European Radio Controlled Clocks

In January 1966, twenty years before the well known Kundo and Junghans radio controlled clocks made their debut, the first permanent, atomic referenced, round-the-clock long wave time service in the world came into operation in Switzerland. The continuous transmission of precise frequency from Prangins, as well as time markers derived from an atomic standard was the first long wave time and frequency standard in the world. In comparison, DCF-77 transmissions of standard frequency from Frankfurt (Mainflingen) did not include time signals until 1973. Rugby in the UK followed in 1974 with calendar code added in November 1976

The Prangins Time Service – HBG, was set up on the initiative of the Observatory at Neuchatel and described in the official journal of the Swiss Watch Chamber of Commerce, La Suisse Horlogere, in March 1967, by P. Kartaschoff, Head of the Frequency Standards Department of the Swiss Laboratory for Horological Research, Neuchatel, under the title “Europe sets it clocks by Prangins Time”.

The Prangins signal comprised a 75 KHz carrier wave with 1 sec interruptions in a pattern to denote seconds, minutes and hours. Thus, according to their particular needs, users of the service could make use of the frequency standard defined by the carrier wave, or of the time scale marked with “pips”.

The production of a completely reliable radio controlled clock was still a few years away, and in advance of the service going on air, research was carried out for the design and manufacture of a professional quality portable transistor radio receiver to pick up the time signal transmission and make it available to the user in the form a frequency standard, and of audible pips or electrical pulses. The receiver was developed at the Swiss Laboratory for Horological Research (SLHR) and a pilot series made in 1966.

SLHR Receiver.

Industrial manufacture of the registered model was taken over by Portescap at La Chaux-de-Fonds and marketed as Recepteur de Signaux Horaires T 75 A. Retail sales were aimed mainly at observatories and scientific institutions. By the beginning of 1967 an impressive number of sales had been made throughout Europe and it was true to say that (as far as timekeeping in scientific circles was concerned) Europe was, indeed, setting it clocks by Prangins time.

Radio controlled clocks for industry and commerce followed, mostly for professional use. An RC clock was also made for the sale to the public, the Imhof “Observatory Time” and a small master clock for use in business and factories, the Favag E 80 HBG, both from around 1980 or half a dozen years before those that would appear in Germany.

Imhof “Observatory Time”

The Imhof “Observatory Time” is a stand-alone radio controlled battery clock, cased in a solid mahogany case with brass supports and mineral glass. It has a single stepping motor driving the seconds followed by conventional motion work for the minutes and hours and, like a conventional mechanical clock, one sets the time by via a friction clutch in the motion work. An LCD display in the lower half of the dial shows the date, proving that this example was manufactured after addition of the full date code to the time signal.

Favag E 80

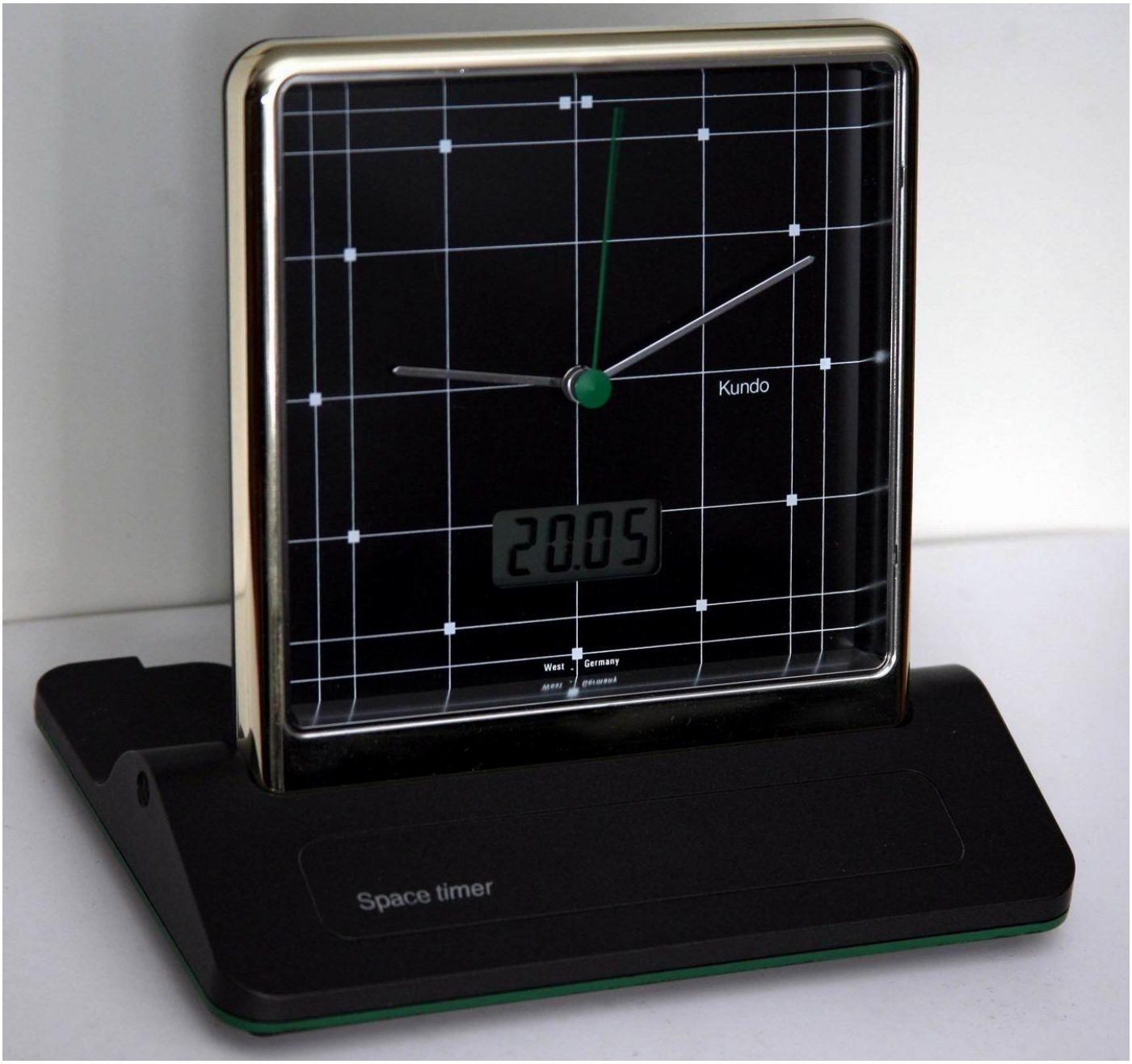
The Favag E 80 HBG is a radio controlled master clock with its own quartz timebase specified at 0.1 seconds in 24 hours at 20^{oc}. The pilot dial in the image comprises a single stepping motor driving the motion work which can be run fast, stopped and started by means of a toggle switch.

The clock is mains powered and provided with slave dial outputs of 24 volt alternate polarity minute pulses. Internal back up batteries are held on float charge and will power the clock for several hours in the event of mains failure.
The dial has a red LED reception indicator that will show the presence or otherwise of a good signal.
.

The first German radio controlled clocks
Both Kundo and Junghans introduced RC clocks when the cost of the technology fell to the point where sales could take place on the high street. They were first shown in1985 at the Basle Fair and went on sale in the following year under the Space Timer and “RC” names respectively. A very few expensive models were also made for a short period such as the Junghans RC Solar but for the home market only.

German RC clocks contained radio receivers tuned to DCF (transmitted from Mainflingen) and were the daily resetting type based on patents of Dr. Wolfgang Hilberg in which the clock looked for a transmitted signal periodically (usually a few times during the night) and reset the clock from scratch to the received signal. To reset hands in this fashion required a microprocessor to instruct the stepping motors driving the motion work so that the hands finished up in the correct position. The first RC clock put on the market by Kundo was the Space Timer Type 351/0001 shown below.

Other German RC clocks were soon introduced on the German Market by Hermle and Staiger but the movements for these were supplied by Junghans and Kundo.



In spite of the hype about atomic time, resetting clocks do not work well when reception conditions are poor due to a failure to decode the time properly. Therefore, because of poor reception caused by weather conditions or use in marginal reception areas, these early German clocks could show the wrong time and had a bad reputation in the first few years that they were made. Something had to be done about it and Junghan's turned to the patent of Wolfgang Ganter, filed in 1989, in which clocks failing to find a good signal aborted resetting (until the next scheduled attempt) and reverted to the time last successfully decoded. This made a mockery of claims about "atomic" accuracy but at least prevented a noticeably wrong time being shown.

In 1988 German RC clocks began to be imported to the UK. However, these were, inevitably, resetting types tuned to DCF and, therefore, on the margin of satisfactory reception. The UK market needed clocks made with receivers tuned to MSF transmitted from Rugby and Junghans clocks with this facility became available by the end of the 1980s.

German re-organisation of the manufacture of quartz and radio controlled movements

In 1997, the manufacturing of German RC movements began to be concentrated in one independent specialist manufacturer – UTS, the quartz movement manufacturing division of Kundo, which by 1996 also supplied Junghans.
Resetting by then had the added feature of avoiding a completely fresh start by giving clocks a slight losing rate and then nudging the display forward to the correct time. These proved more reliable; however this deliberate slowing of the clock seems to lose the point of atomic accuracy.

The manufacture of quartz clocks including RC movements in Germany can be summarised as follows:
1956 – Diehl buy a controlling share in Junghans.
1979 - Kundo, the largest maker of quartz clocks in Germany, splits off the quartz movements division as a new company: UTS.
1980 - Cooperation agreement is signed between Kundo and Staiger.
1985 - Kundo and Junghans manufacture the first German radio controlled clocks.
1987 - UTS becomes a stand alone company.
1992 – Kundo merges with Staiger to form Kundo-Staiger
1996 - UTS takes over the production and sales of Junghans quartz clock movements thus becoming the largest manufacturer of quartz and RC clocks in Europe.
1997 - UTS is floated as a separate independent company into which all German RC movement manufacture is concentrated.
2000 – Diehl sells Junghans to EganaGoldpfeil, a Chinese jewellery and brand management conglomerate listed on the Hong Kong Stock Exchange.
2000 – Bankruptcy of Kundo-Staiger. All assets, brand ownership and unsold stock sold by the Receiver to Artfield manufacturing Co Ltd., Fotan, also in Hong Kong, who continue to sell the Kundo and Staiger brand names, but with movements supplied by UTS.
2002 - UTS becomes the world's leading company in the supply of RC movements. From this point onwards the names on the dials of most European radio controlled clocks and watches become a matter of brand marketing.

Junghans bankruptcy and recent history

What happened to Junghans after being sold to Egana Goldpfeil is outlined below.
1) Junghans continued to be unprofitable and in 2000 Diehl decided that it did not fit well within the Diehl Group. In view of this, Diehl sold Junghans to the multinational jewellery/brand company Egana Goldpheil based in Hong-Kong.
2) However, by 2008 Egana Goldpfeil was, itself, in financial difficulties problems and was declared bankrupt in 2009.
3) Egana Goldpfeil was bought from the Receiver by the Swiss private investment group MYWA.
4) MYWA soon realised that Junghans had never made enough money to cover its research costs and decided to dispose of it.
5) MYWA looked for a buyer and sold Junghans to the Steim Family in 2009 for an undisclosed price.
6) Hans-Jochem Steim is managing director of the Kern-Liebers Group and, by great good fortune for Junghans, the Steim family has its headquarters in Schramberg.
7) The Stein family decided not to integrate Junghans into its current operations, preferring to control it through private ownership.
8) At the time of Steim buying the insolvent company, Junghans had only 85 employees and the business press at the time reported that "Steim would concentrate on the traditional watchmaker's art and want to build mechanical watches in the *Erhard Junghans* series in the Schramberger tradition".
Nevertheless, Junghans has continued to supply radio controlled timepieces but on a much reduced scale.

End of the Prangins time service

HBG transmissions ceased at 07.00 on the first of January 2012.
In an age of satellite based atomic time, and with the transmitter aerials due for expensive refurbishment, the Swiss federal government decided to close the Prangins time service.
It was no longer needed by observatories and laboratories and, as far a members of the public using radio controlled domestic clocks were concerned, the switch to using DCF albeit by buying a new RC clock or watch was easy.

David Read – Feb. 2017