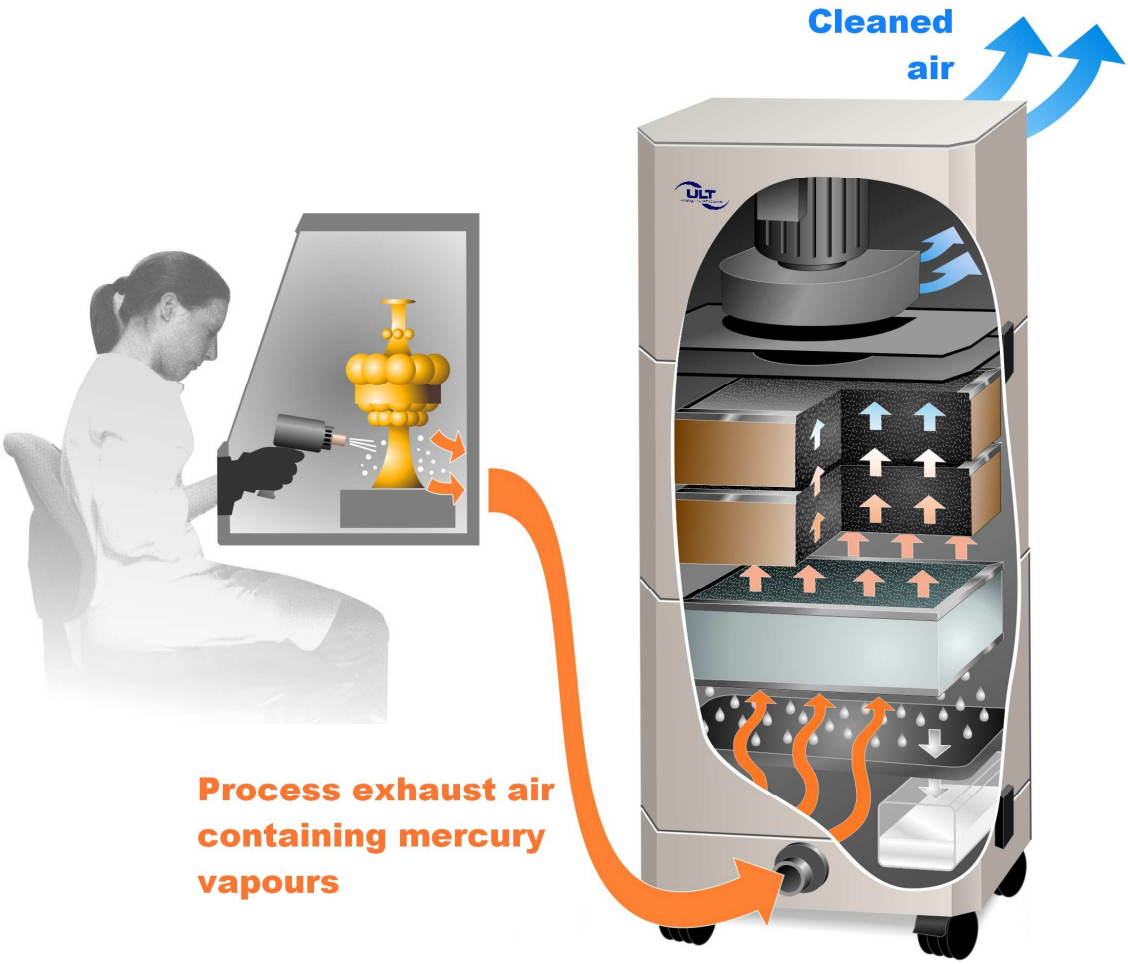
*Modern air filtering technology*
*for a 3000-year-old gilding technique*

# Fire Gilding




**Fire gilding** is the most important metal gilding technique known for the longest time and practiced from as early as the times of the ancient world until the 19th century. It was mentioned for the first time in Plinius' *naturalis historia* (natural history).

A lot of fire gilded historic items, even from the ancient world, are still in a pretty good condition. Accordingly, fire gilding is a very durable method. Mainly things made of silver, copper, brass and bronze have been fire-gilded over the centuries. One of the best-known German fire-gilded statues is the "Golden Horseman" in Dresden which shows the famous Saxon king August the Strong and was unveiled in 1736.

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# *Clean air, high performance*

In fire gilding, a gold amalgam is used. Such gold amalgam can be produced in different ways. For example, about six times as much mercury can be added to a given quantity of molten fine gold.

However, it is also possible to dissolve the gold in the form of dust, foil or leaf gold at low heat or simply by powdering in a surplus (six to eight times as much) of mercury. The amalgam thus produced forms a doughy mass at room temperature and now liquefies far below the melting point of gold.

Then, the metal surface to be gilded is degreased and "quicked" or dipped into quick-water (in reality a solution of mercurous nitrate). To do so, mercury is dissolved in diluted nitric acid. Now, the amalgam can be applied to the material (for example with a brass brush) prepared this way.

The object with the amalgam on its surface is fumed over a weakly glowing charcoal fire, while the amalgam is distributed and smoothened. Normally, a hare's foot (a dried hind leg of a hare) was used for this purpose. During the heating-up, the gold particles of the amalgam diffuse into the basic metal, while most of the mercury evaporates. Afterwards, because of its roughness, the surface is not shining golden but is matt yellow. Using polishing stones (agate or haematite), one can smoothen the surface and make it shine.

Owing to the **toxic vapours** produced in fire gilding, this technique has been largely substituted by galvanic gilding since the second half of the 19$^{th}$ century. However, galvanic gilding only causes some precipitation, through the pores of which chemicals can act on the basic material. Today, there is a number of small shops that, **using state-of-the-art environmental technology and observing strict regulations**, again use fire gilding for museums, churches and, to a growing extent, make precious items for arts and luxury articles markets.

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