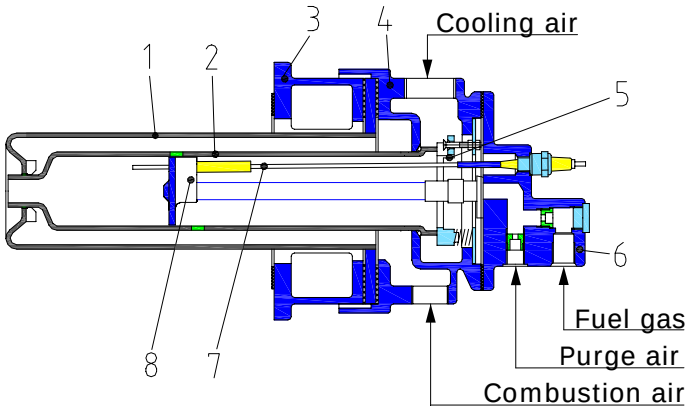
# High-Velocity Burner NOXMAT® HGB
## - direct and indirect heating -

### Constructive design / Mode of function

1 ... Outer tube
2 ... Ceramic burner tube
3 ... Flange part
4 ... Air part
5 ... Retainer
6 ... Gas part
7 ... Electrode
8 ... Gas lance with swirl plate




The **burner** is comprised of a three-part burner head, outer tube as well as such components as burner tube, gas lance, and electrode installed inside.

**Combustion air** is flowing via connecting line through air part into the space between burner tube and outer tube.
The major portion of combustion air (primary air) is flowing from the space through holes into the interior of burner tube and, further, through swirl plate into the combustion chamber.

The swirl plate is to swirl the combustion air to achieve intensive mixing with fuel gas in the combustion chamber.
The minor portion of combustion air (secondary air) flows through the annular gap between burner mouth and outer tube and is mixed with the flame gases escaping from the combustion chamber.

**Fuel gas** is flowing via connecting line through gas part and gas lance to swirl plate. The gas flow is dividing there.
The major portion of fuel gas flows into the combustion chamber and is mixed there with the intensively swirled combustion air.
The minor fuel-gas portion is led into the ignition chamber and ignited there by means of high-voltage ignition spark.

Exactly matched conditions in the ignition chamber ensure eased ignition and start-up of burner (cold start). The flame gases escape with high velocity from the burner tube. They are mixing with secondary air, thus achieving complete combustion. Graded fuel-gas and combustion-air supplies effect a delayed combustion process, entailing a low combustion temperature and reduced $NO_x$-emission.

**Waste gas** of burner is exhausted through a separate waste-gas exhaust line.

**Purge air** is supplied to fuel gas in the gas part through a purge-air nozzle in metered quantities to achieve excellent conditions for ignition. Further, said purge air is purging the gas lance to remove residual fuel gas in case of burner shutdown. So, any afterburning is precluded.

NOXMAT High-Velocity Burners are equipped with a separate cooling-air connection. **Cooling air** is directly flowing from there through burner tube into the radiant burner and/or the furnace chamber.

**Flame monitoring** takes place as a function of process via flame monitoring current of an UV-sensor or via ionization current of electrode, concurrently acting as ignition and monitoring electrode.