



CENTRAL POWER RESEARCH INSTITUTE, BANGALORE

R&D UNDER NATIONAL PERSPECTIVE PLAN MINISTRY OF POWER, GOVERNMENT OF INDIA

INVITATION FOR RESEARCH PROPOSAL FOR LED

The Ministry of Power (MoP), Government of India, under its ‘R&D Scheme of National Perspective Plan (NPP)’ is promoting research and development for the benefit of Indian Power sector. R&D under National Perspective Plan is directed towards applied research with focus on development of new products / Process Development/Technology development/field implementation and adoption / absorption of new technologies in power. The scheme is being jointly managed by Central Electricity Authority (CEA) New Delhi and Central Power Research Institute, Bangalore, under the guidance of Technical Committee and Standing Committee on R&D (SCRD).

The R&D programme under NPP supports activities aimed at developing and integrating technologies to evolve systems both in the advanced and emerging areas and in traditional areas of Power Sector viz., Generation (Hydro and Thermal), Distributed Generation, Transmission, Distribution, Energy & Environment and end use of electricity. Applications of R&D for socio-economic benefits are consciously promoted under this programme. The details of the thrust areas identified are enumerated in the 12th Plan document on R&D, under Chapter 6, of Working Group on Power for 12th Plan, by Ministry of Power, Govt. of India. (Details are available on the website of CPRI).

The specific objectives of this R&D programme for the Indian Power Sector are:

- To develop and integrate technologies in identified areas
- To promote modern / advanced technologies for socio-economic problem solving
- To promote modernization of traditional technologies, tools and skills
- To facilitate enhancement of quality and performance of power systems
- To promote activities aimed at improving technology, materials, Processes and other appropriate activities as applicable to Power.

Priority will be given to the proposals having potential for generation of IPR / Patents.

Proposals are invited for collaborative R&D with the involvement of Industry / User partner from Manufacturers, Power Utilities, CPSUs and State PSUs, Academia and R&D Institutions etc. Proposals along with technical and financial particulars may be submitted in the prescribed format (available in the CPRI website) to:

Joint Director (R&D Management Division) Central Power Research Institute, Prof.Sir.C.V.Raman Road, Sadashivanagar P.B.No.8066, Bangalore -560 080	Phone - 080-23604736 Fax - 080-23600942 E-mail: sundar@cpri.in
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- For further Details of the scheme and application format kindly refer to website:- <http://www.cea.gov.in> & [www.cpri.in/r-a-d-schemes/research-scheme/XII plan](http://www.cpri.in/r-a-d-schemes/research-scheme/XII%20plan).
- Last date for receipt of proposals is **31st March 2016**

Research and Development Program for LED

Introduction

The prices of LEDs have come down sharply over recent times due to the bulk procurements in India. However the high cost of LEDs and inadequate information of their comparative advantages has limited their demand. Despite the Government and industry taking steps to raise demand for energy efficient lighting, there exists supply side weaknesses in LED lighting products such as heavy dependence on imports for electronic components and LED chips, modifications required for as per Indian conditions of the imported products and limited testing capacity for LED lighting.

Objective:

The main objective of this R&D programme is to make LEDs more efficient, affordable and customized to Indian conditions. To develop energy efficient, cost-effective, reliable and future-ready LEDs as per requirement of domestic environmental conditions with an end objective to benefit users in India, interventions at various points are necessary. Expected deliverables and key areas where support is needed for increasing domestic content in the LED luminaries are listed in table:

Sl. No.	Area of proposed research	Specific R&D problem	Current Technology	Technology Challenge (Expected deliverables)
1.	Power Electronics and Lighting Management	Surge protection	Surge Protection Devices, MOV E-Cap Combination and GDT (Gas Discharge Tube)	<ul style="list-style-type: none">• Development of Low cost Surge Protection Device or Circuit for large scale consumer/ government procurement• Development of Power Electronics for grid voltage variation issues
2.	Optics Management	Design and material with moisture and dust protection	Polycarbonate (PC), Acrylic (PMMA) lens with Elastomer Gaskets/Sealants	<ul style="list-style-type: none">• Long durability of thermoplastics is questionable.• Low cost with high heat deflection and UV resistant thermos-plastic or Silicon material to be explored.• Optical Design to be freeze (preferable) for Street lighting procurement program in India.
3.	Thermal Management	Thermal resistance and cost effective heat transfer	High Cost of Aluminium Heat Sinking	Low cost engineering plastics (thermal conductive) to

		material	High cost of Thermal Conductive Plastic	replace metal
4.	Opto-Semiconductor Material	Low cost wafer, substrate	Wafer and substrate are costly	<ul style="list-style-type: none"> • Exploring low cost wafer solution and substrate. • Exploring manufacturing of LED package in India. • Lowering Thermal Resistance of LEDs. • Evaluation Guide for LEDs package for high scale Government Purchase.