



NASA Langley's Quick Change Ceramic Flame Holder

For high-output torches

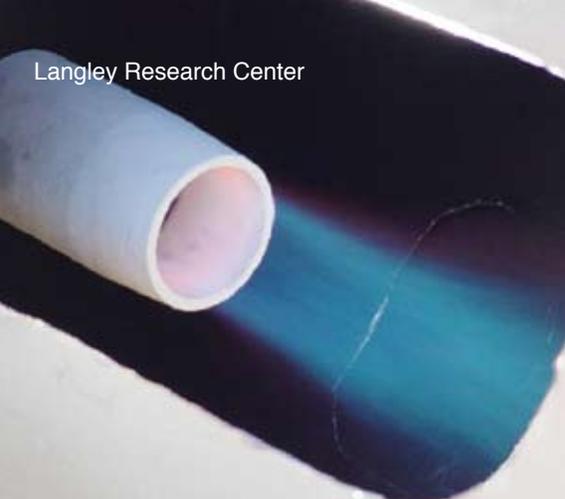
Seeking to improve upon stock stainless steel flame holders, researchers at NASA's Langley Research Center have developed a new ceramic design with a service temperature of 4,000°F. The combination of high strength and high temperature capability and a twist lock mounting method to the steel burner sets this flame holder apart from existing technology.

Benefits

- Enables about double the torch output without damaging the torch
- Can operate at higher temperature (4,000°F) than stainless steel (1,600°F)
- Allows the torch to be optimized for different applications (e.g., may use a mixing nozzle or a supersonic nozzle)
- Can be used with either venturi or blown burners
- Is easily replaceable without tools
- Operates without torch/holder rusting together after use
- Permits a modified torch to still use a conventional flame holder

partnership opportunity





The Technology

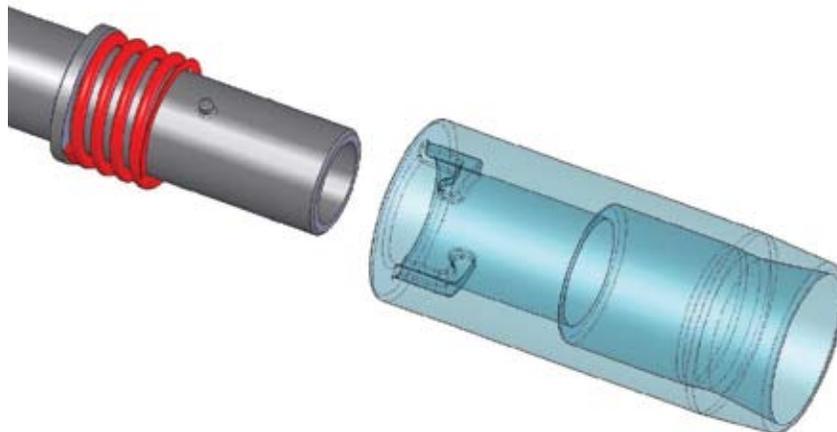
The high output flame holder was developed in support of the U.S. Navy's efforts to design a jet engine simulator for infrared plume studies. Previous tests had shown that off-the-shelf components would melt or burn up in a short time. Given these design and performance criteria, NASA developed a ceramic flame holder that has a much longer life cycle and can be used with a variety of torches or burners. Where the stainless flame holders showed signs of oxidation, flaking after only three hours of testing, NASA's ceramic flame holder has over 150 hours and 200 cycles of use in a casting furnace, and soot marks are the only signs of use; there are no signs of deterioration.

NASA expects the new technology to help enhance safety through increased reliability and flame control. Additionally, the total cost of ownership is less due to decreased maintenance and improved efficiency.

Applications

The technology offers wide-ranging market applications, including:

- Aerospace – jet engine simulation
- Manufacturing – torches for forging, casting furnaces, and pottery kilns



The new design uses a twist lock attachment (an improvement over set screws), and has a service temperature of 4000°F. The flame holder slides onto the torch and roll pins engage the bayonet fitting grooves.

For More Information

If your company is interested in licensing or joint development opportunities associated with this technology, or if you would like additional information on partnering with NASA, please contact:

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