Large-scale ejectors

Large-scale ejectors for up to 100 or 200 kg/h of chlorine gas are primarily installed in intermittent chlorination plants for water cooling systems. Ejectors can be optimally designed in dependence of the volume of chlorine to be metered, the volume of motive water available (V), the flow pressure (p1) and the back pressure (p). However, ejectors designed especially to the customer’s specification would result in unnecessarily expensive individual units, and long delivery times. It can therefore be worthwhile to use standard ejectors for which, as a compromise, specific operating data are assumed.

In the tables given below, ejectors for up to 100 and 200 kg/h of chlorine gas are specified with a number of different motive water data. The first variant is an ejector with the lowest possible flow pressure and a large flow volume, while the last variant is an ejector with high flow pressure but low flow volume.

The selection of the right type of ejector depends on whether, for example, the motive water is wasted or recirculated back into the system, or whether the use of centrifugal pumps with low capacity but high supply pressure is preferred.

With the operating data remaining the same in both cases, the ejector can be selected as a reasonable uPVC version or as a wear-resistant, rubber-lined cast-iron version.

The suction pressure (p0) of all ejectors is compatible with group C 2700 chlorination units, and amounts to approximately 0.8 bar of absolute pressure at the maximum flow rate.

Attention!
Pressures p and p1 are the pressures directly before and after the ejector. Pressure drops in the pipes must be taken into account.

The operating data apply for motive water temperatures of 20°C.

Nozzle material
Type a and b flow and mixing nozzles are made of PVC, type c flow nozzle is made of Hastelloy, the mixing nozzle of PVC.

Temperature
The ejectors can be used at operating temperatures of up to max. 40°C.

Accessories
The fittings required for operation can be found in the data sheets for chlorinators. In every case a nonreturn valve must be fitted at the gas intake (see MB 2 32 01).
Order example

An intermittent chorination plant requires 100 kg/h of chlorine gas to be delivered into a system under a pressure of 1 bar. An additional loss of pressure due to the 60m long chlorine solution piping between ejector and injection point is assumed to be 0.8 bar. Therefore the back pressure just after the ejector amounts to 1.8 bar of excess pressure. Since the water used in the water cooling system is constantly recirculated, i.e. is not wasted, an existing centrifugal pump operated at a pressure of 4 bar with a flow volume of 70 m³ can be used. The recycled water available at a pressure of 1 bar can - with the pressure increase of 4 bar - be brought up to the required pressure $p_1=5$ bar.

Ejector type 8a, Part No. 23100006 requires a flow pressure of 65m³/h of water, which is more than covered by the existing flow of 70m³/h. Since the cooling water does not contain any abrasive suspended particles, and the ejector will only be operated intermittently, the PVC ejector will be sufficient.