain’s design for opening up the Insight Micro-Rotor entailed skeletonising the mainplate and eight bridges that, until now, have been made in solid brass. At the thicknesses he envisaged, going as thin as 0.7mm, skeletonised brass bridges wouldn’t have necessarily held up. Grade 5 titanium, however, offered the requisite strength and a lightness that could reduce the overall weight of the movement to 15.95g, the ability to look good naturally without the need for galvanic deposition, and the ability to be hand-polished. All the same, machining titanium has its challenges.

*“Titanium takes longer than brass to machine the material into the required shape. Progress is slower and more incremental, with more steps required for each piece,”* says Romain. “*It wears down tools and can break them more easily. There is always a risk of fire, so you must avoid unmonitored machining during the night. And it also tests the machine operators’ ability to work within +/- 2-micron tolerances because if any holes are a fraction too small, the jewels could break when the watchmakers drive them in.”*

**Off-the-scale hand-finishing drawing on 15 years of savoir-faire**

If machining the titanium mainplate and bridges of Insight Micro-Rotor Squelette has its challenges, they pale in comparison to the challenges of hand-finishing them. For this skeletonised movement calls on a particular savoir-faire for which Romain and his team have garnered plenty of plaudits since the brand was founded in 2005: *anglage*, or the art of bevelling, softening, smoothing and polishing components by hand.

Put simply, *anglage* beautifies the component by creating a polished bevel between its surface and its flanks, one which catches the light and the eye. The *angleur* or *angleuse* creates a bevel using a steel file, then softens and smooths the material, first with degussit stone then using a series of buffs with emery-paper tip gradually going from a coarser to a finer grain, before polishing the bevel using the woody stem of the locally-growing gentian plant with diamond paste. It requires skill, experience and patience, and even relatively simply-shaped bridges made in brass can each take tens of hours to bevel, soften, smooth and polish by hand.

As you can imagine, the skeletonised mainplate and bridges of the Insight Micro-Rotor Squelette tested the talents of the Romain Gauthier *anglage* team on an entirely new level. One thing was the complexity of the shapes created by the skeletonisation, featuring no fewer than 156 sharp, internal angles that make it tricky for these artisans to access with their handheld tools, while limiting the scope of movement that their hands can make. Another thing was the way in which the titanium behaves.

*“In all my 17 years as an angleuse, I have never worked on a movement consisting of so much titanium,“* says Sylvie Devaux, Head of *Anglage* at Manufacture Romain Gauthier. *“I’ve worked on brass, steel, gold and German silver components and am even used to working on the titanium constant-force bridge of Romain’s Logical One, which takes a good 20 hours to finish by hand. But Insight Micro-Rotor Squelette is another proposition for me and my team.*

*“The same properties that make titanium a challenge to machine also make it extremely difficult to hand-finish. Each of the bevelling, softening, smoothing and polishing stages take far longer than working with brass. You have to repeat steps, sometimes twice. Titanium tends to stick to our anglage tools, and we have to keep trimming the ends of the buffs and gentian so they stay effective. You also sometimes come across micro-grains in the titanium that detach, leaving tiny spots. The only solution is to go back over the angle all again.”*

Indeed, it takes one Romain Gauthier *anglage* specialist no fewer than 250 hours to bevel, soften, smooth and polish by hand the natural titanium mainplate and eight bridges needed for one Insight Micro-Rotor Squelette.

And that’s not even counting the time it takes Sylvie and her team to carry out other decorative techniques applied by hand to these components, such as polishing the screw and jewel countersinks using an ebony spindle, satin-finishing the flanks and hand-frosting the flat surfaces.

In fact, when you add up all the hours devoted to decorating the entire movement by hand or by hand-operated tools – including *anglage*, hand-frosting, polishing countersinks, circular graining, straight graining and snailing – it comes to over 350 hours of work!

Sylvie concludes: *“Performing the anglage for one Insight Micro-Rotor Squelette is a real test of mental stamina. For a month and a half, 8 hours a day, you have to really be in the zone, concentrating so hard. It is like a marathon. You have to approach it angle by angle, component by component, until you finally reach the finish line and get that feeling of accomplishment.”*

In addition to hand-polished bevels, customers can opt for matte-finished bevels on their Insight Micro-Rotor Squelette, giving a slightly more understated look. The latter removes the need for the hand-polishing stage, but still involves the steps of bevelling, softening and smoothing by hand.

**Raising the bar for contemporary skeleton watches**

While the superlatively hand-finished, skeletonised mainplate and bridges of the Insight Micro-Rotor Squelette are a spectacle in themselves, opening up the calibre uncovers a raft of fresh details.

Between 1 o’clock and 3 o’clock, the winding and time-setting mechanisms are more visible with a cluster of Romain Gauthier S-slot screws on show. We can now see one of the mainspring barrels, decorated by snailing, at 5 o’clock and, at 7 o’clock, circular-grained gears with circular, bevelled arms. The increased sense of depth created by this skeletonisation makes the balance wheel at 6 o’clock appear as though it is floating, while the snailed micro-rotor at 9 o’clock sways more dramatically than ever between the stripped-down bridges.

The spectacle continues through the display back where the micro-rotor can be seen engaging the visible train of gears, beginning with the reversing gear that gives the mechanism its bidirectionality. The highly-decorated barrels and ratchet wheels are now more exposed, while the sinuous shapes of the bridges are juxtaposed by the straight-grained, linear plaquettes adorning them.

*“I feel that skeletonising the Insight Micro-Rotor takes this calibre to a more technical level,”* says Romain. *“The wearer can marvel at the gears and other moving parts that are now on show and appreciate the architecture even more. Opening up the movement also creates more layers making it more three-dimensional. The result, for me, is a real contemporary skeleton watch.”*

**Manufacture-Only Carbonium® Edition**

Romain Gauthier always knew that if he was ever going to create a timepiece that collectors could purchase exclusively through Manufacture Romain Gauthier, it needed to be something special with a strong identity. And so, for his first ever Manufacture-Only edition, Romain has chosen to present probably his sportiest looking watch to date: An Insight Micro-Rotor Squelette with case, crown, dial and buckle made out of Carbonium®.

Carbonium® is a high-tech, high-performance, carbon fibre composite invented and produced by French company Lavoisier Composites. It is made by employing a special compression-moulding process to ‘upcycle’ the epoxy resin and carbon fibres found in prepreg tapes sourced from the aerospace industry – fibres once earmarked to form part of an airliner wing, fin or fuselage.

Romain says: *“I have been interested in presenting a watch in carbon fibre for some time, but I was always waiting to find the right material, one that is a bona fide, technical carbon composite. I found that material in Carbonium®. I was drawn to Carbonium® because not only does it possess excellent mechanical properties, but it also looks fabulous and wears light on the wrist.”*

To make each of the Carbonium® elements for this timepiece, Lavoisier Composites creates Carbonium® blocks which are then finely shaped on a 5-axis machining centre before being matte-finished for a slightly silky surface appearance. In accordance with Romain’s wishes, Lavoisier chose a long fibre length of 50mm, in their eyes the sweet spot between mouldability, aesthetics and mechanical properties.

Indeed, the carbon fibre in Carbonium® is three times more rigid than titanium, yet twice as light. The fully assembled Carbonium® case for Insight Micro-Rotor Squelette weighs in at just 15.36g. So with the cased-up movement weighing 31.31g, it is fair to say this Carbonium® edition feels like a feather on the wrist.

What is more, at 42mm in diameter, this case is larger than the Insight Micro-Rotor case in precious metal or titanium (39.5mm). That is because the rigid and fibre-rich nature of Carbonium® means localised increases in case dimensions needed to be made in order to machine it optimally. The extra couple of millimetres only serve to increase the assertive presence of the Carbonium® which bears a striking, organic-looking, veined pattern. As you turn the watch, the veins take it in turns to reflect the light, lending the case a real vivacity.

With carbon fibre watches, often the movement is placed in a watertight cylinder within an unwaterproofed case. Romain was keen to avoid this ‘hack’ and instead wanted the skeletonised movement to be protected from humidity by the Carbonium® case itself. To that end, Lavoisier Composites performed a multi-step waterproofing process developed especially for this Romain Gauthier case, that saw resin injected into the micropores – invisible to the naked eye – on the inside of the case to prevent water from entering it.

As for the “Manufacture Only” status of this edition, Romain Gauthier feels that this will enhance its appeal to collectors. *“Purchasing this timepiece directly from us, our collectors will know that they are acquiring an exciting timepiece that they won’t find anywhere else,”* says Romain. *“Those who own it will, in a sense, become part of a club of owners who understand how this watch represents me in terms of the architectural movement, the extreme level of hand-finishing and the technical-yet-casual nature of the Carbonium® case. And they will know that they will have made a considerable contribution to supporting our watchmaking.”*

Customisable elements include the final finishing to the bridges and mainplate (hand-polished or matte-finished bevels); colour of the steel hands, dial accents and plaquette engravings; and colour of the natural rubber strap. The example here features hand-polished bevels, Pacific blue and white dial accents, and Pacific blue steel hands and natural rubber strap.

**Precious metal or titanium “Special Orders” available through Manufacture Romain Gauthier or its retailers**

Insight Micro-Rotor Squelette can also be requested as a “Special Order” in a 39.5mm precious metal or natural or black DLC Grade 5 titanium case, either directly via the brand or through Romain Gauthier retailers. To fuel our imaginations, Romain has created two Special Order examples featured here.

One is in 18k red gold featuring an oven-fired black enamel dial greyed by hand-frosting with white and gilded dial accents, complemented by 18k red gold hands; mainplate and bridges bevelled, softened and smoothed by hand, then matte-finished; and gilded micro-rotor, plaquettes and balance wheel. It is fitted with a grey, natural rubber strap with 18k red gold pin buckle.

The other example is in 950 platinum featuring an oven-fired, satin-blue enamel dial made in house by Romain’s wife Ana Gauthier, with white dial accents, accompanied by 18k white gold hands; bridges and mainplate bevelled, softened, smoothed and polished by hand; and rhodium-treated micro-rotor, plaquettes and balance wheel. It is accompanied by a navy-blue alligator leather strap with 18k white gold pin buckle.

Elements that collectors or retailers can customise include the material of the case; final finishing to the bridges and mainplate (hand-polished or matte-finished bevels); colour of the dial and dial accents; material and colour of the hands; colour of the plaquettes and their engravings; and the material and colour of the strap.

**TECHNICAL SPECIFICATIONS**

**Insight Micro-Rotor Squelette Manufacture-Only Carbonium® Edition**

**Features and indications**

Off-centre hours, minutes and small seconds

In-house, automatic movement

Superlatively hand-finished, skeletonised mainplate and bridges in natural titanium

22k gold bidirectional micro-rotor

Double mainspring barrel in series giving 80-hour power reserve

42mm Carbonium® case

Available exclusively through Manufacture Romain Gauthier

**Dial and hands**

Carbonium® hour-minute dial and small seconds dial (monobloc)

Skeletonised hour and minute hands in matte-finished steel

Solid small seconds hand in matte-finished steel

Colour of hands and dial accents customisable

**Movement and finishing**

Dimensions: 32.1mm x 6.8mm

Power reserve: 80 hours

Number of jewels: 33

Number of components: 206

Balance frequency: 28,800 vph / 4Hz

Components in: 22k gold micro-rotor, titanium, steel, stainless steel, beryllium copper, brass and German silver

Choice of final finishing to the bridges and mainplate (hand-polished or matte-finished bevels)

Colour of plaquette engravings customisable

**Case**

Material: Carbonium®

Dimensions: 42mm x 12.9mm at highest point

Water resistance: 50m/5atm/170ft

Sapphire crystal with interior anti-reflection coating, front and display back

Carbonium®crown for manual winding and time-setting at 2 o’clock

**Strap and buckle**

Natural rubber strap, colour customisable

Carbonium®pin buckle

**TECHNICAL SPECIFICATIONS**

**Insight Micro-Rotor Squelette Special Orders**

**Features and indications**

Off-centre hours, minutes and small seconds

In-house, automatic movement

Superlatively hand-finished, skeletonised mainplate and bridges in natural titanium

22k gold bidirectional micro-rotor

Double mainspring barrel in series giving 80-hour power reserve

39.5mm precious metal or natural or black DLC Grade 5 titanium case

Available through Manufacture Romain Gauthier or its retailers

**Dial and hands**

Oven-fired enamel dial

Skeletonised hour and minute hands

Solid small seconds hand

Finishing of the dial, material of the hands, colour of the hands and dial accents customisable

**Movement and finishing**

Dimensions: 32.1mm x 6.8mm

Power reserve: 80 hours

Number of jewels: 33

Number of components: 206

Balance frequency: 28,800 vph / 4Hz

Components in: 22k gold micro-rotor, titanium, steel, stainless steel, beryllium copper, brass and German silver

Choice of final finishing to the bridges and mainplate (hand-polished or matte-finished bevels)

Colour of plaquettes and plaquette engravings customisable

**Case**

Material: 18k red gold, 18k white gold, 950 platinum or natural or black DLC Grade 5 titanium

Dimensions: 39.5mm x 12.9mm at highest point

Water resistance: 50m/5atm/170ft

Sapphire crystal with interior anti-reflection coating, front and display back

Crown for manual winding and time-setting at 2 o’clock

**Strap and buckle**

Natural rubber strap or alligator leather strap hand-stitched in Switzerland, colour customisable

Pin or deployant buckle

Buckle in material to match case, except for platinum case which is accompanied by 18k white gold buckle

**ROMAIN GAUTHIER**

**Celebrating 15 years of high-end watchmaking**

This year 2020 marks the 15th anniversary of Romain Gauthier, the high-end watch brand based in the Vallée de Joux, Switzerland, led by its passionate founder Romain Gauthier.

Since establishing the brand in 2005, Gauthier has been marrying the know-how that he has developed living, studying and working in this picturesque valley – the heart of fine Swiss watchmaking – with a no-compromise approach to *haute horlogerie* to create exceptional timepieces.

These timepieces have been hailed for their eye-catching designs, innovative in-house movements and extremely high level of hand-finishing. Their exclusivity is ensured by the very small numbers in which they are created – about 60 pieces per year.

**The man who built the brand**

Romain Gauthier was born in 1975 in the Vallée de Joux, Switzerland, the cradle of fine Swiss watchmaking. It was here that Romain developed his passion for traditional haute horlogerie, his grasp of mechanics and engineering, and his eye for design.

Having studied precision mechanics at technical college, Romain qualified as a constructor of precision machinery in 1997. A year later, he started his first job as machine programmer-operator at a horological components manufacturer that he helped turn into one of the best-performing facilities in Europe.

Determined to build from scratch not just his own high-end watch, but also his own high-end watch brand, Romain completed an MBA in 2002. His final thesis was the business plan for his own watch company.

After working behind closed doors on his own timepieces for three years, he launched the Romain Gauthier brand in 2005, unveiling its first timepiece Prestige HM at Baselworld 2007. This was followed by Prestige HMS (2010), Logical One (2013), Logical One Secret (2014), Insight Micro-Rotor (2017), Insight Micro-Rotor Lady (2018) and Insight Micro-Rotor Squelette (2020). These encompass classically refined pieces, contemporarily casual creations and ethereal *objets d’art*, all featuring supremely finished in-house movements.

In 2013, the jury of the Grand Prix d’Horlogerie de Genève – the Oscars of watchmaking – awarded Romain Gauthier’s Logical One the prize for Best Men’s Complication.

**Manufacture Romain Gauthier**

Romain Gauthier’s ability to create exquisite timepieces is in large part thanks to his *manufacture*, based in Le Sentier, Switzerland, that he has steadily built up over the past 15 years.

The *manufacture* blends skilled craftsmen and time-honoured watchmaking tools with experienced technicians and cutting-edge production methods, allowing Romain Gauthier to design, produce, decorate, assemble and regulate in house all movements for the brand’s timepieces.

While this savoir-faire means that quality is uncompromised and precision is impressive, it also imbues Romain Gauthier timepieces with a rare beauty and unique soul.