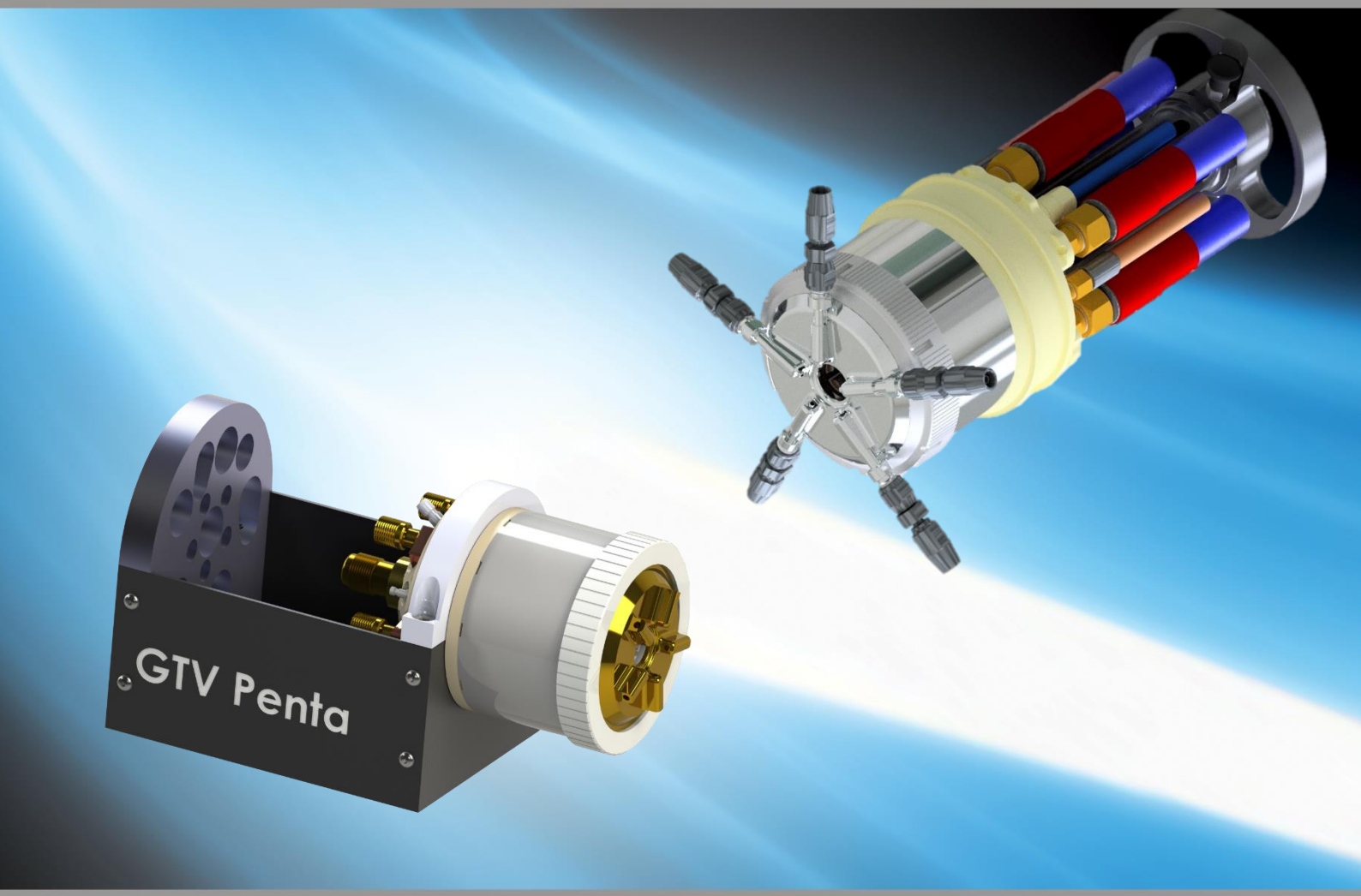
COMPARISON

GTV plasma torch Penta (315.000)
GTV plasma torch Penta RE (319.000)



Simpler optimized production

- Anode connections now only 2-piece without solder connection
- Greater tolerance in cascade length possible due to rear mounting
- With the same component tolerances, subsequent machining of the assembled cascade is no longer necessary
- Important test dimensions are easier to access
- Avoidance of multiple fits ("floating design" of the connections in the rear body)

Maintenance-friendly PENTA RE

- Easier replacement of all components
- Tool holder on the central nut of the nozzle body and tool for torque wrench

RE-design cooling circuit

- More even distribution of the cooling water in the cascade area
- Improved cooling in the area of the cathode holder/cathode

RE-design gas distribution/guidance

- Realization of a 3-stage gas distribution
  resulting in a more even flow to the cathode

RE-design purge gas distribution

- more even distribution of the purge gas
- easier inspection of the purge gas bores for contamination
- improved sealing in the nozzle body and anode crown. The previously glued-in grub screws are no longer required

Improved ignition sequence

- Use of a new electrode in the cascade stack as ignition electrode
- Ignition no longer takes place in the inlet area as before
- For the ignition process and the generation of an auxiliary plasma, all five anodes are connected to the ignition electrode at the same time, which means that ignition takes place in the same way as a standard APS burner with one anode and one cathode.
- This leads to an increase in service life in terms of ignitability and the number of ignitions in the PENTA RE
- Reduction of the risk of flashovers in the cathode holder inlet area and anode cascade outlet or on the injector holder during the ignition process
- Pluggable ignition connection with contact-protected ignition socket on the ignition cable

Reduction of possible leaks

- "Floating design" of the connections in the rear body.
- No sealing by means of Teflon tape or gluing.
- Anode crown without cooling water routing through the bonded ceramic plates.
- All O-rings now more easily accessible and axially sealing or radially external sealing.

Reduction of possible flashovers between the power/water cables

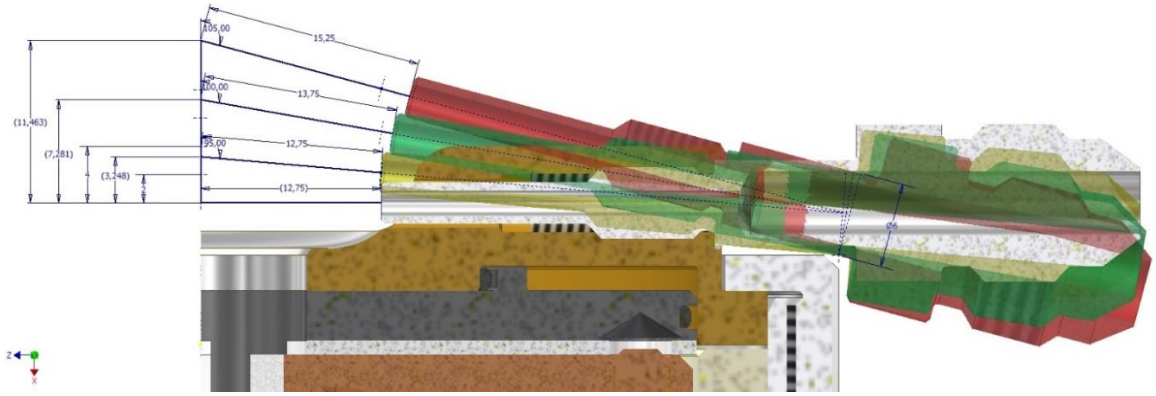
- Larger, staggered distances between the power/water cable connections
- Elimination of shrink tubing
- Improved fastening options for covers/brackets for the power/water cables and anode connections on the rear body

(Currently the cover is only used for hose holders and protection of the cathode connection)

Improved inclined position of the injectors

PENTA STANDARD up to 95° only possible with 8 mm injector spacing
PENTA RE smaller injector spacing

- < 95° with 4 mm spacing
- < 97.5° with 6 mm spacing



Injector angles and resulting distances to the nozzle zero point

Use of optimized materials and realization of an improved installation situation of the spacer washer to the anode cascade outlet and anodes

- Increased service life of the spacer disk
- Reduction of the risk of leaks and flashovers in the event of deposits forming on the anodes and/or on the cascade outlet

Overall torch dimensions reduced

- Nozzle body/central nut now Ø108/115mm instead of PENTA standard Ø118/125mm
- Outer diameter of rear body unchanged due to compatibility with burner holder
- Overall 7mm shorter from burner holder

Note: All of the above modifications also lead to a modified plasmatron, which in turn can have an effect on the layer properties.