

Bronze cast

Lost-wax-bronze-casting with lost mould

You have already seen the three splendid fountains of Augsburg. Now we would like to introduce you to the technique of their construction: the lost-wax-bronze-casting.

It was and still is a masterly performance to cast such huge works with so many details in only one piece.

First the artist needs to design the bronze figure:

Over a roughly modelled core of clay, also called casting core, the figure with all its details is shaped in a layer of wax. This task already determines the final appearance of the bronze sculpture. Additionally a bearing frame is attached. It is made out of bronze rods serving as spacers. It is meant to maintain the casting core in its planned position. Around the finished model with a surface made out of wax a system of wax-rods is attached. It forms tubes for pouring in the bronze as well as tubes, which let the air escape.

The completed model is surrounded by a covering of several layers of clay. After the burning the wax flows out of the form. What's left is a stable cover. Hollow spaces are created between the casting core and the cover. The figure is walled up in the ground and casted in a so-called casting pit. As soon as the bronze heats up to a minimum temperature of 1083°C it is filled up into the form.

As long as anyone can remember, the technique of metal casting has fundamentally remained the same. Up to the present metal casting includes high risks caused by extremely hot fires and weighty masses of metal. An extremely dangerous procedure as the metal is likely to burst due to high pressure and heat.

After the bronze has cooled down for days, the form made out of clay can be removed. What's left is the bronze figure with its casting core remaining on the inside. Now one can see the quality of the artist and the caster. If the cast doesn't succeed, the form is irreversibly lost. This is why one talks about a procedure with lost mould.

The finished sculpture is still enclosed in a net of drainpipes made out of bronze. Those are removed during the surface treatment. The rough surface needs to be smoothed out in several steps. Originally it was the Goldsmiths who did this. If every step succeeds, the figure is completed and ready to be erected on its provided place.

The bigger figures with the casting core inside are likely to crack over time. Differences in temperature, humid casting core material and corroded iron release enormous powers leading to cracks and explosions of the bronze skin. A huge challenge for those who try to maintain the bronze figure.

Very noticeable is its change in surface: the Patina.

When the fountains were inaugurated, people could admire a gleaming golden sculpture. Very different from what we can see today: When looking at a bronze sculpture, we are used to the green-blue, sometimes brown oxidation caused by environmental influences.

Today new bronze figures are given a Patina on purpose, to make them look old. Additionally, a layer of wax covers them. It is meant to protect the bronze in order to preserve it well. Bronze is a metal mixture consisting of copper, tin, lead and zinc.

Even at times of the fountains construction there were different secret proportions of mixture. Each different proportion leads to a different colour of the Patina.