

Summary of  
3<sup>rd</sup> International PV Module Quality  
Assurance Forum

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International Pre meeting & Welcome Dinner

November 26<sup>th</sup>

International Pre Meeting

Task Group	Attendees
Task Group 1	13
TG2,3,5 Joint	26
Task Group 4	9
Task Group 8	6
Total	54

Welcome Dinner

Category	Attendees
Invited Guest	5
Sponsor	36
TG member	3
Organizer(PVT EC)	5
Total	48



**PVTEC**

## 3<sup>rd</sup> PV International PV Module Quality Assurance Forum

Date: November 27<sup>th</sup> 2012, 10:00 17:50  
 Venue: Iino Hall Conference Room A(Tokyo, Japan)  
 Participants : 216 Sponsor : 21 organizations

**Chairs**  
 Dr. Michio Kondo(Research Center for Photovoltaic Technologies, AIST )  
 Dr. Sarah Kurtz (National Center for Photovoltaics, NREL)

**Organizers**  
 Photovoltaic Power Generation Technology Research Association (PVTEC)  
 National Institute of Advanced Industrial Science and Technology (AIST)  
 National Renewable Energy Laboratory (NREL)

**Supporting organization**  
 Minister of Economy, Trade and Industry (METI)  
 United States Department of Energy (DOE)  
 European Commission DG JRC  
 The Japan Electrical Manufacturers Association (JEMA)  
 Japan Photovoltaic Energy Association (JPEA)



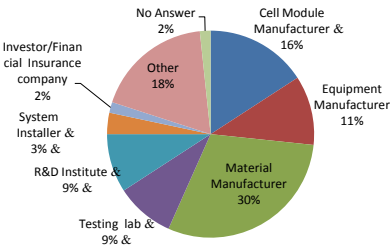
### Program Agenda



10:00	Opening remarks	Dr. Michio Kondo(AIST) / Dr. Sarah Kurtz(NREL)
10:10	Welcome Speech	
	Ryoji Doi (METI)/Jeffrey Miller(DOE/US Embassy)/Dr. Hiromu Takatsuka(PVTEC)	
<b>10:40</b>	<b>Session I. Special Talk</b>	
10:40	Quality Requirement for PV Systems	Dr.Heinz Ossenbrink(EU_DG_JRC)
11:10	The True Power™ – Advanced Combination of extended indoor & outdoor testing of PV modules & system across various climate zones	Dr.Thomas Reindl(SERIS)
11:40	Outline of newly started Japanese FIT program	Keisuke Murakami(METI)
<b>12:10</b>	<b>Session II JIS Q8901 and Bankability</b>	
12:10	JIS Q8901 and its certification	Katsuaki Shibata(JET)
12:30	“Bankability” of PV project	Teiko Kudo (SMBC)
12:50	Q&A	
13:00	Lunch Break	
<b>14:00</b>	<b>Session III Technical session</b>	
14:00	PID and correlation with field experience	Dr. Juliane Berghold (PI-Berlin)
14:20	PID Testing—	Dr. Tadanori Tanahashi(Espec)
14:40	PV Module Quality Assurance	Dr. Neelkanth Dhere(FSEC)
15:00	Discussion	
15:20	Coffee Break	
<b>15:40</b>	<b>Session IV Task Group update</b>	
15:40	Update of QA Forum efforts and its future perspective	Dr. Sarah Kurtz(NREL)
16:00	Update of TG1-5 & 8	Japan TG leaders
17:00	Open discussion	All
17:40	Closing Remarks	Dr. Michio Kondo(AIST)



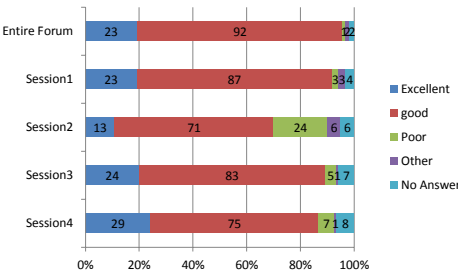
Attendee Survey - 1 -  
120 returns



1.Category of organization



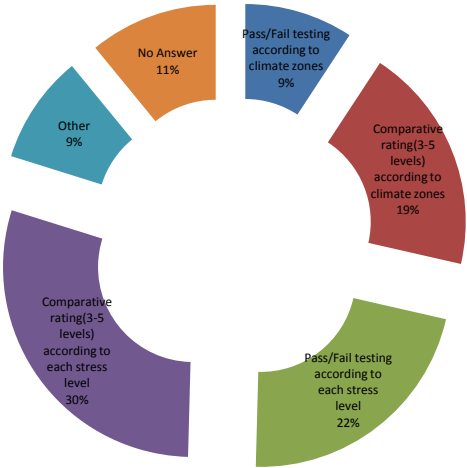
2.Evaluation of each session



Attendee Survey - 2 -

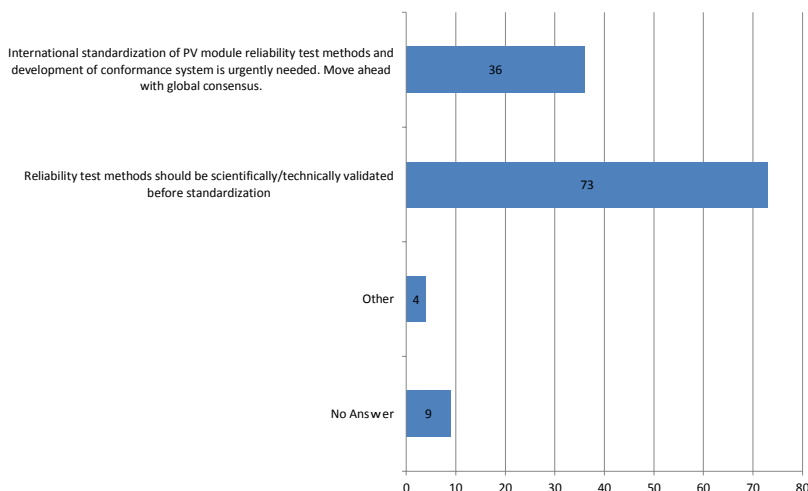
3. Which of the following testing/rating system is more preferable?

Pass/Fail testing according to climate zones	11
Comparative rating(3-5 levels) according to climate zones	23
Pass/Fail testing according to each stress level	26
Comparative rating(3-5 levels) according to each stress level	35
Other	11
No Answer	13



### Attendee Survey - 3 -

3. Comment on International standardization for PV module reliability test methods and development of relevant conformance system.



### Discussion Summary – 1 -

□ **TG1 • JISQ8901** Terrestrial photovoltaic (PV) modules-Requirement for PV reliability assurance system(Design, Production and Product Warranty)  
 JIS\*: Japanese Industrial Standards  
 English version available at  
<http://www.webstore.jsa.or.jp/webstore/Com/FlowControl.jsp?lang=en&bunsyoid=JIS+Q+8901%3A2012&dantaiCd=JIS&status=1&pageNo=0>

- More clear definition of “functional life time” and measures to assess its validity desired.
- Consistency with IEC / ISO standard is a future challenge.

#### □ **Tests for PV module reliability(Efforts of TG2-5)**

- Indoor test results should align with actual field failure mode. Applying more stress itself does not make sense.
- Collection of field data from different climate zones/application is required to develop climate zone/application specific test methods.
- Acceleration factor of each test
- 61215/62646 with some minor modification could be used to assess PV module reliability in many climate zones. If so, it could be a fast and cost effective solution.
- Reliability should cover not only module power output performance but also safety.

## Discussion Summary – 2 -



### □ PV Module Rating system

- Major module manufacturers may be driven to make a single product which satisfy requirements for all climate zones/application, resulting in higher cost.
  - ✓ mass-production benefits
  - ✓ difficulty to forecast each regional demand, risk of excessive inventory
  - ✓ efficient R&D, Certification cost/time
  - ✓ product performance warranty, uncertainty of final destination of the product
- PV is still new industry. Every company is trying to differentiate their products for successful market development. Rating information will help their efforts
- Rating will provide module makers with good information in developing their & product portfolio strategy, e.g. many different types modules for each climate & zones, focus on some specific market, single product to fit all, and, etc.
- Currently proposed rating system is tentative one and should be revised by further feedback from users including investors and finance institution.
- Rating by climate zone is preferable, however, 61215+(steroid) can be considered as a realistic first step
- Incentives may be offered for High rating (High quality) product e.g. lower & insurance rate &
- Vote for support of rating system by show of hands ....Favor 74 vs. Against 44

### PVTEC (Photovoltaic Power Generation Technology Research Association)



✓Established at 1990 '

✓67 member organization (as of march 1<sup>st</sup> of 2013) '

Asahi Glass Co.,Ltd.	Denki Kagaku Kogyo Kabushiki Kaisha	Hitachi Chemical Co.,Ltd.	Kyodo Printing Co.,Ltd.	Nitto Denko Corporation	Sumitomo Bakelite Co.,Ltd.	Toshiba Mitsubishi-Electric Industrial Systems-Corporation
Asahi Kasei Corporation	Dexerials Corporation	Iwasaki Electric	Lasertec Corporation	NPC Incorporated	Sumitomo Seika Chemical Co.,Ltd.	
C. I. Kasei Co.,Ltd.	DIC Corporation	Japan Electrical Safety & Environment Technology Laboratories(JET)	Lintec Corporation <b>TG4 Leader</b>	Okura Industrial Co.,Ltd.	Tanaka Holdings Co.,Ltd.	Toyo Aluminum K.K.
Central Research Institute of Electric Power Industry	Dow Corning Toray Co.,Ltd.	JX Nippon Oil & Energy Corporation	Mitsubishi Chemical Corporation	Onamba Co.,Ltd.	Teijin DuPont Films Japa Limited	Toyo Ink SC Holdings Co.,Ltd.
Choshu Industries Co.,Ltd.	Du Pont Kabushiki Kaisha	Kaneka Corporation	Mitsubishi Heavy Industries, Ltd.	Panasonic	The National Institute of Advanced Industrial Science and Technology(AIST)	TOYOBO Co.,Ltd. <b>TG3 Leader</b>
Dai Nippon Printing Co.,Ltd.	Du Pont-Mitsui Polychemicals Co.,Ltd.	Kikusui Electronic Corp.	Mitsubishi Plastics Inc.	SAES Getters SPA	Three Bond Co., Ltd.	UL Japan Inc.
Daicel Corporation	EKO Instruments Co.,Ltd.	Kobelco Research Co.,Ltd.	Mitsubishi Rayon Co.,Ltd.	Saga Prefecture	Tokyo Electron Ltd.	ULVAC Inc.
Daido Steel Co.,Ltd	ESPEC Corp.	Komatsu NTC Ltd.	Mitsui Chemicals Inc.	Sekisui Chemical Co.,Ltd.	Toppa Printings Co.,Ltd.	Yocasol Inc.
Daikan Chemical Co.,Ltd.	Fuji Electric Co.,Ltd.	Kuraray Co.,Ltd.	Nippon Sheet Glass Co.,Ltd.	Sharp Corporation	Toray Engineering Co.,Ltd.	
Daikin Industries Ltd.	Fujifilm Corporation	Kyocera Corporation	Nissan Chemical Industries Co.,Ltd.	Shin-ei Electronic Measuring Co.,Ltd.	Toray Industries Inc.	<b>TG5 Leader</b>

More than 20years history established broad network in Japan.

PVTEC is providing platform for QA taskgroup activities.