# operating principle of a gear pump in general
(simplified)

Through the inlet side (suction) of the pump the fluid will flow between the teeth of the gears which are not covered by the housing. In fact of the rotation of the gears the fluid between the teeth will move into the area covered by the housing. Because of the very small clearance of the pump (variopumps gear pumps have only a few microns clearance) the area between the teeth of the gears and the housing can be recognized as a chamber. This defined volume will be transported by the rotation of the gears to the outlet side (discharge) of the pump. There the fluid will be pressed out while the teeth are moving towards.

inlet / suction --->   *---> outlet / discharge*
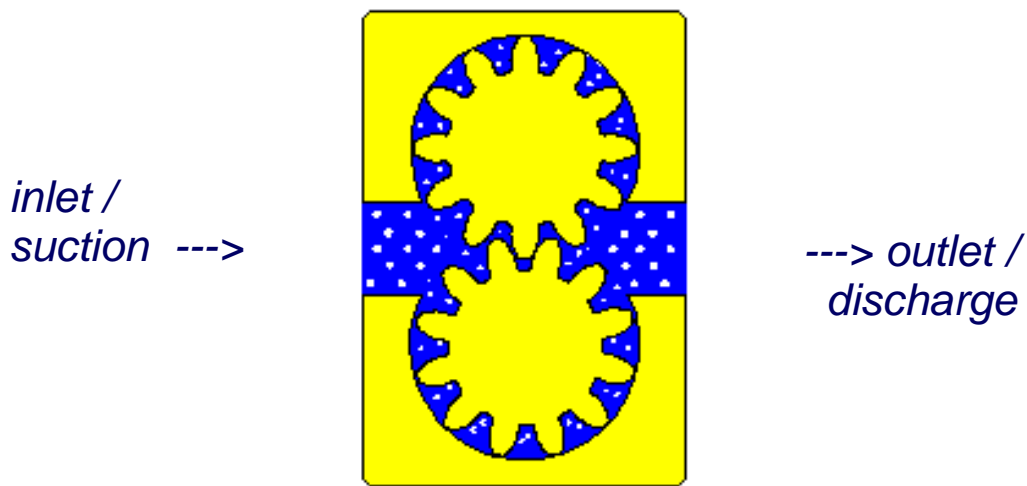
One can say that this type of pump is a `volumetric´ pump, because the **output** is defined by the volume between the teeth and proportional to the rotation of the gears (revs). Therefore a characteristic feature of gear pumps is the **specific volume** per revolution (i.e. VPC-2,78 = 2,78 cm³/rev.). Therefore preselection is simply done.

> Example:
> required output is about 1 m³/h
> this corresponds to 1000 l / 60 min = 16,7 l/min
> with a selected 3-phase motor (4pol ~ 1500 1/min) we need a specific volume of about 16,7 l / 1500 1/min = 11 cm³/rev.
> VPC-10,2 would be the selected pump
>
> And vice versa:
> eff. revs of motor 1420 1/min x 10,2 cm³/rev. = 14,484 l/min (corresponding 0,869 m³/h), with the restriction that this calculation mode requires an operating temperature of about room temperature, further a viscosity of the fluid higher than 100mPas and moderate differential pressure (the volumetric efficiency is estimated with 100%!)

Please note!
depending on the fluid (i.e. viscosity) and other parameters (i.e. diff. pressure, temperature) in combination with the chosen materials there are many other aspects to take into consideration to obtain the suitable pump size.
variopumps can **choose and calculate** a suitable pump within short time and this is based on an experience of more than 30 years in gear pumps applications.