

## Details of CARE Facility

**Name of CARE facility:** Exhaust Emission measurement system for Internal Combustion Engines

**Location:** Engine Research Laboratory (next to central Workshop)

**Total cost of equipment/facility:** 40 Lakhs

**Year of CARE funding:** 2002-03 and Operational since, March 2004

**Support provided by CARE:** 25 Lakhs (rest support from MHRD and Other Projects)

**Name of Principal Investigator:** Dr. A K Agarwal ([akag@iitk.ac.in](mailto:akag@iitk.ac.in); Tel: 7982/7458)

**Brief description and capability of CARE facility:**

**(Please add a photograph of the facility)**

The proposed emission analysis system is for measurement for (UBHC) Unburnt Hydrocarbons and (NO<sub>x</sub>) Nitrogen Oxides in engine exhaust. The "RAW Exhaust EMISSION SYSTEM" is manufactured by Horiba, Japan. The EXSA 1500 emission analysis system is a modular, innovative exhaust gas emissions analysis device that can be easily adapted to user specific requirements and can be integrated into existing test environment. The EXSA complies with latest regulatory standards for light and heavy duty test procedures such as EURO III and IV. The system is designed to fulfill the research and legislative requirements for measuring gaseous emissions. The following measurement methods are applied to the regulated emission species listed below.

Emission Species	Method
CO	NDIR (Non-Dispersive Infra-Red)
CO <sub>2</sub>	NDIR (Non-Dispersive Infra-Red)
O <sub>2</sub>	PMD
NO <sub>x</sub>	CLD (Chemiluminescence)
THC	FID (Flame-Ionisation Detector)



**Utilization of the facility:** a) PI : Mostly for analysis of exhaust gases (regulated emissions) from different types of engines using different fuels, and also for development of different engine technologies.

**Mechanism of time sharing:** This facility is available for everyone, 24\*7.

**Charging mechanisms:** Free

**Any difficulties, that you faced in running CARE facility:** I don't have any full time technical personnel to look after this CARE facility. My PhD students help maintain the machines and also the calibration gases are quite expensive.

**Link to the website for the CARE facility, if any:** <http://www.iitk.ac.in/erl>