

Technical Features

PVD Coating

The thinnest, toughest and most attractive protection.

In the old days when watches lived permanently in the protection of the pocket of a waistcoat, preserving the beauty of their exterior finish was not a problem. Since the advent of wristwatches, however, they are exposed to scratches and other dangers that are an inevitable part of our active and sporting daily lives.

For Longines' watchmakers it was essential to find a way of ensuring the long-term preservation of the beauty and elegance of the objects they created. The question applied first and foremost to models that were partly or totally gold-plated, the fine layer of gold being especially vulnerable to the bumps and knocks that happen when a watch is worn on the wrist every day.

Rather than simply applying a layer of gold plate to the basic metal of the watch-case or the bracelet, the craftsmen and designers at Longines looked for a process that would guarantee long-term resistance to wear

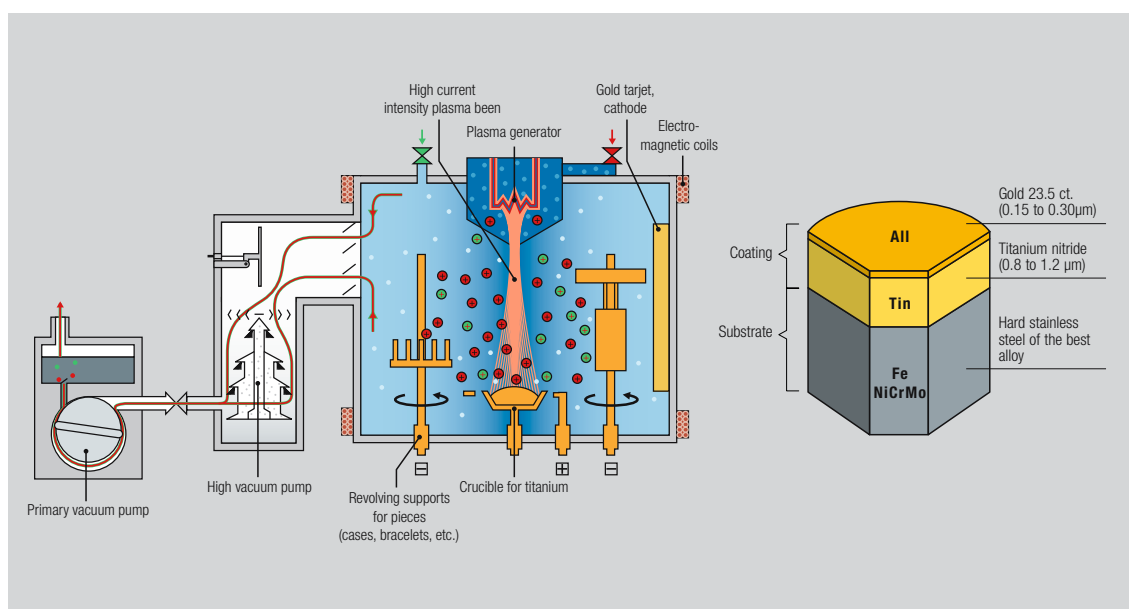


and tear. After testing various techniques, they finally chose a particularly effective procedure: PVD (physical vapour deposition), which involves plating the surfaces of the case and the bracelet with a layer of protective metal in vapour form (ionic plating).

PVD: a cutting-edge procedure

1. The parts of the case and the bracelet that are to be treated are placed on supports in an air-tight container, which may hold several hundred parts at a time.
2. The air is pumped out of the container, creating a vacuum equivalent to one billionth of normal atmospheric pressure, in other words close to the pressure that exists in space.
3. A gas, in this case argon, is introduced into the container and then transformed into particles smaller than an atom. These particles are sprayed on to the watch parts, which causes their surface to heat up.
4. The jet of particles and the heat it generates clean the parts of the case and bracelet very thoroughly.

5. The jet of particles is then turned on a quantity of titanium, which is an extremely resistant metal. The jet vaporises the metal and the atoms of titanium that are produced are deposited on the objects, where they react with the atoms on the surface of the objects and create a layer of titanium nitride (TiN). Being extremely dense and compact, this layer of titanium nitride is also highly resistant to wear and tear.
6. The layer of titanium nitride is then covered with a layer of 23.5 carat gold to enhance its brilliance and provide additional protection against corrosion and tarnishing. When the PVD operation has been completed the parts are inspected meticulously before being passed on to the assembly workshop.



PVD coating: exceptional qualities

PVD as done by Longines, i.e. a layer of titanium nitride embellished with a layer of fine gold, results in the same warm, smooth lustre as traditional gold-plating ... plus added resistance!

In effect, PVD coating on a Longines watch is practically as hard as sapphire crystal. It will therefore easily resist corrosion through sea-water or sweat, climatic extremes and pollution of all kinds. For many years it will resist the inevitable and repeated friction, knocks and scratches of daily life.

It should also be mentioned that physical vapour deposition is not harmful to the environment since it is a procedure that produces no pollutants, neither directly nor in the form of toxic residues.