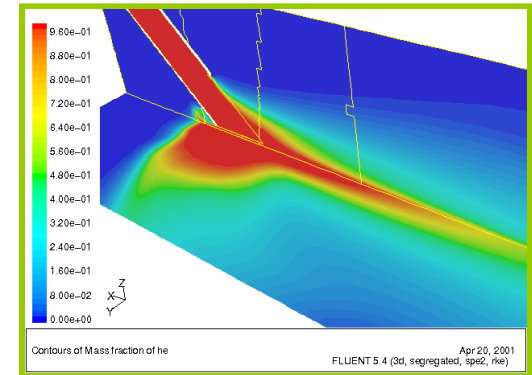




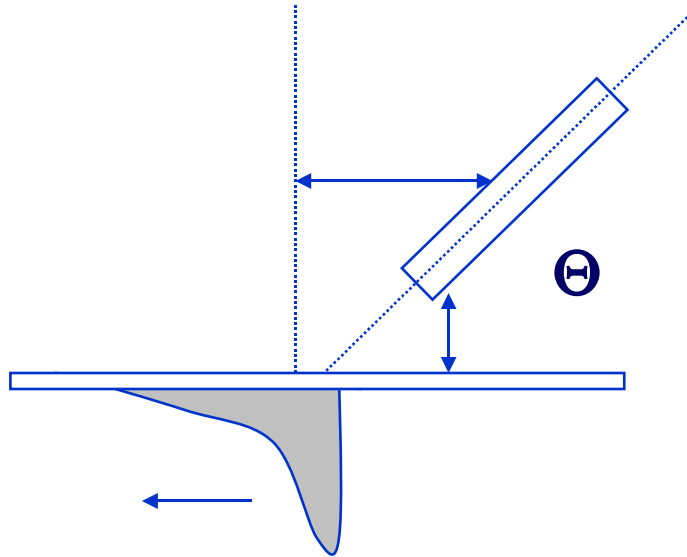
AIR LIQUIDE

TM

Shielding Gas Nozzles for Laser Welding



Shielding Gas Nozzle

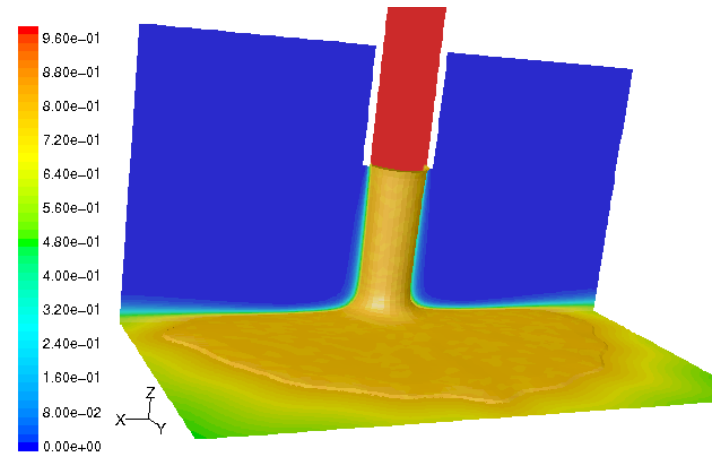
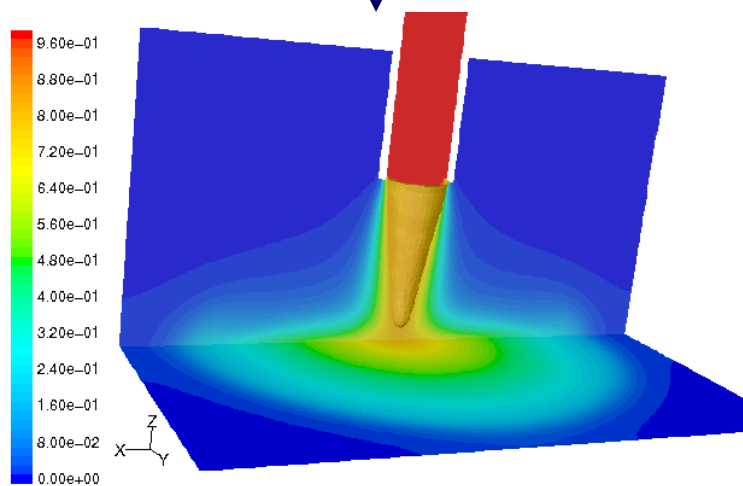
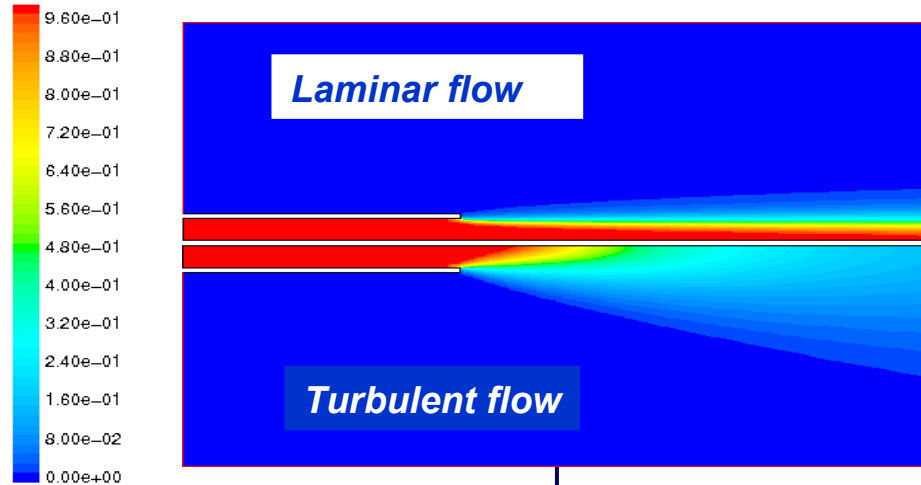


- *Angle*
- *Positioning*
- *Distance*
- *Flow*
- *Type of Shielding Gas*

- Avoid any air going into the shielding area,
=> oxidation
=> plasma

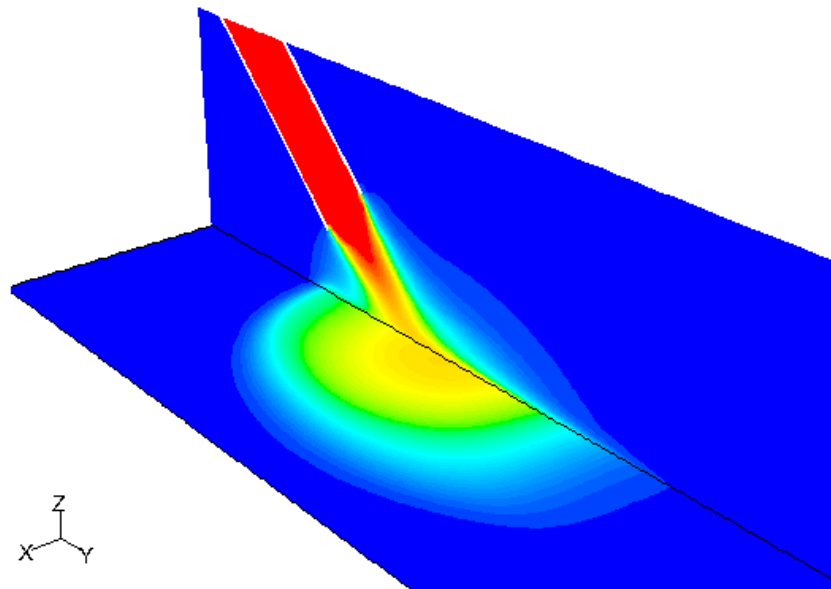
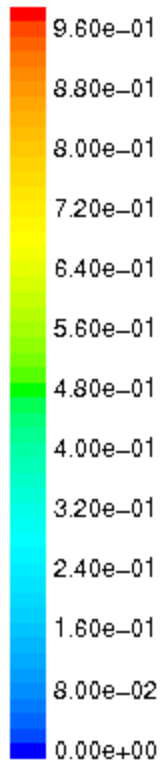
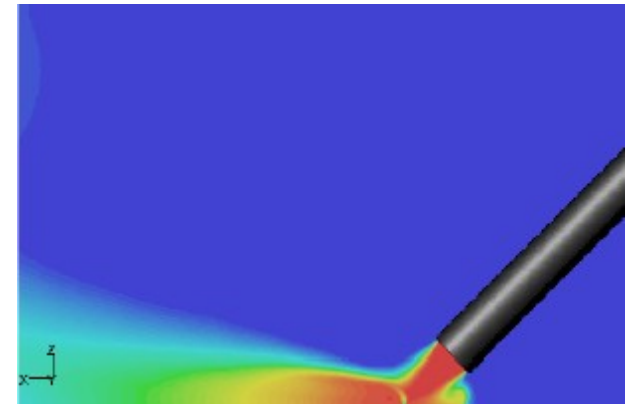
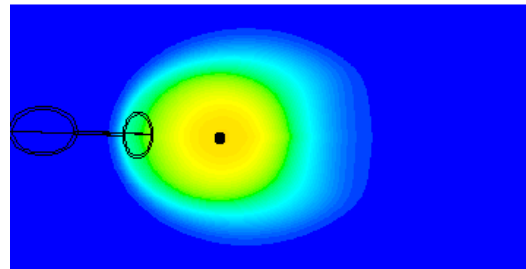
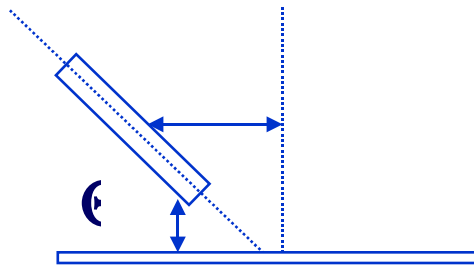
Laminar and Turbulent Flow

He mass fraction



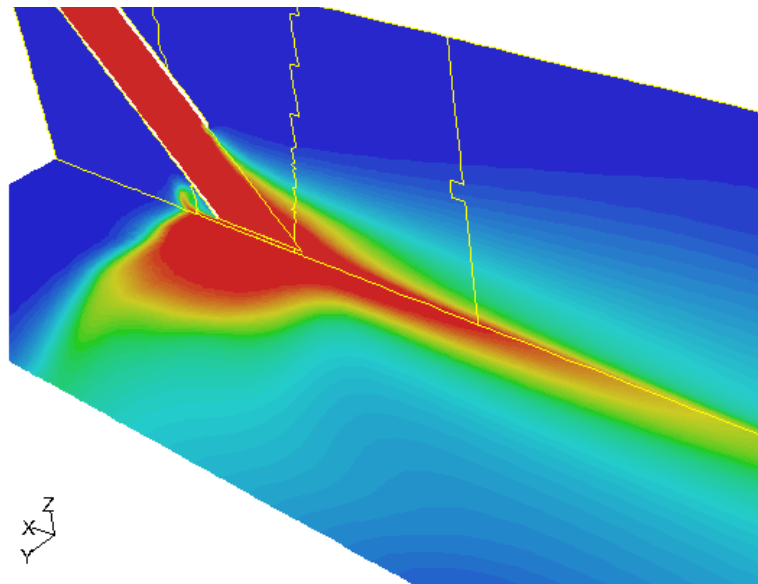
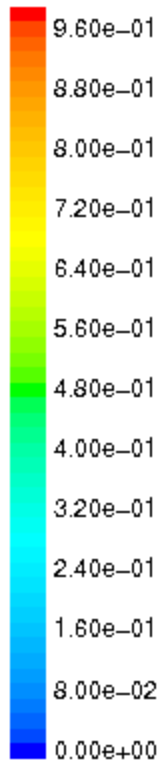
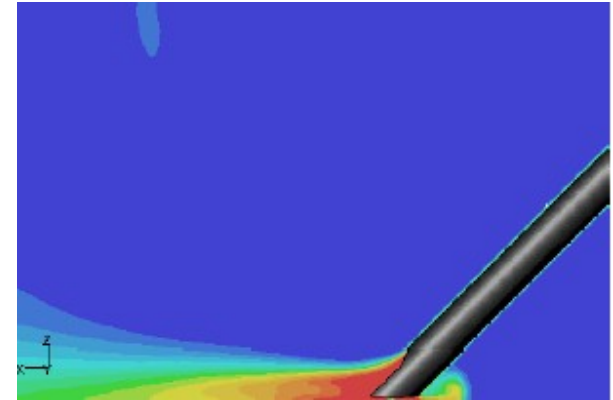
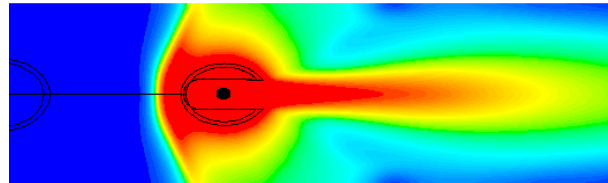
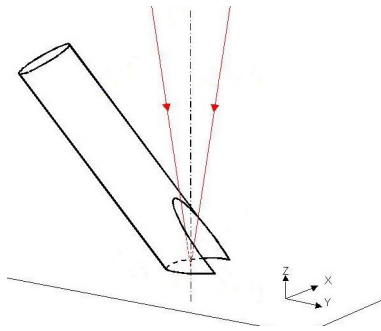
Conventional Nozzle

Cylindrical nozzle at 45° Distance 20 mm from keyhole



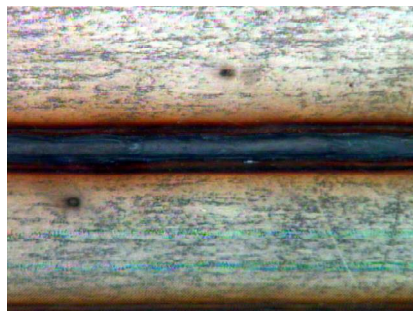
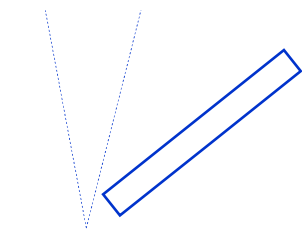
Customized Nozzle

Customized nozzle at 45°

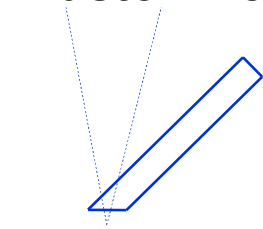


N2 and O2 level in the bead

Standard



Customized



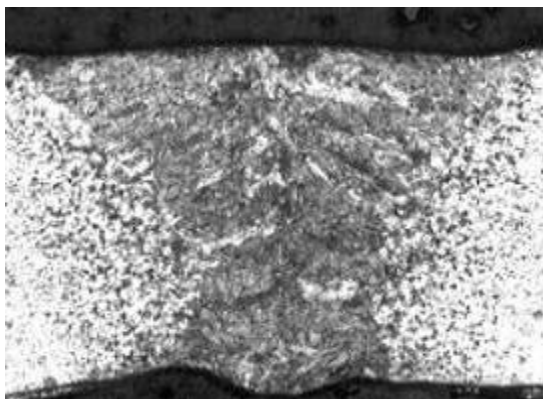
	%O2	%N2
Base metal	0.0021	0.0048
Standard 45°	0.0038	0.006
Standard 20°	0.0072	0.0099
Custom 20°	0.0029	0.0044
Custom 45°	0.0026	0.0047

Customized Nozzle

***“lateral walls”** provides a Laminar gas flow in the interaction zone*



Tailored Blank Applications



- ✓ **Material : Galvanised Steel, 1,76 / 1,76 mm.**
- ✓ **Laser Power : 7 kw.**
- ✓ **Welding Speed : 8 m/min.**
- ✓ **Focus length : 200 mm.**
- ✓ **Flow Rate : 20 l/min.**
- ✓ **Nozzle Diameter : 8 mm.**

✓ **Standard Solution : He**

✓ **Optimisation Gas: He + 40 % N²**

✓ **Optimisation Gas & Nozzle : He + 70 % N²**



Customized Gas Mixtures and Customized Nozzles for Laser Welding

- ✓ ***Improve your weld quality.***
- ✓ ***Gain in Productivity & reduce costs.***
- ✓ ***Optimise your Laser machine.***