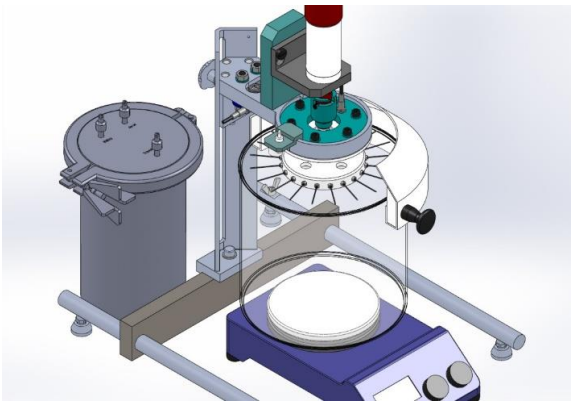
Jet Cutting
VARCut2Go

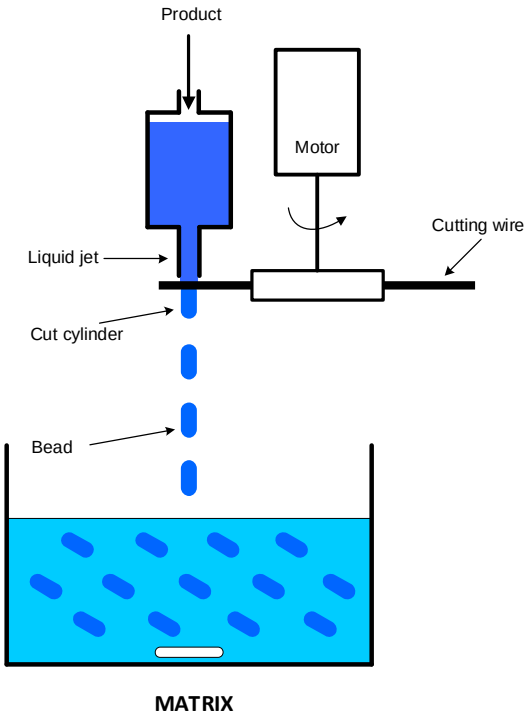
For bead production by the jet cutting, the fluid is pressed with a high velocity out of a nozzle as a solid jet. Directly underneath the nozzle the jet is cut into cylindrical segments by a rotating cutting tool made of small wires fixed in a holder. Driven by the surface tension, the cut cylindrical segments form spherical beads while falling further down to an area where they finally can be gathered.

Bead generation with the jet cutting principle is based on the mechanical impact of the cutting wire on the liquid jet. This impact leads to the cut together with a cutting loss, which in a first approach can be regarded as a cylindrical segment with the height of the diameter of the cutting wire. This segment is pushed out of the jet and slung aside where it can be gathered and recycled.



As only a mechanical cut and the subsequent bead shaping driven by the surface tension are responsible for bead generation, the viscosity of the fluid has no direct influence on the bead formation itself. Thus, the jet cutting technology is capable of processing polymers with viscosities up to several thousand mPas (for example: alginate, chitosan, pectinate, carrageenan cellulose derivate (CMC, SEC, CS) and polyvinyl alcohol (PVA)), which can be processed with application of other microencapsulation technologies.

Especially when alumina or starch are added the viscosity goes up and in most cases the products can only be processed only by mechanical cutting like with the Nisco **VARCut2Go**.



The size of the beads can be adjusted within a range of between approx. 200µm up to several millimetres.

The main parameters of this principle are the nozzle diameter, the flow rate through the nozzle, the number of cutting wires and the rotation speed of the cutting tool.