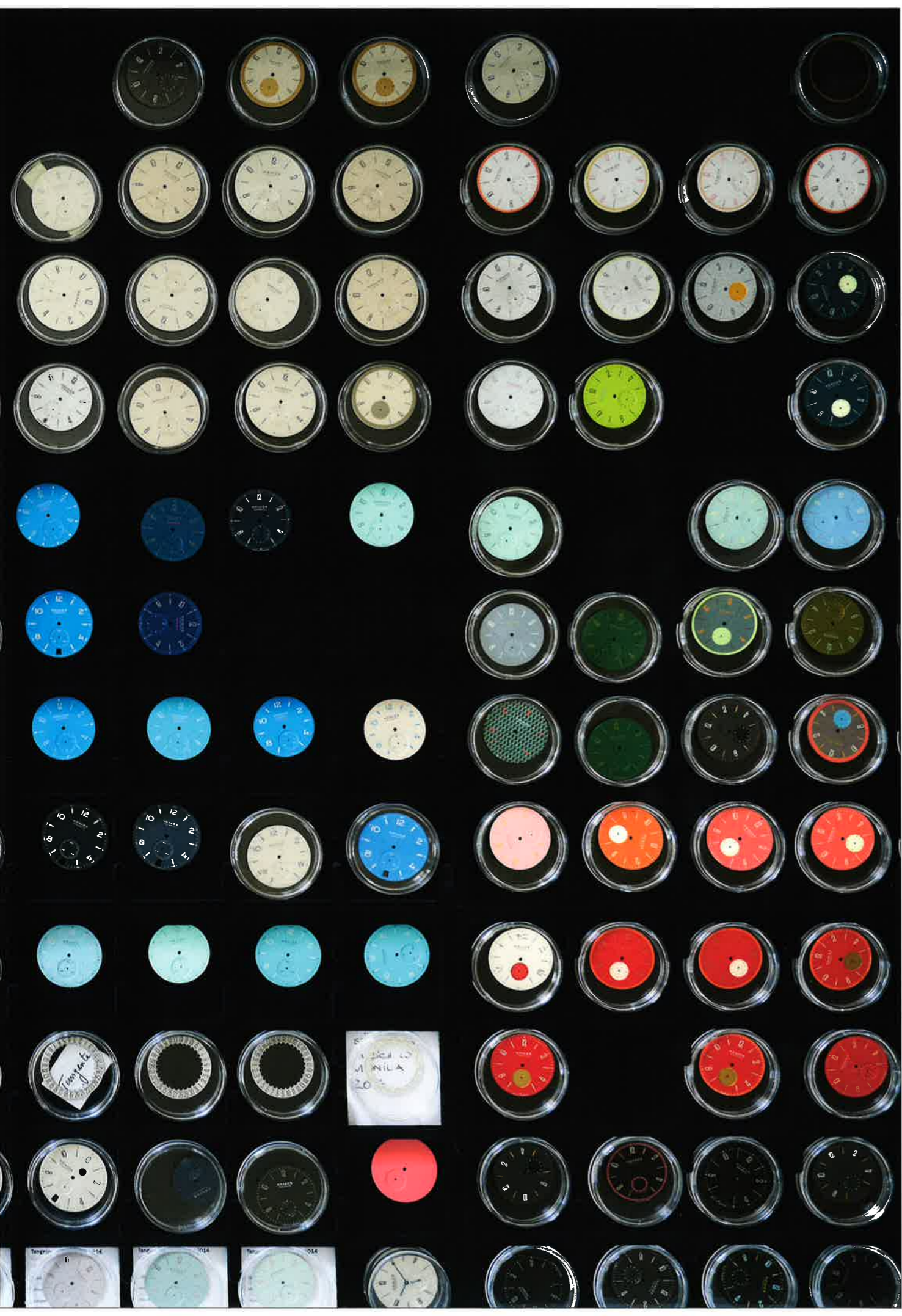


# The Horological Journal



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# Nomos Celebrates 30 Years

*Style and Precision for Everyday Wear*



Martin Foster FBHI

Nomos shared a generational turning point in German history 30 years ago. Today, as the fireworks over the Brandenburg Gate remind us of the 1989 fall of the Berlin wall, we can contemplate that just two months later, Roland Schwertner's aspiration arose, phoenix-like, from the political ashes, and gave us Nomos.

This company is proud to call its home Glashütte, a small town tucked away between forests and hills, south of Berlin and located in the eastern Ore Mountains.

Nomos is owner-operated and not part of any watch industry conglomerate. For those of us immersed in this global horological melee, that is indeed a relief in our tense money-centred world of luxury watches, where the big brands tread on each others' toes in a race for the top. Its management comprises founder and head of sales Roland Schwertner and co-partners Uwe Ahrendt (CEO and a graduate engineer responsible for production) and Judith Borowski (CBO, who heads up communications and design in Berlin).

For centuries, Saxony-based Glashütte has been producing some of the world's most sought-after timepieces. Philosophically in tune with this, everything at Nomos Glashütte is distilled to essentials. What emerges is a brand synonymous with good design and at an affordable price. Now, today, Nomos Glashütte is the largest manufacturer of mechanical timepieces in Germany, exporting to over 40 countries. Signature lines include the Tangente, Metro and Minimatik.

It is held that Nomos watches are not strictly in the style of the Bauhaus of 1919. However, Nomos believes they are how Max Bill and other Bauhaus designers would create and wear them today. As Bauhaus minimalism has evolved over the last century, perhaps it could be said that Nomos minimalism now presents the Bauhaus of 2019? After all, Nomos Glashütte is also a member of the Deutscher Werkbund, a group that represents the interests of companies that preserve the arts of handcraft with industrial production, design and functionality. The Deutscher Werkbund predates Bauhaus and still flourishes today.

The 40 designers and other creative people in the team at the Nomos Berlinerblau Studio continue this tradition with a sharp eye for contemporary and future trends.

Thus, with a manufacturing team in Glashütte and a designer team in Berlin, Nomos creates a harmonic symbiosis of traditional craftsmanship and contemporary design which is recognised for its clean and minimalist aesthetic.

Uwe, however, as quoted in *Luxury Briefing* magazine, is looking for a strongly independent path. 'Established luxury brands react to the current economic situation by lowering the entry-level price for mechanical watches in the hope



Figure 1. Nomos Glashütte headquarters, in the town's former railway station building.



Figure 2. Nomos watches, designed in Berlin and made in Glashütte. Nomos has its Berlinerblau bureau with about 30 employees taking care of its designs, advertising, marketing material and campaigns. It provides the genesis of the development through to the emergence of new Nomos timepieces in the marketplace.

of appealing to a new generation of watch enthusiasts,' he told the publication. 'We [at Nomos] don't make watches for astronauts or yachting, but rather beautiful watches for everyday life. Customers and retailers are becoming ever more aware of our reputation, and we're delighted about it.'

The first Nomos timepiece, the Tangente, was presented in 1992 and is still considered to be the most popular model. At that time, the basis for these movements was the Swiss-made ETA Peseux 7001. Pursuant to an uncompromising policy of independence, a full range of calibres has now been



Figure 3. The chronometry building, high up in the valley, houses watchmakers' assembly workshops. The majority of work is done by hand.



Figure 4. Nomos watchmakers in the workshops in the chronometry building's complications department.



Figure 5. Nomos Glashütte and international humanitarian medical organisation Doctors Without Borders have long been in partnership. To date, 8,000 watches have been produced to raise funds. This special edition of the Tangente Neomatik cal. DUW 3001 measures just 3.2mm in height and features the Nomos swing escapement. A subtle 'Ärzte ohne Grenzen' ('Doctors Without Borders') inscription below six o'clock on the dial, and a larger engraving on the back, pay tribute to the organisation. The figure 12 is red, since this is the colour that represents both emergency aid and the medical body itself. It is fitted with the new Nomos bracelet, which is smooth and comfortable.

Figure 6. This Nomos Tangente Sport Neomatik 42 date timepiece is a new release for 2019 and is the first Nomos watch designed especially with a bracelet. Its Nomos Neomatik date calibre [DUW 6101] is shock-protected, with a sapphire crystal glass back and crown protection. The slender DUW 6101 movement saves space in height, meaning its extreme robustness is packed into a compact unit. Water resistant to 300m are the Club Sport, left, and two colours of the Tangente Sport. Superluminova on the dial and hands has been increased in both varieties, thus it glows longer in the dark, or underwater.

developed. Following the successful design and manufacture of the 'swing' escapement in 2014, all components are now made in-house.

Since 2005, Nomos has installed its own in-house manufactured movements in all its timepieces. It is therefore not beholden to capricious policy decisions and monopolistic supply restrictions of the Swiss makers. Roger Moore, Bill Clinton and many German celebrities have relied on a fine Nomos wristwatch.

Nomos watches have won more than 150 prestigious

design awards (as of December 2018), including the iF Design, Good Design, Red Dot Design and German Design Awards. In 2018, Nomos Glashütte became the first non-Swiss brand after A. Lange & Söhne to win the Grand Prix d'Horlogerie de Genève – the Oscars of the watchmaking world – with the Tangente Update model, which has also been awarded the European Product Design Award.

Nomos Glashütte currently produces a complete range of 13 in-house calibres with various complications (see overleaf).



Figure 7. Nomos developed what it called its 'swing system' escapement, which it released in 2014. The swing system is a high-end lever escapement, originally pioneered in the English watch industry in the mid-eighteenth century, but picked up and refined by the Swiss. For Nomos, it is the product of years of investment and has freed the company from dependence on Nivarox (Swatch Group), which is currently the industry's primary supplier of escapements.

Figure 9. The special Nomos cal. DUW 5201 for the Zürich Weltzeit Amsterdam is a limited edition of 25 pieces designed in close collaboration with Nomos by Ace Jewellers (Amsterdam) as a 'homage to their home town of Amsterdam'.

The Nomos Glashütte movements have a 'Glashütte three-quarter plate', are rhodium-plated and refined with Glashütte ribbing and Nomos *perlage* (decorative spotting). Further special features include a stop-seconds mechanism, fine adjustment in six positions, Glashütte-style Nomos stopwork, tempered and blued screws, sunburst finish on the ratchet and crown wheels.

Additional features of the movements DUW 1001 and 2002 include a swan neck fine rate adjustment, hand-engraved balance cock, screwed gold chatons, 84-hour power reserve,

twin mainspring barrels and a beautiful copper-alloy screwed balance.

Differentiating Nomos philosophy from the historical global watch brands is important both to buyers and others such as writers for the industry – and this differentiation tells us clearly how and why Nomos stands apart. It pursues a determined policy of independence whilst carefully monitoring price affordability. Above all, however, when we talk to Nomos we are talking to real people, without the artificiality of having to carve away the PR promotional guff which is endemic to the mainstream brands of this idiosyncratic industry.

NOMOS GLASHÜTTE						
	Escapement	Size (mm)	Duration	Power Reserve Indication	Date Indication	Notes
<b>Manual Winding</b>						
Alpha	Nivarox	23.3 x 2.6	43			Variant Alpha.2 has short seconds pivot
DUW 1001	Nivarox (screwed balance)	32 x 3.6	84	✓		Twin barrels, screwed balance
DUW 2002	Nivarox (screwed balance)	32.6 x 22.6 x 3.6	84			Twin barrels, tonneau, screwed balance
DUW 4101	Swing	32.1 x 2.8	42		✓	
DUW 4301	Swing	23.3 x 2.8	43	✓		
DUW 4401	Swing	32.1 x 2.8	42	✓	✓	
<b>Automatic Winding</b>						
Epsilon	Nivarox	31 x 4.3	43			
Zeta	Nivarox	31 x 4.3	42		✓	
DUW 3001	Swing	28.8 x 3.2	43			
DUW 5001	Swing	31 x 4.3	43			
DUW 5101	Swing	31 x 4.3	42		✓	
DUW 5201	Swing	31 x 5.7	42			World Time/GMT
DUW 6101	Swing	35.2 x 3.6	42		✓	

Photographs © Nomos Glashütte.

## Nomos - Provenance and Corporate Structure

Since its inception in 1990 by IT specialist and photographer Roland Schwertner, Nomos has developed three sites in and around Glashütte, which is now recognised as the traditional point of German high precision watchmaking. The Nomos administration was established in the town's former railway station building, while most of the watchmakers are located on Am Erbenhang Street. In Kreuzberg in Berlin, the company maintains its Berlinerblau in-house design agency. Staff designers (and guests such as industrial designer Mark Braun) develop their visualisations for future collections here. When decisions are formalised, they are sent along to the Nomos production house in Glashütte. The affordable Nomos Bauhaus-style watches were originally designed by Susanne Günther and the first editions of Nomos watches were released in 1992.

In its early years, the company focused on manufacturing mechanical watches with hand-wound movements. In keeping with its commitment to independence, however, it has developed new movements with the essential features of self-winding and calendar elements, and its 'swing system' version of the lever escapement.

Today, Nomos employs around 300 people, 260 of whom are based in the Nomos manufacturing sites in Glashütte and the neighbouring village. Annual production is approximately 20,000 pieces. Nomos Glashütte is owner-operated and not part of any group; no incestuous conglomerate affiliations here at all. The Nomos co-owners and senior management team are founder Roland Schwertner (also head of sales at Nomos Glashütte), CEO Uwe Ahrendt and CBO Judith Borowski and two additional partners Lother Meyer and the company bank.



*Roland Schwertner*

**Nomos Glashütte Founder**

Roland was born in 1953 and studied business administration before working as an IT consultant and photographer in Düsseldorf.



*Uwe Ahrendt*

**Chief Executive Officer**

Born in 1969, Uwe Ahrendt is a fourth-generation Glashütte resident whose history in the industry dates back to his great-grandfather, who owned a company that produced balances for A. Lange & Söhne. Uwe is a toolmaker with degrees in precision and industrial engineering. His career took him to IWC Schaffhausen and A. Lange & Söhne, where he worked as head of production. He has been the CEO of Nomos since 2000.

Uwe has three children and has been a member of Glashütte's town council since 1999, joining the local regional council in 2019. He is a member of the advisory council of the German Federal Bank in Saxony and Thuringia.



*Judith Borowski*

**Chief Brand Officer**

Judith Borowski was born in 1969 and studied criminology, art history and politics in Zurich and Hamburg before enrolling in journalism school. She worked as an editor for TV channels and newspapers, such as German public service broadcaster ARD and *Financial Times Deutschland*, before joining Nomos Glashütte in 2001.

Judith is responsible for design and brand management at the watchmaking company. She lives in Berlin with her family.

Photographs © Nomos Glashütte.

1990

Roland Schwertner, IT specialist and photographer, arrives in Glashütte and registers the trademark 'Nomos Glashütte/SA' in January.

1992

New movements designated as Tangente, Tetra, Orion, and Ludwig are publicly introduced and brought on the market.

A court rules on the use of the protected designation of origin 'Glashütte'. At least 50% of the add-on value of a calibre must be realised in the town in order to qualify for this designation.

2001

Development of the unusually flat Nomos date mechanism is completed and the technology is patented. It is laid around the edge of the mechanical movement thus avoiding adding to the overall thickness of the calibre.

2003

The Nomos power reserve mechanism is incorporated for the first time. This mechanism is also extra flat, requiring only an additional three wheels.

Uwe Ahrendt becomes a partner.

2004

Judith Borowski becomes a partner.

2005

Nomos Glashütte finally becomes a watch factory. It creates the Epsilon, its first fully in-house designed and made automatic calibre, for use in the Tangomat. It also begins building the manual winding calibres in-house.

2010

Design and construction of the Worldtimer and a GMT model are completed.

2014

Nomos Glashütte now has its own escapement, designed and built in-house and designated the Nomos swing system, having realised the necessary components and fine regulation. This system is a potent declaration of independence in the world of precision watchmaking and demonstrates the company's objectives of independence and the quality assurance of its movements.

2015

Nomos develops the Neomatik cal. DUW 3001 which, at only 3.2mm in height, is exceptionally thin as well as highly precise. Its release sets both a new standard for self-winding calibres and, for Nomos, the foundation of a new market segment.

2017

A further manufacturing facility is set up in the Schlottwitz district.

2018

The eleventh calibre from Nomos Glashütte, DUW 6101, is an entirely new design. It features a cutting-edge mechanism by which one can set the date both backwards and forwards quickly and easily via the crown. The date display can be placed at the edge of the dial, even in larger watches. At a height of just 3.6 mm, this Neomatik calibre is exceptionally slender.

# Behind the Scenes at Nomos

## A Factory Visit by the HJ



Justin Koullapis FBHI

My first visit to Nomos was in the summer of 2006, when it was collaborating with Wempe to produce high-grade chronometer movements for the old established German jewellers. Back then, Nomos was entirely housed in the old Glashütte town railway station.\* It still operates out of this building, but with its hugely expanded production capability the site now serves as offices, while the technical and design arms of the firm are in dedicated facilities elsewhere. Nomos is Germany's largest manufacturer by volume of mechanical watches. Prices range from £1,060 to £15,800 although the bulk of the collection is priced at £2,000-£3,000.

Aside from its buildings and facilities are the company's attitude and values, and the only true witnesses to that are its people. Since the time of that first visit, I have had many interactions with the staff from Nomos, and have been impressed by the long tenure of its employees: they must enjoy working there. Year in, year out, the same friendly and genuinely enthusiastic faces welcome us as old friends. There are none of the over-polished airs and graces about them that are so common in this industry. At Baselworld, one young chap called Merlin greeted us every year to take our coats and give us cloakroom tickets. I didn't realise until recently that he is the son of one of the founders, and presently vice-president of Nomos in North America.

When we visited this summer, our first stop was with Sarah Mie Nass, head of International Public Relations and Christiane Schönthier at their newest site, the *Fertigung*, or machine-production facility, in the neighbouring village of Schlottwitz, **Figure 1**. All watch manufacturers that produce large series in-house now are replete with every type of digitally-controlled machine, including sliding-head lathes with automatic bar feed, multi-axis precision milling machines and wire-erosion electro-discharge machining (EDM) cutters. The experienced production engineers at Nomos aim to have these machines running at capacity as much as possible, and typically the only thing a visitor can see through the machines' glazed cabinets is a flood of coolant while the cutters do their work. This is punctuated by the periodic clink as a new watch part drops along a chute into a waiting basket.

Don't get me wrong: although these parts are made by highly automated processes to an extremely high specification, they in no way resemble what ends up in the finished watch.

\* This hilly town in Saxony is fewer than 20km from the Czech border. I have noticed that people often mispronounce it. Being a compound word, there is a break between the *s* and the *h*, they are pronounced separately, not together 'sh'. The correct way to say it is something like a clipped Yorkshire 'glass' followed by 'hooter'. Glass-hooter, not glar-shoot.



Figure 1. The Nomos machine-production facility is in the neighbouring village of Schlottwitz.

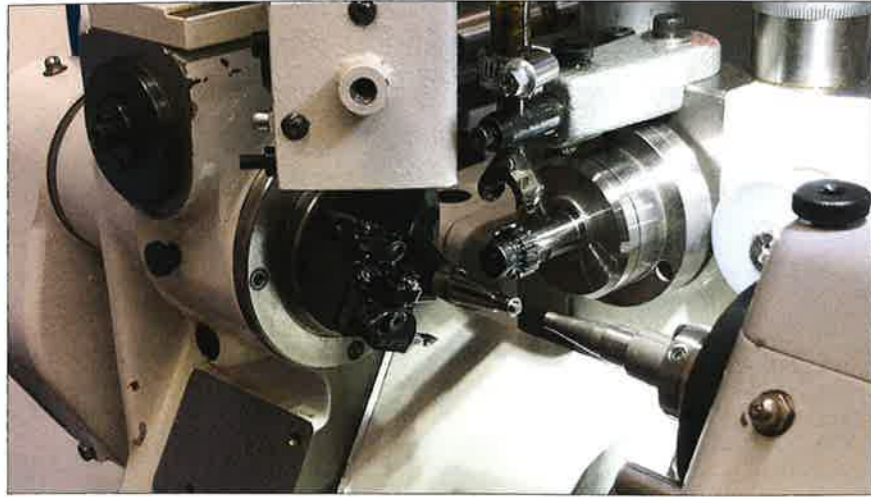


Figures 2A and B. Cupro-nickel balances, fresh off the sliding-head lathe.

Scores of further technical and finishing processes are needed to transform these 'grey' blanks into the jewel-like parts that bespeak traditional horology.

In the turning department, stocks of high quality European brasses steels and bronzes are kept on hand. The banks of bar-fed sliding-head lathes are extremely versatile and can produce an amazing range of geometries. The three-armed CuNi-alloy balances for the Nomos swing system escapement come straight off the machine with the rims chamfered and spot-drilled for later drilling or fine poising, **Figures 2A and B**.

The teeth on many wheels are cut on a hobbing machine. This can be done most efficiently by stacking a number of wheel blanks and then hobbing them together, but it can also be done on single wheels, as is the case with one type of upper crown wheel, where the toothed part is on a different plane from the boss, meaning that they can't be stacked – the step would create gaps that would lead to vibrations and burrs, **Figures 3A and B**.



Figures 3A and B. In the 'Gearing' department, these steel blanks will become ratchet wheels. Due to the boss on their underside, these cannot be stacked and must be hobbled one at a time. The wishbone delivers jets of cutting fluid, whilst a pointed cutter in the foreground slices burrs off the work.

Instead, each of these wheels is given its own sacrificial backing piece, and together this pair is cut as one.

(I am often amused by direct translations into English; the name of this department is *Verzählen*, which is 'gearing' in German, but directly translated it means something like 'betoothing', an expression I might very well adopt!)

No CNC facility is possible without an associated toolmaker's workshop, where all the supporting devices, fixtures and tooling are made.

Stepping out of the *Fertigung* presents a marked change of air, from the compelling smell of cutting oil to that distinct cleanness that comes from proximity to mountains. A short drive along the riverside road takes us into Glashütte and then either a very stiff walk or a short drive up the hill to the *Chronometrie*, **Figure 4**. Determined to dignify the occasion by not being under-dressed even in one of the hottest European summers for decades, we were in jackets and ties, so for us there was only one way up that road! From the summit, the views are supremely rewarding. Glashütte is evocative and beautiful in the summer as it must be in the crisp snows of winter.

Here at the *Chronometrie*, the watch parts are transformed from their off-the-machine appearance to a fine finish acceptable for the wrist. Of the 600 or so hands that make Nomos 'Nomos', most are occupied at this hilltop location.

The steps needed to turn the machined parts into a finished watch seem almost innumerable. A critical process is that of organising and arranging components in such a way that the watch or sub-assembly can be put together quickly and efficiently. For example, when placing and pressing jewels into holes, the semi-automated process needs the supply of jewels to all be facing the same way. Jewels are placed in position by an operator who lays them in neat rows on dedicated pallets, **Figure 5**.

For headed parts like studs and screws, they are oriented head-up in grooved pallets in a vibratory process, **Figure 6**.

The automated fitting of jewel holes is supervised by an operator. A computerised vacuum head places the stones loosely in position, followed by driving in with servo-press calibrated for force and depth of insertion. Using this method, the lateral positioning of the stones is held to within  $2\mu$  of nominal which, with the tolerance of the jewels themselves, gives an overall tolerance of  $4\mu$  of the position of the pivot hole.

Even lubrication is systematised – micro-dosing equipment

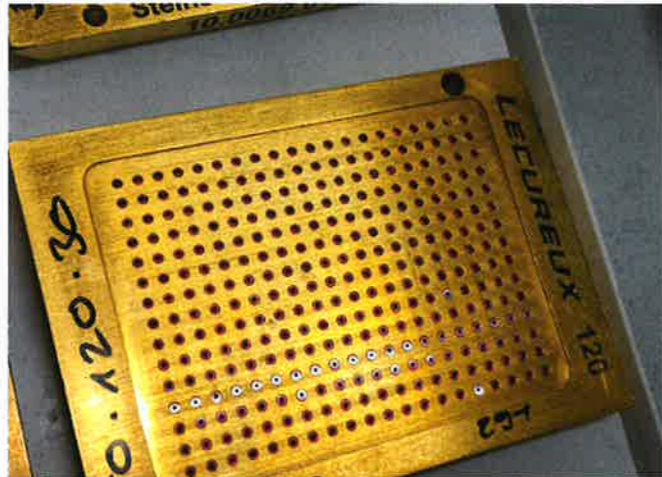
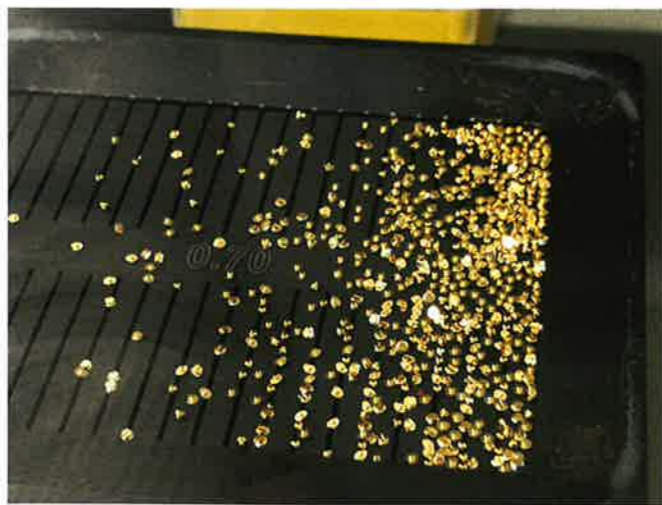


Figure 5. Jewels are placed into pallets so that automated jewel presses can repeatedly and predictably access them.



Figures 6. Some parts are first automatically oriented head-up so that they may be easily accessed by operator or machine.

delivers exactly the same amount of grease or oil every time the device is activated, **Figures 7A and B**. After lubrication, the watches are left running for periods first of 14 hours, then three days and five days in succession, with interim timekeeping tests being conducted between each period. This



Figures 7A. At this assembly station, the lady is surrounded by aids to her work. Micro-dose dispensers ensure predictable and clean oiling. Automatic pneumatic screwdrivers start rotating when they are pressed down.



Figure 7B.



Figure 8. This gap is gauged as large, medium or small, and pallets with a suitable gap are chosen when controlling the amplitude of a new watch.

'running in' is largely to allow the grease to properly disperse over the mainspring.

Leading up to the regulation in six positions, fine adjustments are carried out. An example is dynamic poising, where shavings are removed with the balance in situ, and it is here where the dimples machined into the balance rims come into their own.

In a very specialised department they carry out the fine pre-assembly and adjustment to the swing system escapement. We watched in fascination as a lady shellacked the stones into new pallets. First a series of 20 pallets with stones are mounted on a brass pallet-warming tray. Pins in the tray jig the pallets so that they are all held firmly in the same orientation. A piece of shellac is warmed and drawn out into a long thread. This is then chipped with a watchmaker's screwdriver into even-length pieces about a millimetre long. The chips are placed on the stones, and the whole is warmed on a classical pallet heater. The lady told us that she swaps jobs with colleagues, because doing only this would drive her crazy! Considering that Nomos have produced many tens of thousands of swing system escapements, I did get to wonder if *all* the pallets are prepared in that one room, 20 at a time?

This pallet-setting process for the swing escapement is designed to have some variation. Nomos fits stones into the pallet bodies at three different depths, which are called large, medium and small. Large has the deepest engagement with the escape wheel (i.e. the stones protrude more) and therefore the deepest locking, **Figure 8**.

This becomes critical in the assembly of manual-wind versus automatic watches. The escapement, which has a  $52^\circ$  lift angle, is set to peak at  $320^\circ$  amplitude for manual-wind watches, but only at  $310^\circ$  for automatic. This is to accommodate

possible variation in the degree of slip in the mainspring and the attendant risk of banking. Rather than adjusting each set of pallets on a watch-by-watch basis, they fit the watch with a suitable set from the range of three sizes, and this governs the amplitude to within a few degrees. Automatic watches are typically fitted with 'large' category pallets, whilst they aim to fit the medium pallets to the majority of their watches.

One can still buy Nomos watches with the classical Nivarox escapement; all the models with their calibre 'alpha' are fitted with Nivarox escapements, of which they bought large supplies in the early days.

In the same department, a chap peering through a microscope was truing balance springs in the round and in the flat. Centring at the collet is critical, and when properly done, the coils all appear to scroll outwards in a continuous, gliding motion when the holding arbor is spun.

One way to optimise the adjustment process of new escapements is to ensure that balances and springs are closely matched to each other before adjustment begins. For example, minute differences in manufacturing can have a big effect on the moment of inertia of a balance. If a balance whose mass is at one extreme of the tolerance range were fitted with a 'standard' spring, it will take a lot more work than normal to bring such a watch to time. This presupposes that a 'standard' spring exists, because the springs will experience similar variation in manufacture.

The industry has therefore developed a grading process, where loose balances are tested for their moments of inertia and springs for their elastic characteristics. Each of these is then classified within a number of groups. Springs and balances that fall into corresponding groups are then married to each other and require the least amount of tweaking

to oscillate at the theoretical rate. This work requires sophisticated equipment, the Greiner Class-O-Matic being the gold standard, as used by Nomos. The equipment is so sensitive that it can detect opening and closing drawers in the neighbouring area, so they operate it only in strictly controlled conditions.

Producing a new escapement is not for the timorous. Nomos began work on developing the escapement in 2007; by 2009 it had begun collaboration with the Institute of Machine Elements and Machine Design at the Technical University of Dresden. This collaboration, funded in part by the *Sächsische Aufbaubank* and the EU's European Regional Development Fund, led to the development not only of the swing system escapement but also to a new wheel tooth profile for the going train of their DUW calibres (DUW stands for *Deutsche Uhrenwerke*, and is applied to all calibres with the swing escapement and also the calibres 1001 and 2002, introduced in 2013 pre-swing). Most parts of the escapement are made under Nomos's own roof, including the escape wheel and balance. The jewels are ground and supplied by specialists to the company's specific pattern. Upon completion of the escapement's development, it was secretly included in some 10,000 watches in the years leading up to its official press launch in 2014 in the Metro model.

Why would Nomos expose itself to the expense and risks of making its own escapement? Of course, the cachet of being one of the few companies in the world to do so is hugely valuable. By association, the town of Glashütte also benefits, being perhaps the only place in Europe outside Switzerland where this is done at this scale. Does Nomos plan to sell the escapement? The company told us that whilst it has the capacity to do so, this is not its intention.

Beyond philosophical considerations, having its own escapement gives Nomos an edge at a technical level. Bought escapements from the likes of Nivarox are fixed with respect to the pinning points of the balance spring collet and the stud, and need to be oriented in the watch in a prescribed way if the system isn't to suffer from 'hard-wired' errors from the orientation of an escapement, such as the Caspari and Grossman effects. By developing an escapement afresh, they can orient it as they please in their movements.

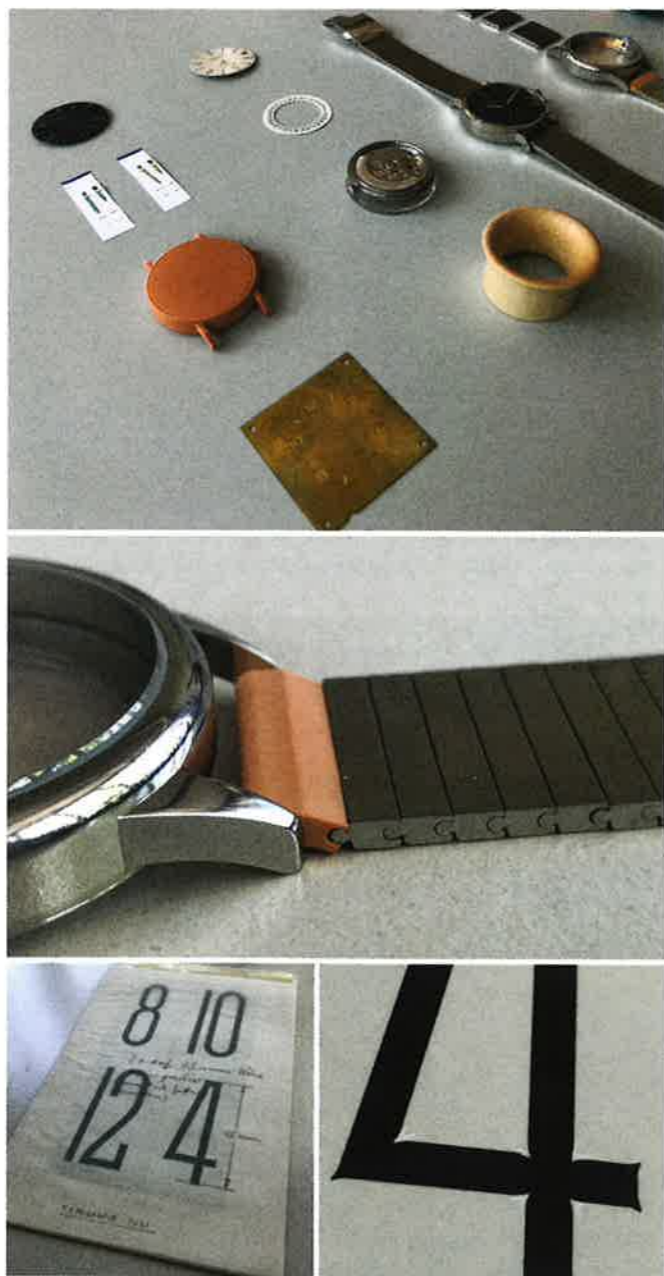
Technology is at the heart of the entire design process, from the early concept stages of a new watch to the details of escapement optimisation. For example, when the model Ahoi was commissioned, **Figure 9**, the classical Nomos case style needed a full technical review due to the model's 20-atmosphere water-resistance. Starting with sketches, senior product designer Thomas Höhnel (a graduate of Berlin's University of the Arts and Central Saint Martins in London) studied his ideas using iterative steps with rapid prototyping first in plastics and then ceramic, **Figure 10**. Once a degree of confidence has been attained that the design is commensurate with what is technically possible, a metal prototype is produced. From plastic model to metal prototype typically takes 6-8 weeks. This might be repeated a number of times, before the production engineers can even think of assuming responsibility.

If it's a new calibre that's being designed, the process is, of course, even longer. Now that there is a track record of in-house calibre production, some of the steps may need less attention. For example, wheel trains, tooth forms and calendar work are all resolved; calibres now take about two years to develop, although some of the more complex automatics have



© Nomos Glashütte

Figures 9. The Nomos Ahoi demanded additional design attention, because although it has the typical lean Nomos appearance, it is pressure-resistant to 20 ata.



Figures 10. Every detail is considered at the design stage, including microscopic typeface adjustments. Rapid prototyping sits side-by-side with industrial machining.

taken as many as five. Digital modelling of the escapement is performed using Finite Element Method CAD software, which is sophisticated enough to simulate the effects of different types of oil on the escapement. Another detail currently being studied is pallet bodies with different degrees of elasticity and how that affects escapement impulse, **Figure 11**.

Indeed, having experienced the earnestness and positive intensity of this relatively young company, I was forced to wonder not *how* it all started, but *why*? What compelled a man to rush to the distant reaches of a post-Cold-War Germany and set up an industry in a highly specialised field in which he had absolutely no background?

It seems there is no plain answer; obsessions grab us and hold us without needing reasons. By his own account, we can at least identify a few of the stepping stones that led founder Roland Schwertner, now 66, down this path. His first exposure to the watch industry was while working as a photographer and IT consultant in the 1980s; one of his clients was a Düsseldorf-based watchmaking company. Schwertner knew the region around Glashütte from visiting relatives there. He visited the town in 1990, two months after the fall of the Berlin Wall. No doubt energised by what was happening in Europe, he says that he was inspired by the potential he saw. Collaborating with a graphic designer and a watchmaker, Nomos was founded within a year. The first four models they introduced are still in production today: Tangente, Orion, Ludwig, and Tetra. Indeed, no Nomos models have yet been retired.

Then again, why would they be? Nomos watches are instantly recognisable, yet with enough variation in style to suit many tastes. The watches and the people making them have attained that rare balance of being technical whilst eminently approachable, you might as easily say fun. Looking at its history and working practices, it becomes clear why Nomos has lasted for 30 successful years, and why it looks set to run for many more.



Figure 11. Theodor Prenzel discusses how finite element analysis helps Nomos refine subtleties like escapement lever geometry.



Figure 12. It seems that watchmaking has to compete with football for the hearts of the local fellows.

*A full tear-down of the Tangente Neomatik 41 has been written and will appear in a future edition of the HJ.*