FITTING OUT OF THE RUSSIAN STANDARD MEASURING INSTRUMENT FOR THE UNIT OF AIRFLOW VELOCITY BY THE PRECISION LASER DIAGNOSTIC SET “LAD-015”

Description
For the first time the State standard measuring instrument for the unit of airflow velocity (VNIIM, St. Petersburg) is equipped by the precision laser diagnostic set “LAD-015". This allowed VNIIM to implement successfully the program of International Key Comparisons of standard national measuring instruments for the unit of airflow velocity APMP.M.FF-K3, organized by the inter-regional metrological organization “Asia-Pacific Metrology Program” (APMP). The standard measuring instruments of six countries (Japan, Korea, Russia, Singapore, USA, and Taiwan) were compared with each other. These works have been carried out from October 2008 till August 2010. This work was awarded by the Gold medal and First Degree Diploma of the X Moscow International Salon of Innovations and Investments (2010).

![Image of State special measuring instrument](image)

Fig.1. State special measuring instrument for the unit of airflow velocity GET-150-85, equipped by the laser Doppler diagnostic set LAD-015.

Technical appraisal and economic benefits
Performance advantages and features of the precision laser diagnostic set LAD-015 are as follows:

- It is adjusted functionally to parameters of the State special measuring instrument for the unit of airflow velocity GET-150-85.
- Powerful semiconductor laser with wave front stabilizer.
- Anamorphic optic scheme with improved spatial-temporal uniformity of the probing optic field.
- Single-photon wide-range photodetector on the up-to-date photoelectron Hamamatsu multiplier.
- The programmable system for automatic experimental procedure.
Fig.2. Laser Doppler diagnostic set LAD-015 as a part of the State measuring instrument (on the left), operation still – calibration of 2D ultrasonic anemometer – in the framework of the Program on Key Comparisons of national measuring instruments for the unit of airflow velocity APMP.M.FF-K3 (on the right).

**Application areas**
Fundamental metrology, fitting out of wind tunnels and setups, experimental aerodynamics, meteorology, etc.

**Development stage**
The invention is completed and introduced into practice, approved internationally, supported partially by JSC “IOIT”.

**Patent situation**
Patents were obtained, additional patenting is in progress.

**Commercial offers**
The state measuring instrument with laser diagnostic set LAD-015 currently operates in VNIIM. Applications for transfer of unit size to the secondary departmental measuring instruments and instruments of the state metrological services are accepted. The laser diagnostic set LAD-015 is ready for serial production and can be tailored according to the customer demands (Institute of Thermophysics SB RAS, Public corporation “IOIT”).

**Estimated cost**
The price is subject to negotiation.

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