Specifications for Pulsed Laser System for Particle Image Velocimetry

NASA Langley Research Center requires two, separate dual-head, pulsed Nd:YAG laser systems for flow physics research. These laser systems will be part of Particle Image Velocimetry (PIV) systems used by the Flow Physics and Control Branch in wind tunnel and laboratory experiments to investigate and analyze complex flow phenomena.

The lasers shall have the following characteristics:

- Shall output 532 nm beam only
- Shall have a pulse repetition rate per laser head of 0-15 Hz.
- Shall have a minimum output energy 200 milljoules at 532 nm wavelength
- Shall have a pulse width no greater than 10 nsec
- Shall have a beam diameter no greater than 7 mm
- Shall have a beam divergence of no greater than 3.5 mrad.
- Shall have a beam pointing stability of <100 micro radians.
- Shall include internal laser beam combining and alignment optics for PIV applications.
- Shall have a Stable-type resonator for proper beam forming.
- Shall fire the laser within +/-.5 nsec with relation to the external trigger input (jitter).
- Shall include laser safety shutter or switch device.
- Each laser head shall accept external flash lamp and Q-switch trigger inputs to synchronize with a TTL level pulse.
- Shall operate by single phase, 120 VAC @ 60 Hz.
- Maintenance and servicing shall be performed on-site.
- Vendor shall respond to requests for emergency service and repair within 24 hours.

**The vendor shall provide technical literature in order for the Government to evaluate the quotes submitted based on technical merit.