

Indian Low Voltage DC Forum

Industry Connections Activity Initiation Document (ICAID)

Version: 1.2, 30 October 2013

Instructions

- Instructions on how to fill out this form are shown in red. It is recommended to leave the instructions in the final document and simply add the requested information where indicated.
- **Shaded Text** indicates a placeholder that should be replaced with information specific to this ICAID, and the shading removed.
- Completed forms, in Word format, or any questions should be sent to the IEEE Standards Association (IEEE-SA) Industry Connections Committee (ICCom) Administrator at the following address: industryconnections@ieee.org.
- The version number above, along with the date, may be used by the submitter to distinguish successive updates of this document. A separate, unique Industry Connections (IC) Activity Number will be assigned when the document is submitted to the ICCom Administrator.

1. Contact

Provide the name and contact information of the primary contact person for this IC activity. Affiliation is any entity that provides the person financial or other substantive support, for which the person may feel an obligation. If necessary, a second/alternate contact person's information may also be provided.

Name: Mustafa Wajid

Email Address: Mustafa.wajid@meher.com

Phone: +91 80 2224 1272

Employer: Meher Group

Affiliation: Meher Group

2. Type of Activity

Specify whether this activity will be entity-based (participants are entities, which may have multiple representatives, one-entity-one-vote), or individual-based (participants represent themselves, one-person-one-vote).

Entity-Based

3. Purpose

3.1. Motivation and Goal

Briefly explain the context and motivation for starting this IC activity, and the overall purpose or goal to be accomplished.

While there has been a significant amount of discussion and speculation on the potential cost benefits of powering homes, commercial buildings, and microgrids with DC power instead of AC power, very little actual data exists to support this dialog. Such data, if available, would provide utilities and manufacturers with the metrics to make informed decisions to proceed with low voltage and medium voltage (up to 600 volts) DC powered systems.

This activity will utilize a working DC microgrid, DC commercial building, and DC powered homes constructed by CPRI and other third parties. It will test DC on AC appliances and equipment, and install photovoltaic panels to provided DC. The system will include storage, distribution, and protection of the DC system, as well as the interconnection to the utility AC system.

The critical need for such activity in India is highlighted by the fact that approximately 300 million people are without electricity due to lack of AC infrastructure. Also rapid urbanization has resulted in commercial buildings becoming a key energy consumer and energy efficiency is a vital issue.

Upon completion of the work, the activity will publish empirical data derived from the project with regards to technical and economic findings of the project.

3.2. Related Work

Provide a brief comparison of this activity to existing, related efforts or standards of which you are aware (industry associations, consortia, standardization activities, etc.).

The activity proposers are aware of two IEEE-SA Industry Connection activities which are closely related to this effort:

DC in the Home
Systems and Components for Energy Routers

Additionally, the proposer is aware of two consortia which are investigating similar issues:

EMerge Alliance DC initiative
DC Components and Grids (DCC-G) in Europe

The activity proposer has reached out to both of the Industry Connection activity leaders to determine how the results of these two efforts can both facilitate and accelerate the Indian Low Voltage DC Forum results. The group is also engaging with key members from other global activities including the EMerge Alliance and DCC-G activities. The LVDC India forum will work closely with all the global initiatives so that existing learning from such activities can be considered.

3.3. Potential Markets Served

Indicate the main beneficiaries of this work, and what the potential impact might be.

At present, there are 400 million Indians without electricity due to the lack of utility AC distribution infrastructure. DC microgrids represent the best possible means to bring electric power to this population.

The empirical data that will be published will be of value to the photovoltaic generation and energy storage industries/manufacturers around the world, providing a baseline for other countries and manufacturers to employ in their renewable energy plans. Electric utilities will also benefit from the investigation of tying DC microgrids to AC systems.

DC in the building is becoming a key subject globally. In a recent survey by CEA, it has been reported that the commercial buildings are the highest consumer of energy surpassing industry. In this context, energy efficiency is considered critical aspect which will be addressed by the DC in building activity. Increasingly, there is very keen interest on more and more data centers be driven by DC power and couple of such initiatives are underway in India.

DC in the home is becoming a reality with DC powered LED lighting, DC powered ceiling fans including a shift towards consumer appliances being driven by DC power. This will result in a potentially huge market driven by consumer appliances, and basic housing infrastructure that will support this migration.

4. Estimated Timeframe

Indicate approximately how long you expect this activity might take to achieve its proposed results.

Expected Completion Date: 10/2015

IC activities are chartered for two years at a time. Activities are eligible for extension upon request and review by ICCOM and the IEEE-SA Standards Board. Should an extension be required, please notify the ICCOM Administrator prior to the two-year mark.

5. Proposed Deliverables

Outline the anticipated deliverables and output from this IC activity, such as documents, proposals for standards, conferences and workshops, databases, computer code, etc., and indicate the expected timeframe for each.

This activity is expected to utilize a working DC microgrid, commercial building and DC powered homes constructed and operated by CPRI and other third parties to develop empirical data in a carefully monitored environment. (9/2014)

The activity will publish empirical data, best practices and lessons learned by CPRI and other third parties, as applicable, in the construction, operation and economic efficiencies of a LVDC system. (12/2014)

The IEEE-SA will enter into memoranda of understanding with CPRI and other third parties, as applicable, which will define roles and responsibilities of the respective parties.

The activity will also make appropriate recommendations and proposals for enhancing the scope of existing standards or proposing new standards projects. Any IEEE standards development activity will be done outside this Industry Connections program through the appropriate sponsoring committee and IEEE-SA working groups.

6. Funding Requirements

Outline any contracted services or other expenses that are currently anticipated, beyond the basic support services provided to all IC activities. Indicate how those funds are expected to be obtained (e.g., through participant fees, sponsorships, government or other grants, etc.). Activities needing substantial funding may require additional reviews and approvals beyond ICom.

The activity will be funded by contributions from the participants in the form of cash, equipment, and/or in-kind services. The Indian Central Power Research Institute (CPRI) is also expected to contribute resources and provide the test bed environment.

7. Management and Procedures

7.1. IEEE Sponsoring Committee

Indicate whether an IEEE sponsoring committee of some form (e.g., an IEEE Standards Sponsor) has agreed to oversee this activity and its procedures.

Has an IEEE sponsoring committee agreed to oversee this activity? No

If yes, indicate the sponsoring committee's name and its chair's contact information, and skip the remaining parts of this section (skip 7.2 and 7.3, below).

Sponsoring Committee Name: Committee Name

Chair's Name: Full Name

Chair's Email Address: who@where

Chair's Phone: Number, including country code

Additional sponsoring committee information, if any.

7.2. Activity Management

If no IEEE sponsoring committee has been identified in 7.1 above, indicate how this activity will manage itself on a day-to-day basis (e.g., executive committee, officers, etc).

An executive committee will oversee the program. Individual track groups will develop and implement the three activities (microgrid, commercial building, homes)

7.3. Procedures

If no IEEE sponsoring committee has been identified in 7.1 above, indicate what documented procedures will be used to guide the initial operations of this activity (e.g., the baseline *Industry Connections Activity Policies and Procedures*).

Policies and Procedures will be developed based on the ICom-provided entity P&P template.

8. Participants

8.1. Stakeholder Communities

Indicate the stakeholder communities (the types of companies or other entities, or the different groups of individuals) that are expected to be interested in this IC activity, and will be invited to participate.

Indian government and utility members
Suppliers of electrical equipment and appliances
Manufacturers/constructors of distribution infrastructure
Manufacturers of photovoltaic panels and storage systems

8.2. Expected Number of Participants

Indicate the approximate number of entities or individuals expected to be actively involved in this activity.

20 -30 organizations

8.3. Initial Participants

Provide a list of the entities or individuals that will be participating from the outset. It is recommended there be at least three initial participants for an entity-based activity, or five initial participants (each with a different affiliation) for an individual-based activity.

Use the following table for an entity-based activity:

Entity	Primary Contact	Additional Representatives
ABB	Giandomenico Testi giandomenico.testi@in.abb.com +91-97419 44494	Mr. Ramprasad Satyam ramprasad.satyam@in.abb.com +91 95355 00880
Central Electricity Agency	Neerja Mathur neerjamathur123@gmail.com +91 11-2610 4217	Pankaj Bhatra pan_batra@hotmail.com +91 9350981062
CPRI	Murugesan dgcpri@cpri.in +91-94483-62457	
Crompton Greaves	Dileep Patil dileep.patil@cgglobal.com	Venkata Vaddamanu venkata.vaddamanu@cgglobal.com

	+91 97697 78242	+91 99303 27692
Emerson	Dinesh Dhut dinesh.dhut@emerson.com +91 9619394272	
GE	Ravi Segal ravi.segal@ge.com +91-96 1198 8922	
IBM	Dr. Murali Kota	Mr. Deva Seetharam Mr. Zainul Charbiwala zainulcharbiwala@in.ibm.com +91 81055 99777
Infosys	Rohan Parikh Rohan_Parikh@infosys.com +91 98450 50950	Mr. Mani Radha Krishna
ISGF: India Smart Grid Forum	Reji Kumar Pillai reji@rejikumar.com +91 98115 48584	Mr. Prakash Nayak
Juwi	Rajesh Bhat r.bhat@juwi.in	
Meher Group	Mustafa Wajid Mustafa.wajid@meher.com +91 80 2224 1272	
Panasonic	Hiroaki Fukuda fukuda.hero@jp.panasonic.in +91 88 0036 6922	
Philips	Geetha Mahadevaiah geetha.m@philips.com +91 98450 10063	Priyaranjan Mishra mishra.priyaranjan@philips.com +91 99804 96004
Schneider-Electric	Satish Kumar satish.kumar@scheider-electric.com	
Siemens	Ram Chugh	Mr. Vikram Gandotra vikram.gandotra@siemens.com +91 9811110288