



Additive injectors for static mixers in the water industry - a real necessity?

Static mixers are widely used in the water industry to mix specific chemicals in water, at water treatment and wastewater plants, in the production of drinking water and desalination plants. It is mainly the "trouble free" operation, 100% uptime and the high degree of homogeneity, which make the static mixer an ideal tool for the water treatment industry.



Injectors for faster and more efficient mixing

The main pipes for the transport of water often have a large diameter in which the injected additives volumes are very small. Mixing ratios of 1: 10,000 are not uncommon. If the mixing ratios are far apart or the physical properties vary greatly it is important not to add additives via a side stream, but to use an injector. When using an injector, an additive is introduced at an ideal point in the main stream which is just before the first mixing element. This makes the mixing considerably faster and more efficient. For some processes, such as the dosing of polyelectrolyte, fast mixing essential because the reaction will only take place during a short period of time. At the bottom of this article you will find a link to a Case Study Sheet on this application.

Other substances which for example can easily be dosed with an injector are: acids, alkalis, disinfectants, antiscalants and lime, as well as gases such as CO₂ or O₃.

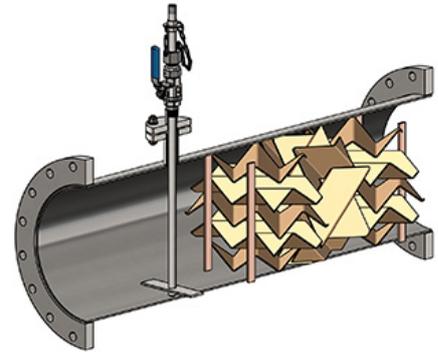
The correct injector - Centreline or sparger (clarinet) injection

The injection of additives can take place by means of a (semi) centreline injection or via sparger (clarinet) injectors. With this last injector the tube of the injection lance is much longer than with the centre line injector. The tube has a specific pattern of holes which provides a wider distribution of the additives in the initial stage just before the first mixing element.



Injector as an integral part of the design

At PRIMIX we see the injector as an integral part of the static mixer, already taking into account the desired dosages and flow patterns in the engineering phase. A static mixer can be provided with a virtually an unlimited number of injectors when desired. However, a number of 1 to 6 injectors is most common and they are often provided with a removable injection lances. A removable injection lance can be removed during full operation and under pressure for easy cleaning or maintenance. To ensure a continuous mixing of additives the injectors in this case are often placed in a dual redundant configuration (see the header image of this article).



Materials

PRIMIX provides a wide variety of static mixer solutions in which the mixers and injectors, depending on the application, are made of e.g. PVC, HDPE, PTFE, stainless steel, low temperature carbon steel or GRP (such as [glass fiber reinforced static mixer with Dekadur Plus liner](#)). Read more about the other [material options and mixer element types](#) via this link.

More information on Polyelectrolyte dosing

Please contact your local PRIMIX partner for more information on the PRIMIX combined injection and mixing solutions.

