#### SYNTHESIS Designpartner

# JUNGHANS RODIO CONTROLLED SOLAR CERAMIC WRISTWATCH



## **PROJECT EXPOSÉ**

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#### **THE BIG INNOVATION:**

With the development of an integrated ferrite antenna in a radio controlled movement, it became possible to dispense with the previously required external antenna in the wrist strap. This eliminated costs associated with the expensive, waterproof electronic connection between the external antenna and the radio controlled movement. Located inside the watch case, the antenna would also be much better protected against damage.

Parallel to this, a strong boost in performance occurred in solar cell technology, which made it possible to gain enough energy for a radio controlled movement from a surface the size of a dial. This would save the customers additional expenses arising from troublesome battery service.

And simultaneously a new technology emerged which made it possible to produce more or less precise injection moulded ceramic parts made of super strong zirconium oxide. These ceramic components are ultra-poor conductors and therefore have no influence on the receiving quality of the ferrite antenna in the radio controlled movement. In addition, the components are characterised by a very high surface hardness. However, they are not brittle, but slightly elastic and therefore very scratch and break resistant. In addition, they do not emit any allergenic substances, so they cannot cause skin allergies.

It immediately became clear to me that these techniques could be employed to build a watch of normal size with a stable ceramic housing and a perfectly protected radio controlled movement. Moreover, the radio controlled movement would get sufficient incident sunlight to provide power for almost unlimited ultra-accurate pace.

All this would result in the creation of an ultra-precise, virtually indestructible and practically service free wristwatch that would always show the right time!

We designed a very simple case, which, thanks to the solar cell, did not have a battery lid that needed to be opened. Antenna contacts were also not necessary due to the internal antenna. The radio controlled movement was inserted from the front and helt firmly in position by the pressed-in glass with a spacer ring. A very expedient, easy-to-build structure, which was so cost-effective that a medium-sized series of watches within a medium, easy-to-sell price band would already cover the tooling costs and other preparatory work.

But the top management hesitated because this project would be based upon the world's first watch case ever made in this technique. Looking back on daunting examples of similarly manufactured parts, it could not be guaranteed that the ceramic case could be produced with the precision and accuracy necessary for a watch component. It took almost a year to gather confidence for the clear technology-, cost, timing and marketing concept for this ground-breaking innovation.

Based on the desired dimensions, the design of the watch case and the radio controlled movement were pushed simultaneously employing highly concurrent engineering. On completion of the design, the moulds for the ceramic injection were built. The first cases were injected, sintered, ground and polished. The big day came: we placed three watch cases neatly on a tray and concealed them under a cardboard box. In front of the entire Board, I lifted the box and presented three black, highly polished, glossy, exact and precise watch cases on a white tray. I knew it would be a success!

And it was a success: unveiled at the Basel Watch and Jewellery Show, the watch received the "Best of Basel 1995" Award and production and delivery commenced immediately after the presentation. The Junghans Radio Controlled Solar Ceramic Watch sold so well that the five different models accounted for 25% of the company's total turnover. This is quite an achievement considering that the company had an entire assortment of 2,500 different watches and clocks. The watch was in production from 1995 to 2008.

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JUNGHANS Mega Solar Ceramic wristwatch with special Ceramic Bracelet





Further variations for different price points and different colour and style preferences



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