The Testing Ground

A Swiss chronometer isn't a Swiss chronometer until COSC, the official Swiss testing institute, says it is. We examine the organization's stringent testing process.

BY JAN LEHMHAUS

The administrative offices of the Contrôle Officiel Suisse des Chronomètres, or COSC, which tests watch movements for precision and certifies them as chronometers, is in the town of La Chaux-de-Fonds in the Jura watchmaking region. There, director Andreas Wyss coordinates the activities of COSC's three testing centers in Le Locle, Bienne and Geneva.

Despite its official-sounding name, COSC is not a government agency, but a non-subsidized, not-for-profit association that adheres to a series of organizational rules and regulations established over the course of its history. It was founded in 1973, as a means of supporting the Swiss mechanical-watch industry, which was starting to feel the effects of competition from the makers of cheaper, quartz-driven timepieces from the Far East. The watchmaking cantons of Bern, Geneva, Neuchâtel, Solothurn and Vaud, as well as the Federation of the Swiss Watch Industry (FH) came together to jointly administer and award the prestigious title, "chronometer."

As a non-profit, COSC is financed entirely by income generated from the fees it charges watch manufacturers for testing their movements. It is governed by a general assembly, with representatives from the cantons, watch manufacturers and their professional association. It has two basic functions. As an instrument of quality control, it tests movements, which have been voluntarily submitted, and determines which ones are precise enough to bear the "chronometer" label. It also has a commercial objective, to promote Swiss chronometers. As of last summer, it began certifying only those movements that will be cased in watches made by Swiss manufacturers (see sidebar).

COSC director Andreas Wyss

In the beginning, COSC consisted of seven laboratories that had been founded independently in the 19th century, but which proved difficult to oversee and administer collectively. Logistics, as well as Switzerland's federally minded character, determined that consolidation into a single, centralized testing office would not work. Instead, COSC opted to keep three testing centers, all in important watchmaking towns.

The director of COSC is chosen by the general assembly. This person coordinates the work performed by the three offices — though not as a traditional supervisor, since the 20 or so employees are not part of COSC but are employed by the local governments. The central office in La Chaux-de-Fonds supplies the technical equipment needed for measuring and assessing the results and arranges for the regular certification of the operations as SCS (Swiss Calibration Service) laboratories through the Swiss office for measurement and accreditation, or METAS.

THE COURSE OF TESTING has both technical and legal specifications. One of these is that the customer (i.e., the watch company) is solely responsible for transporting the movements to and from COSC. (The last accident that occurred in-house — in which several hundred movements fell to the floor — happened many years ago.) The movements must be delivered in clear, plastic capsules that

The New Face at COSC

Andreas Wyss has been director of COSC since July 1. The 48-year-old engineer previously held positions in the metal fabrication and precision-machine industries. He spoke with *WT* about the latest developments at the testing agency and his plans for its future.

WT: You've been the director of COSC for several months now. Tell us about the projects you're tackling first.
AW: Naturally, we are trying to make the work we perform at COSC more readily known and more easily accessible. An important aspect of this is providing a Web site that is more appealing and informative. It's my opinion that even more manufacturers should have their watches certified as chronometers, and so it's important to provide them with information about what we do. Logistics throughout the testing processes are also being improved. We have made arrangements with manufacturers to notify us of the number of movements they will be submitting a few days in advance. This was not the usual procedure in the past.

WT: Will you increase the testing criteria, and possibly test complete watches, as the Germans are doing in Glashütte?
AW: We follow the testing criteria set out in the international ISO 3159 standard and it would be very difficult for us to change that. Also, we already test cased watches for customers at their request.

WT: A dramatic change was enacted before you took this position — as of this past summer, COSC is certifying movements for "Swiss made" watches only, which means only watches that are cased in Switzerland. Several German brands were caught by surprise by this change. What is the thinking behind it?
AW: The general assembly at COSC came to this decision after much debate. It was their intention to strengthen the Swiss watch industry with an exclusive chronometer certification. It's unfortunate that several foreign companies were unaware of the change and couldn't amass sufficient stores of certified movements in time.

WT: But won't COSC become less significant as a strictly national or regional organization, and won't this also open the way for other testing facilities?
AW: Financially speaking, the loss of a few hundred movements to other testing facilities abroad is rather insignificant. And, of course, it's impossible for me to say now whether this new arrangement will damage our image. Still, this decision isn't set in stone. It's a remedy for the current situation, just as in the past COSC sometimes tested only Swiss movements or [at other times] included foreign ones. It seems certain to me that this measure will not play into the hands of other testing institutions. The facilities in Besançon [France] and Glashütte don't have anywhere near the capacity needed to play a much larger role.

WT: Is COSC collaborating with other Swiss quality ratings?
AW: In general we are open to cooperation that is reasonable and productive. It is necessary to ensure, of course, that COSC remains independent, as it is with the Fondation Qualité Fleurier [a quality seal developed by four watch companies with facilities in Fleurier: Parmigiani, Chopard, Bovet and Vaucher]. There, our chronometer test is not a part of the process but rather a prerequisite.

WT: In June an alliance between COSC and the Geneva Seal was announced under the name "Timelab."
AW: Yes, but it wasn't made clear exactly what that meant. Nothing has changed from an organizational point of view. Poinçon de Genève and the COSC office in Geneva share the same address but function independently. The Seal and the newly established organization Timelab were created to show the high level of quality that Genevan watches can attain, but have no influence on COSC. For COSC to be linked to watches from a particular canton would also violate our principle of neutrality.

Movements are stacked on small pallets and prepared for testing.

Below: the deviation of the second hand from standard time is registered by a camera system.

may not be opened at any time during testing, and they must have standardized plastic crowns. They must have an engraved number and a plain, white dial with two markers and no brand logo, though not all brands adhere to this last requirement.

When it reaches the testing laboratory, each movement receives a unique, machine-readable label and is wound mechanically for the first time according to the manufacturer's specifications. Automatic rotors must be disassembled for these tests, so both the manually wound and automatic movements are wound each day.

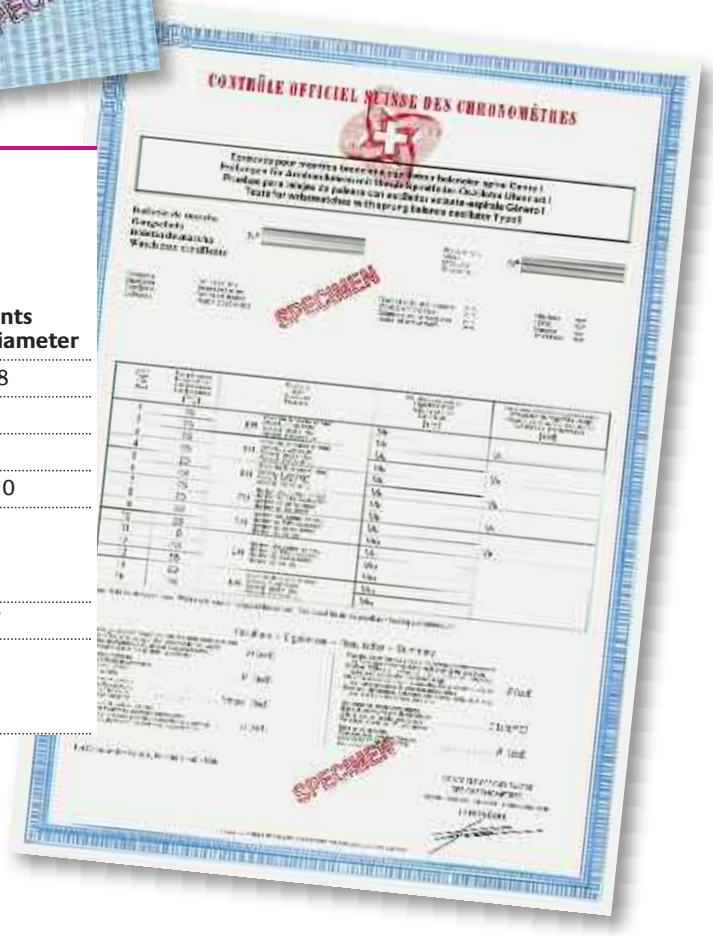
Movements are checked for accuracy in five positions and at three different temperatures for a period of 15 days. The movements are clamped onto small trays and suspended at room temperature (23° C, or about 73° F) for two-day periods in three different vertical positions (with 3 o'clock at the top first, followed by 6 o'clock and 9 o'clock). This is followed by two days in which the dial is face-down, and five additional days when it is face-up. This last period includes one day in which additional mechanisms, such as chronographs, are engaged. Then there are two periods of 24 hours each wherein the movements remain in special climate-controlled chambers at temperatures of 8° C (46° F) and 38° C (100° F). The cooled and heated chambers have foyers where the movements are stored temporarily in order to prevent condensation and temperature shock. Finally, the test pieces spend two days at 23° C with 9 o'clock at the top position. The time display of each movement is measured precisely every day.

COSC Test Requirements

(Mechanical Watches)

Tolerances in seconds per day

	Movements > 20 mm in diameter	Movements ≤ 20 mm in diameter
Average daily rate	-4 to +6	-5 to +8
Average rate deviation	2	3.4
Greatest rate deviation	5	7
Rate difference – horizontal and vertical	-6 to +8	-8 to +10
Greatest difference between average daily rate and one of the rates in the five positions	10	15
Temperature-related deviations	+/- 0.6	+/- 0.7
Resumption of rate (average of 1st and 2nd day compared with final day)	+/- 5	+/- 6



The full COSC certificate (above) shows all individual values; the summary certificate (above, left) is much simpler.

Movements arrive at COSC in clear plastic capsules with simple white dials.

COSC uses serially arranged industrial camera systems that determine the position of the second hand above the dial precisely in relation to the two markings. The testing offices use two reference clocks built by COSC and regulated by an atomic clock to determine the movements' variances. Computers record the results and assess whether the movements meet the requirements set out by the seven testing criteria of the ISO 3159 standard, which specifies the international requirements for the designation "chronometer."

ALMOST 95 PERCENT of movements submitted to COSC pass the tests. The percentage of rejects is extremely low, especially for long-term customers. New submitters receive extensive advice from the COSC offices on how to achieve good results. Upon request from the manufacturer, COSC will issue printed certificates that provide different levels of detail about the results. The full certificate lists all the test results of a tested watch; the simpler summary certificate states only that the watch passed the COSC tests. The type of certificate im-

plies nothing about the quality of the movement or the rigor of the tests: all movements undergo the same testing process.

COSC stores all of the results for five years. Watch owners who want more information on the test results of a chronometer must contact the manufacturer; COSC does not provide information to the end customer. The same applies to any request to have the accuracy of an older watch re-tested (after servicing, for example): these pieces must also be submitted by the manufacturer.

ROLEX HAS BEEN COSC's largest customer for many years. In 2009, the number of movements it submitted (607,512 pieces) made up almost half of all those tested by COSC that year. In second place was Omega (187,558 pieces), followed by Breitling (108,220 pieces, 40,000 of which were quartz) and TAG Heuer (70,195 pieces).

The economic crisis that hit in late 2008 has, inevitably, affected COSC's numbers. In 2009, the number of movements submitted fell 27 percent compared to the previous year and, despite the rapid recovery of the sector, has not yet achieved previous levels.

Despite these numbers, COSC is preparing for brighter days. A new, modern laboratory is under construction in Le Locle. In this facility, many steps in the testing process that are now done manually, including the turning of the trays to the correct positions and their transport to the winding machine and climate-controlled chamber, will be automated, ensuring greater precision and better control. ○

Movements are tested at different temperatures in climate-controlled chambers.