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ENERGY POLICY PROGRAM

PARTICIPANT TRAINING PROGRAM POST-TRAINING EVALUATION

BEST PRACTICES IN THERMAL OPERATIONS AND MAINTENANCE

April 2014

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PARTICIPANT TRAINING PROGRAM POST-TRAINING EVALUATION

Training dates: March 31 – April 11, 2014

The Energy Policy Program (EPP) successfully delivered the first of three anticipated training courses on *Best Practices in Thermal Operations and Maintenance (O&M)* from March 31 – April 11, 2014 in Islamabad, Pakistan. Twenty participants (all male) from three GENCOs, including Muzaffargarh, Jamshoro, and Guddu Thermal Power stations, were in attendance. A participant from the Office of the General Manager (Thermal) also participated. The course was designed to advance the participants' knowledge of up-to-date techniques in O&M, management practices, and achieving increased efficiency of thermal power plants. Participants were also exposed to best practices in cost-reduction measures for thermal power plants.

Key Participant Indicators

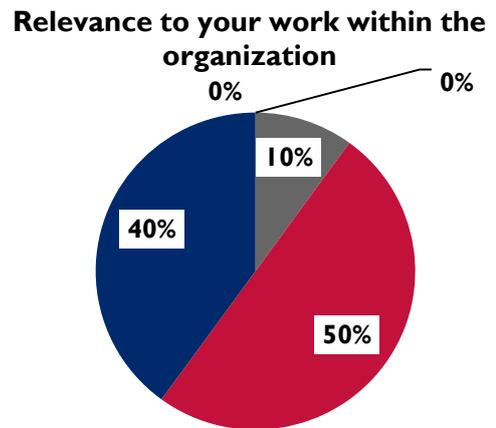
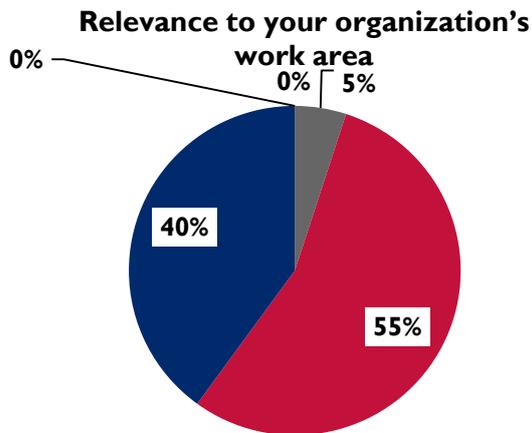
- Number of Participants Trained: 20
- Gender Disaggregation: 100% Male

Upon conclusion of the course, post-training evaluation forms with ten questions were presented to and completed by all of the participants. The summary data from the evaluation forms is presented, below:

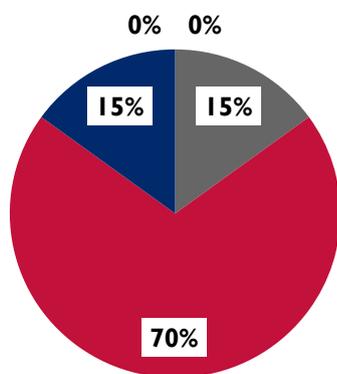
Please tick in appropriate box: 5 outstanding, 4 very good, 3 satisfactory, 2 needs improvement, 1 did not meet expectations

	Did Not Meet Expectations	Needs Improvement	Satisfactory	Very Good	Outstanding
I. Program Rating					
Relevance to your organization's work area	0	0	1	11	8
Relevance to your work within the organization	0	0	2	10	8
Structure of the program	0	0	3	14	3
Topics covered in the program	0	0	2	13	5
Quality of class room interactions	0	1	1	12	6
Quality of training and reading materials	0	0	2	10	8
Appropriateness of reading materials	0	0	3	9	8
Quality of Speakers/Trainers	0	0	1	11	8
II. Program Content and Trainers					
Training Content & Relevance	0	0	0	13	7
Trainer/Speaker Effectiveness	0	0	1	11	8

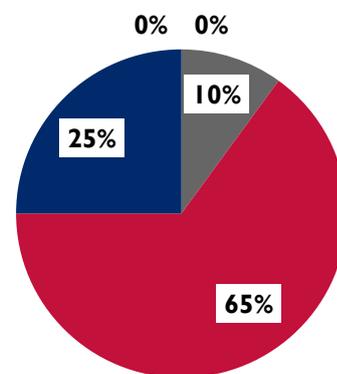
According to participant responses, the below pie charts illustrate the “satisfaction rating figures” for each category:



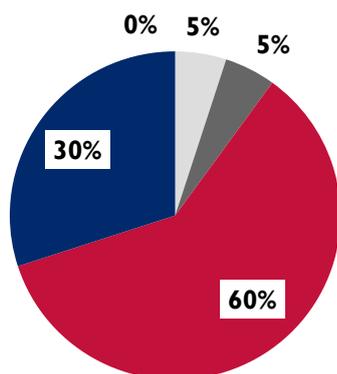
Structure of the program



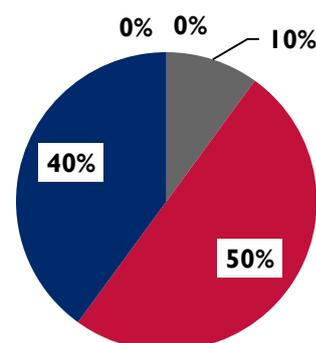
Topics covered in the program



Quality of class room interactions

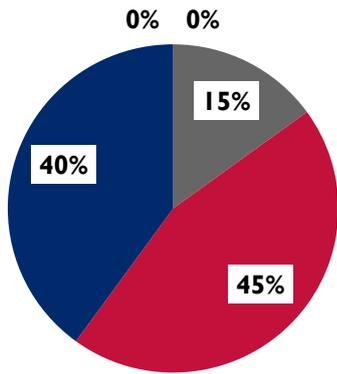


Quality of training and reading materials

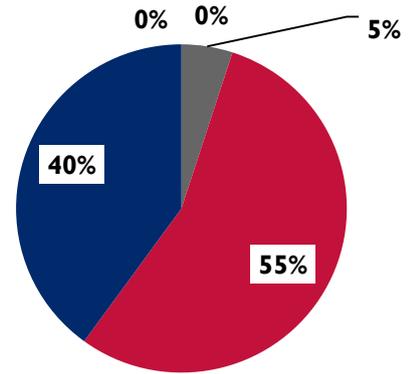


■ Did not meet expectations
 ■ Needs improvement
 ■ Satisfactory
 ■ Very good
 ■ Outstanding

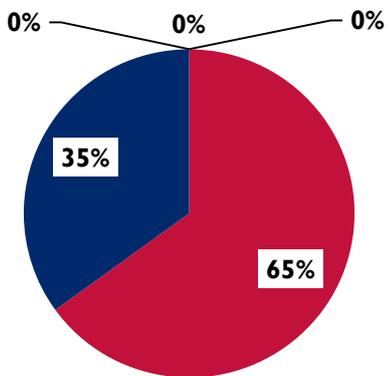
Appropriateness of reading materials



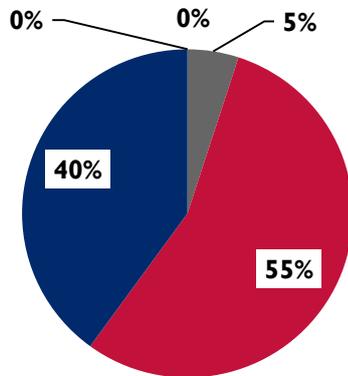
Quality of Speakers/Trainers



Training Content & Relevance



Trainer/Speaker Effectiveness



Did not meet expectations Needs improvement Satisfactory Very good Outstanding

SPECIFIC PARTICIPANT FEEDBACK

Please share any other observation or comments regarding the trainer/training program/logistics:

Participants were asked to share their observations and lend comments regarding the trainer, training curriculum, and EPP-provided logistical support. A majority of participants appreciated the training; and 25% of participants found the training very beneficial.

- *“The training program is very good and beneficial for all of us”*
- *“Such trainings should continue as it is beneficial for the trainees from operation and maintenance point of view”*
- *“The training program is very good and beneficial for us, and this training is facilitated for improvement in our skill and really improved myself after this training”*
- *“Trainers procedure of transferring knowledge is quite satisfactory, Training program is very beneficial to use technical knowledge about O&M procedures and should be refreshed after some period, logistics are satisfactory”*

Two participants felt that the duration of the training course should have been increased.

- *“The training material was more and time was short”*
- *“The training program was really fantastic's, but short time for long course. The trainers were best while bit improvement required for class meeting room’s environment/area, multimedia. This training duration should be increased to get more good results”*

Several participants expressed appreciation for the knowledge that the trainers imparted.

- *“Trainer/Training program is very good; logistics provided about Muzaffargarh trainees was approximately good”*
- *“The training program was very good and the facilities were excellent, the trainers were very good”*
- *“Trainers were efficient to deliver their knowledge training program was good and covered our thermal plant relevant information”*
- *“This training was outstanding, relevant to our organization and place of work, other than that the arrangement, trainer and coordinator done an excellent job and they were very co operative. They have a good command in their field”*
- *“Trainers procedure of transferring knowledge is quite satisfactory, Training program is very beneficial to use technical knowledge about O&M procedures and should be refreshed after some period, logistics are satisfactory”*
- *“The comments regarding this program is very nice, Training was related to our jobs structure of the program is full and topic covered, the quality of reading material is very fruit full for us, trainer /speaker was outstanding”*

Other specific suggestions include:

- *“Tried to give knowledge full of thermal operations within 10 days of working for nearly 9.5 hours, the time is insufficient to cover all topics deeply, No doubt the training was knowledge full and worked as refresher course some low qualified person were nominated for training so that it was wastage of resources gifted by the people of USA”*
- *“There should be case studies and references which could add the experience to the training program for maintenance portion specially”*

Before you received this training, how would you describe your knowledge of operation and maintenance systems and procedures required for thermal power?

A majority of participants expressed having limited knowledge of operation and maintenance systems and procedures before receiving this training. At the conclusion of the course, several participants observed that their knowledge of operation and maintenance systems and procedures had increased significantly.

- *“Before this training, I have not had a lot of knowledge about the plant and operation but as I attend this training, I know how to maintain and operate the power plant”*
- *“I have already familiar for operations and maintenance of power plant but after this training, I have gained deeply knowledge and my skill and best practice in this training and I appreciate to all Team of this training”*
- *“My knowledge of operation and maintenance system and procedures required improvement”*
- *“Before receiving this training I have not had good knowledge for implementation of predictive maintenance”*
- *“Before this training I have already taken training but this one is very progressive, knowledge full, need like bit more time, overall this training is relevant to our job”*
- *“Before this training, operations of plants and maintenance procedures were being followed according to introduction of manufacturer”*
- *“Before this training I have lot of knowledge about the program but after this training I became a perfect engineer of power plant” “In this training session we have come to know new techniques and ideas to overcome the maintenance and operational side problems of thermal power plant under the guidance of trainers and technical experts”*
- *“During this training I gained knowledge of operation and maintenance, the training was very good and all fulfilled the requirement of new technology of coal plant”*
- *“This training has enhanced the knowledge about O&M of power house. Facilitated with awareness and know how about coal/gas plants”*
- *“By getting this training, I have better vision towards maintenance of the plant equipment”*
- *“I have worked in operations and maintenance of power plant, I am well aware of operations and maintenance procedures”*
- *“Going through this training, I observed that I boosted up in every knowledge according to operation, maintenance and Administrative regard”*

What specific skill(s) did you gain as a result of this training?

Participants were asked to address the specific skill(s) that they gained as a result of this training. All of the participants expressed having gained new or more robust skills that would help them in performing their plant functions.

- *“I myself say that before this training allocated literate all the topics of energy policy program and all the knowledge about this program may be gained at the organization, better improvement can be seen and would be profitable organization in Future”*
- *“As the result of this training, I have really gain my knowledge further in this training and physical I have performed simulation of start-up procedure and dcs system also well known in this training”*
- *“How to improve plant performance”*
- *“As result of this training, I have gained further knowledge about proper planning, efficient operation of the power plant and how to get maximum output while decreasing the costs of production”*
- *“Use of simulator and also latest knowledge of operation and maintenance gained and improved”*
- *“After this training I have get good knowledge for maintenance procedures and I will be able to plan, schedule and supervise maintenance of equipments”*
- *“Way of communication, deep knowledge on the specific topic like management and documentation are key skills what I have gain through this training. All the topics have detailed data”*
- *“I gained new skills effort for safety of plant to avoid damages of plant equipments”*
- *“About operation of power plant according to the Sop in best way to optimize the output”*
- *“We have received latest information, techniques and operating maintenance procedures of power plants”*

In the future, how will you apply what you have learned? Please detail how you will leverage and deploy any knowledge you have gained

A majority of participants were of the opinion that the skills they gained as a result of this training will help them in performing their plant functions.

- *“Whatever I learned and gained from this training, I will do good for our plant as it will run safe and sound”*
- *“I shall try to transfer this experience to fellow engineers who have not gone through it.”*
- *“I will apply to the officers, officials and the plant by discuss with them, I will be trained then who are related to me and the plant concerned. Most of them have the lack of communication, training, practically and the theoretically, all the points which have been written in my comments will be given them”*
- *“In the future, I will apply the knowledge (which is gained in this training) at our power plant and to improve the efficiency of plant, I took effort for betterment/improvement of load increase also maintenance of safety equipment”*
- *“In future, I will apply the knowledge gained by proper maintenance planning, repairing of air and flu gases, water, steam pipe lines, rotary equipments, tanks and vessels, to reduce/eliminate the leakage maintenance proper air and fuel ratio, I will ensure safe , reliable, efficient operation of power plant”*
- *“I will try my best to do better maintenance of mechanical equipments which will increase their life time”*
- *“The knowledge gained during training will be utilized to improve the maintenance procedures of plant equipment to increase the reliability availability of plant”*
- *“As I have gained very good information about latest O&M skills, I will train and guide my fellows about these skills by organizing on site demonstration”*
- *“After getting training, InshAllah I will be able to reduce the wear and tear of plant and I will try my level best to make the system more reliable”*
- *“For operation point of view, I will try to point out the different leakages in the system to minimize the cases and increased the output”*
- *“In our plants we shall apply the procedures learned by this training and will try to save energy according to procedure learned in this training”*
- *“In future I will apply the method of operation of power plant, and maintenance of power plant”*
- *“I will apply my newly gained knowledge for all 5 types of maintenance specially computerized maintenance for betterment of efficiency of the plant”*

How will your organization benefit from Thermal Operation and Maintenance (O&M) Training in both the short-term and long-term?

Five the participants shared that they intended to pass on the knowledge they gained as a result of this training to their colleagues.

- *“Whatever I have gained from this training, I will apply this training to the other people of our power plant”*
- *“In both the long and short terms, the organization will surely be beneficial by training other participants”*
- *“I will apply my knowledge which was gain in this training at power plant for betterment of improvement and also utilize this to other people for further training of my staff and also trained this technical staff at our power house through this training b/c this training is beneficial for all technical staff”*
- *“I will apply the gained knowledge to train/communicate the operation knowledge to the people operating air power plant so that precious fuel is utilized properly. I will apply the gained maintenance knowledge for better maintenance of equipments in short term”*
- *“We will do best operation of plant and also give the training on other staff of power plant”*

Six participants stated that they will apply the technical knowledge they gained to better serve their particular plant.

- *“By proper operation and maintenance system I will become more reliable and overall of plant will increase”*
- *“In our organization I will apply procedures according to this training, it will be beneficial for out plants”*
- *“In our organization I will try to apply balancing heat system”*
- *“We can benefit thermal operation and maintenance by using optimization methods of cost and production we can reduced the Aux consumption of plants and reduce leakages of hot gas, steam, water fuel etc”*
- *“Due to our enhanced knowledge about O&M the organization will benefit from much more safe and accurate operation of plant as manual”*
- *“This will helpful in increase of plant performance”*

Other participants expressed appreciation for the management and organizational best practices that they were exposed to.

- *“Both short and long term trainings built up confidence and horizon knowledge, In light of aforesaid, able to operate plant in best way that helpful to increase efficiency”*
- *“In short term this training will help us to do emergent actions for increasing efficiency of our plants in long term this training will create esteem efforts to improve the organization culture”*
- *“Where I worked in last four years, this training knowledgeable will be very beneficiary either it is in management field or how I can improve the efficiency of my plant because I dealt with all power houses in all field, so my organization will have to take the complete benefit from me and I will be available for them”*

What was missing in the Thermal Operation and Maintenance Training?

Four participants shared that nothing was missing from the training curriculum; while two of the participants believed that field visits would have strengthened the training curriculum.

- *“Before giving training, if staff visited at power plant sites”*
- *“During this training in Saturday or Sunday participants recreational tours should have been arranged”*

Four participants believed they would have benefitted from a longer course.

- *“Cover up time is least one”*
- *“If training period increased instead of training time 0800 hrs to 1730 hrs”*
- *“The period is short and training material is huge, therefore training program period may please be increased to achieve the technical knowledge”*
- *“Regarding the power plant operation and maintenance, nothing left behind but one thing what I felt is the lack of time, it should be more and more”*

Other participants felt that the training would have benefitted from more information on management practices, oil and gas, specific case studies, and unit protection.

- *“Some sort of managements topics are missing in the training, So the General natural management topics may be included in course”*
- *“Actually no proper technical lecture and material regarding oil and gas thermal power station was included in this training”*
- *“Standard specially the methodology of dependable capacity test and utilizing and creating correction curves was missing in the course”*
- *“Almost all the essential topics were covered, however the unit protections may please be given further priority in future. More ever more trainings be arranged in future”*
- *“Case studies should be added at maximum cases”*

Do you have any suggestions for how we could improve future Thermal Operation and Maintenance trainings?

As expected, there were a plethora of views expressed to the general question of how to improve future courses.

- *“This training is very beneficial for power plant. To increase time period of this training and also arrange for manager for at least 3 to 5 days, for improvement of the suggestions from trains of different power plant”*
- *“The training period should be increased as much lengthy course, The tour of some technical recreational place will be good plus in this training”*
- *“The course training period is very short please keep it increased to complete the course material”*
- *“Overall it is good practice to arrange O&M training for engineers, according to my observation training on simulation is best. Therefore, it is to suggest that these should have more time on simulation of combined power plant”*
- *“Further improve the training material and increase the time period, the training will be more effective”*
- *“To increase the time period for the completion”*
- *“Time period for training is too short, the costly arrangements in expensive hotels is wastage of resources, although the people of U.S.A gifted the resources for energy crises improvement in Pakistan. The WAPDA administrative College (WASC) hotels may be utilized for some purpose which is also safe on account of security point of view, so training may be more beneficial for ax. Engineers”*
- *“The course covered in this training was extensive, so in future one week more is added for effective training”*
- *“Training was very good and also has gained technical knowledge and improved my skills in operation and maintenance of power plant”*
- *“In my thought this training is too much sufficient b/c books, audios, videos and software was provided for enhance more knowledge about operation and maintenance. Events of accidents, experience need to discuss in this training which have been passed through past. This is very large time training”*
- *“Fully focused on technical point of view, which was good tried, to cover, I think trainer’s staff interaction between them was nice”*
- *“This is need of more expertise and guest speakers for teaching about power plants”*
- *“Increase no. of trainers, Include maintenance of electrical equipments, provide simulators password and user name for long periods (one year), Time of training is very long please re think (in a day), Training period should be increase to cover all topic effectively”*

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