

Liquid / Vaporizer Products

HoribaSTEC has shipped **more than 22,000 direct injection vaporizers** in the past 5 years primarily to the semiconductor industry. The main use is to **replace older bubbler technology**. Our vaporizer handles solvents, water, metal organics, polymers from a few milligrams to 30 grams/minute.

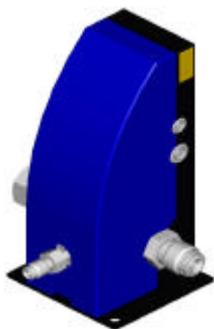
There are many **advantages of direct injection vaporizers** when compared to existing bubbler technology especially:

- Temperature/pressure/liquid level variables are critical for bubblers NOT for direct injection
- Accuracy, response time and physical size of **direct injection is 10 x better than bubblers**

The new generation technology has a piezo electric stack to actuate the valve giving **very fast response** and **fine resolution** with minimal heat generation and **excellent stability**. A thermal sensor principle is used to measure the **mass flow** of the liquid with an integrated peltier element to cool the liquid so there is no risk of bubble generation.

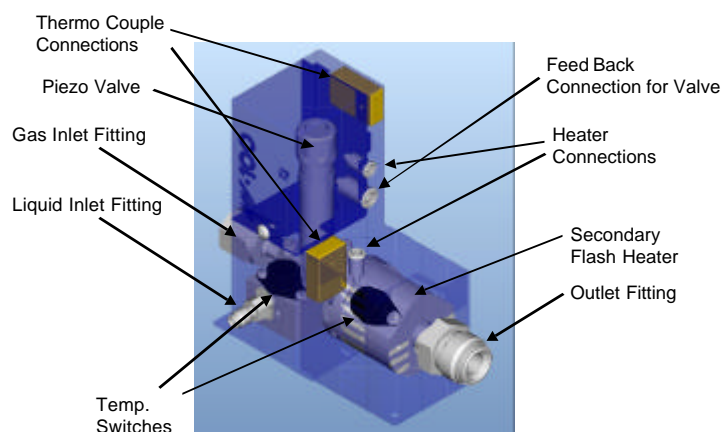
Here are some examples of our direct injection capabilities.

Our smallest vaporizer is the “**VC**” direct injection valve. Size is just 50mm² x 125mm height and typically used in vacuum applications. A liquid mass flow meter with integrated valve drive and PID circuits measure the mass flow of the material. The liquid is then vaporized and controlled by the VC. The result is a compact 150°C vaporizer measuring liquid mass flow from <1ccm upto *5ccm at **<2% F.S. accuracy and <2 seconds response time**.



Similar size as the VC but **bigger capacity** and can be used at atmospheric pressures we have the carrier gas version “**MI**”. This vaporizer also has a liquid mass flow meter with integrated valve drive and PID circuits to measure the mass flow of the material. A gas mass flow controller controls the carrier gas, which is mixed and then vaporized. The result is a compact 140°C vaporizer measuring liquid mass flow upto *7ccm at **<2% F.S. accuracy and <5 seconds response time**.

For bigger capacity still, we have the “**MV**”. This model is similar to the MI but includes a **secondary flash vaporizer** for two stage regulated vaporizing. The result is a compact **200°C** vaporizer measuring liquid mass flow upto 20ccm at **<2% F.S. accuracy and ~5 seconds response time** that can be used especially for materials with critical thermal decomposition properties.



We have many other vaporizer systems and complementary products like liquid and gas mfcs, automatic refilling systems, particle counters, analysers. We also have facilities and experience to design and manufacture complete turnkey solutions.

Please contact your nearest HoribaSTEC office for further information.

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