G1 ULTIMATE

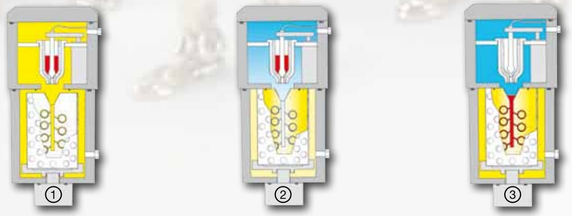
Entry Level to Medium Manufacturing

The system used in our “G” series casting machines is a vacuum over-pressure under inert atmosphere. The casting pieces have a very smooth surface, a very dense molecular structure and no defects such as improper filling, porosity and shrinkage.

In our system both the flask and crucible are located in a common chamber which is first fully evacuated by vacuum, before melting, followed by helium gas supply to create an inert atmosphere. Helium gas presents excellent gas fluidity which provides a cleaning effect of the molten metal and flask and guarantees a smooth filling of metal even with the most intricate filigree patterns. **FIG. 1**

The casting temperature is attained and low frequency pulses are given to vibrate and mix the molten metal by keeping it homogeneous. At this stage the flask is pushed against a long lasting special metal sealing blade system, or SBS, which, like a knife , cuts the investment by sealing the vacuum underneath the flask. This “long lasting” system avoids the use of silicon gaskets or flasks with flange with an important reduction in casting costs. **FIG. 2**

The metal, once completely poured into the flask, is pressurized by argon up to 4 bars. This pressure being applied to the molten metal, forces it into the flask while the vacuum pulls it. This results in a very smooth surface due to the effect of the vacuum and a dense well compacted casting due to the over- pressure which benefits both thin and thick sections. **FIG. 3**



G3 ULTIMATE - G5

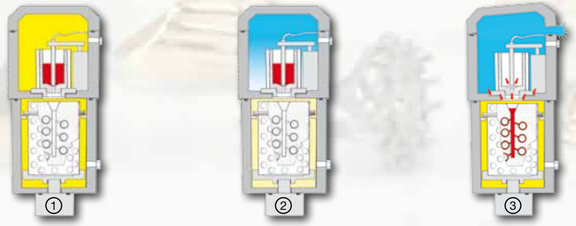
Medium to Large Manufacturing

COMPETITORS

The drawing below depicts the internal layout of most our competitor's machines where the crucible and flasks are located in separate chambers divided by an aluminium base-plate. In this type of system, the crucible sits in the upper section and the flask is sealed beneath with a silicon gasket around its top edge. **FIG. 1**

The effect of this “useless” pressure is drastically reduced by “drag” of the crucible holder etc.; in fact, application of gas “over-pressure” by this method shows no significant advantage over a simple gravity/vacuum traditional and obsolete system. **FIG. 2**

The metal cannot be effectively pressurized up to 4 bars because gas pressure applied above the crucible can only act on the metal, once the mould is occupied, by jetting through the crucible feed hole to the underside. Furthermore, at this high pressure this weak structures will not withstand and the cover will blow out.
A further disadvantage of these machines is that there is usually a gap of 4-5 cm between the crucible feed hole and the flask entry, which frequently leads to splashing and gas absorption problems (our “G” series have the crucible almost attached to the flask). **FIG. 3**



Other machines have tilting covers which have to be lifted for every single cast; this rapidly provokes operator fatigue.

G10

Large Parts for Industry

Our “G” series range is currently accepted as the world’s best casting machines
and we have now introduced the “G10 Heavy - Duty” machine, principally for the production
of aluminium castings in the automotive industry, rapid prototyping and various new technologies.
It is also capable of producing excellent results in metals such as bronze, brass, silver and gold, etc.

A unique feature of the “G10” is the crucible chamber, which is produced by machining from a solid (800 kg) block of aluminium, thus avoiding porosity which is inevitable with other machines having chambers manufactured from sandcastings. A very high level of vacuum and, importantly, a strong pressurization can thus be achieved without the slightest leakage. The cover and crucible chamber are water cooled.

This robust construction permits pressurization of up to 3 bar (in a second or less) of the metal after admission to the mould flask. This is necessary in order to propel the very light aluminium into the mould cavity and to be maintained during solidification, in order to obtain the smoothest possible surface on the castings. The relatively ligtweight construction of other machines on the market does not permit such high and rapid pressurization after pouring and any attempt to employ this, can result in the casting chamber cover being explosively blown off. Generally, these machines can only handle a pressure of 1 bar, applied very slowly (too slowly).

We do not recommend vibration of the flask during pouring since hot investment is extremely fragile and, in our experience, the metal should remain undisturbed during solidification. Also in our experience, double chamber systems work well for the first two or three castings but when the inter-chamber seal is lost, the pressure differential disappears.

Please use this link **www.galloni-aseg.com/video/gseries/gseries3deng.html** to learn more about the advantages of our “Heavy Duty G series” machine over others.

A further advantage is the flask chamber, which is manufactured from drawn stainless steel. In the event of metal breakthrough this is easily removed, thus, unlike such events with sandcast chambers where metal spillage is extremely difficult to remove and most likely will damage the chamber.

The powerful 50 kW low frequency generator and all electronic functions are located entirely within the very robust body of the machine. The G10 is fully automatic and features touch-screen controls. It uses flangeless flasks. The G10 can use two inert gases: Helium for creating the inert atmosphere and Argon to pressurize the metal after pouring.