

- freely editable graphs (profiles) as input/setpoint for above modes;
- load displacement simulation during braking, shifting of cargo from back to front, based on simulated inertia correction;
- hybrid vehicle braking, where a certain amount of the kinetic energy is absorbed by recharging the vehicle battery.

To simulate the operating conditions the Brake dynamometer must have a ventilation system - air cooling of brake test chamber with:

- regulated temperature at outdoor conditions: from -15 to 30°C
- controlled variable airflow from 0 m<sup>3</sup>/h to at least 4000 m<sup>3</sup>/h.

The ventilation system has to be an integral part of the Brake dynamometer supplied by the Contractor together with necessary ducting and installation excluding building works. The set-points of the system must be settable in the Brake dynamometer test program (when in automatic mode) and actual values has to be recorded. The system must be operational in manual mode. It must be visualized (set-points, actual values, failure status).

Additionally the ventilation system has to be equipped with spark arrestor and detector, negative pressure control (for slight vacuum in the test chamber to keep the brake dust inside), temperature and humidity probes, fresh air mode, mixed and closed circuit mode.

#### **5. Brake dynamometer automatic test mode.**

In the automatic test mode, the Brake dynamometer must be able to apply any number of consecutive braking applications with the same or different input parameters.

This concerns in particular the ability of Brake dynamometer automation system to achieve „consecutive braking applications” with usually extreme input parameters values like constant torque (deceleration) with maximum 3% overshoot.

For example as in Table 6 in Appendix 5:

- braking with constant deceleration 6.5 m/s<sup>2</sup>,
- next braking with constant deceleration 0.5 m/s<sup>2</sup>.

The Brake dynamometer should have the ability to program at least the following input parameters:

- the number of braking applications to perform;
- rotational speed of the brake at start of the braking application;
- braking torque in the constant torque mode;
- pressure in the braking system in the constant pressure mode;
- drag torque in dragging mode;
- pressure in dragging mode;
- speed in dragging mode;
- start brake temperature measured:
  - in the material of friction pads;
  - in the material of drum/disc;
  - contactless on the drum/disc surface (if will be installed);
- the rotational speed of the end of the braking application;
- time and total time of the braking application.