Submission of report

IUVSTA Technical Training Course# 16

Title: APPLIED VACUUM TECHNOLOGIES

Although vacuum technology is rapidly growing world over, it is still in infancy in Pakistan. Many industries, research organizations and universities are using vacuum technology equipment but they are deficient in technical personnel having adequate basic knowledge and concepts. So the training in this important area of science and technology is of prime importance in Pakistan. Realizing this fact, Pakistan Vacuum Society (PVS) arranged a technical training course entitled as "National Workshop on Applied Vacuum Technologies (NWAVT-14)"at National Institute of Vacuum Science & Technology (NINVAST), Islamabad from 22-24 December 2014. PVS organized this training course under IUVSTA Technical Training program #16.

This training course was designed with aim to assist the plant operators, researchers, professors and university students, handling vacuum systems at various levels in different scientific organizations, Universities and industries of Pakistan.

The main objectives of the training course were to:

- Provide knowledge about the vacuum science & technology and its applications in the modern and applied fields of research and production engineering.
- Cope with the latest trends, applications and future role of the vacuum technology in the latest research and industrial applications.
- Realize the barriers for the adaptation and promotion of vacuum science and technology and to resolve the practical problems related to this technology for a better, clean and healthy future.
- Enhance collaborative research and development activities among various industries, research organizations and industries of Pakistan.

A total of 58 participants were registered for participation in the course from all over Pakistan. These include; 10 from industries, 13 from research organizations and 35 from universities.

The experts from industries, educational institutions and universities delivered technical talks on the following topics:

- Vacuum science, technology & its applications
- An Engineer's perspective of vacuum

- Vacuum generation techniques-I
- Vacuum generation techniques-II
- Vacuum pump fluids and greases
- Vacuum measurements
- Vacuum gauge calibration & standard systems
- Design of industrial vacuum systems
- Leaks and leak detection techniques
- Use of vacuum in electron microscopy
- Vacuum materials & NDT techniques
- Vacuum coating systems
- Vacuum insulations
- Vacuum in laser technology
- Thin film and nanotechnology
- Vacuum insulations
- Bio interfaces
- Vacuum system fabrication and welding techniques
- Vacuum electronics
- Vacuum system control and displays

To further enhance the concepts about vacuum technology, practical demonstrations on vacuum pumps, gauges and leak detection techniques were arranged. The participants also have tour of various technical labs of the NINVAST.

A book of lecture notes and other relevant literature was prepared and distributed to the participants for their reference and further course of action.

The participants appreciated the financial and technical assistance of IUVSTA for organizing this event. At the end of technical sessions, certificates were granted to the participants.

Financial assistance to a number of deserving applicants was provided out of IUVSTA grant for attending this short training program. The IUVSTA grant was utilized in paying the registration fee, provision of accommodation and travel to those deserving participants coming from far flung areas.

To award the IUVSTA grant, PVS established a committee for deciding the level of grants. This committee scrutinized the applications and finally awarded the grants to limited participants.

Expenditure of IUVSTA Grant (TTC # 16)

Total No. of participants of the workshop = 60

No. of students received IUVSTA grants = 33

Total IUVSTA grant received: Euro 2500

After conversion to US $: US $ 3340

Registration fee (@US$ 80) = 32 students = US$ 2560

Travel grants (@ US$ 60) = 4 students = US$ 240

Accommodation (@ US$ 20) = 27 students = US$ 540

Total expenditure = US$ 3340

Balance with PVS = NIL

List of participants recommended for IUVSTA grant to attend TTC # 16

Title: Applied Vacuum Technologies

Sr.#	Name	Institution	Reg. Fee US$	Travel Road US$	Boarding/ Lodging US$	Total US$
1.	Miss ShajeelaAshfaque	University of Sindh, Jamshoro	80	60	20	160
2.	Miss ShumailaAshfaque	University of Sindh, Jamshoro	80	60	20	160
3.	Mr. Wajid Ali	Hazara University, Mansehra	80	-	20	100
4.	Mr. Muhammad Asif	Hazara University, Mansehra	80	-	20	100
5.	Mr. Abrar Khan	Hazara University, Mansehra	80	-	20	100
6.	Mr. Bilal Aslam	Peshawar University, Peshawar	80	-	20	100
7.	Mr. UsmanNiaz	University of Engineering & Technology, Lahore	80	-	20	100
8.	Mr. Wasif Zia	University of Engineering & Technology, Lahore	80	-	20	100
9.	Miss MunazzaGul	University of Punjab, Lahore	80	-	20	100
10.	Miss SidrahShujah	University of Punjab, Lahore	80	-	20	100
11.	Mr. Saeed-ur-Rehman	Federal of University, Islamabad	80	-	-	80
12.	Mr. Muhammad Rajab	Federal Urdu University, Islamabad	80	-	-	80
13.	Miss FarkahandaKanwal	Federal Urdu University, Islamabad	80	-	-	80
14.	Mr. Ajab Khan	Gomal University, D. I . Khan	80	-	20	100
15.	Mr. Bukhtiar Ahmad	Gomal University, D. I. Khan	80	-	20	100
16.	Miss SundasGul	Federal Urdu Unviersity, Islamabad	80	-	-	80
17.	Miss HinaSardar	Federal Urdu University, Islamabad	80	-	-	80
18.	Mr. Kamran Khan	Institute of Engineering & Technology, Rawalpindi	80	-	-	80
19.	Mr. ManzarMushafYaqoob	University of Punjab, Lahore	80	-	20	100
20.	Mr. Khalil-ur- Rehman	University of Punjab, Lahore	80	-	20	100
21.	Mr. Zaheer-ud-Din	Hazara University, Mansehra	80	-	20	100
22.	Mr. HamadMueenArbi	Islamia University, Bahwalpur	80	-	20	100
23.	Mr. MuhmaadZubair	University of Punjab, Lahore	80	-	20	100
24.	Mr. Wisal Muhammad	Wah University, Wah	80	-	20	100
25.	Mr. Jawad Ali	Hazara University, Mansehra	80	-	20	100
26.	Mr. Iqtadar Ahmad	Hazara University, Mansehra	80	-	20	100
27.	Mr. Ali Asad	Irfa. I. T. University, Lahore	80	-	20	100
28.	Mr. Muhammad Naveed	Hazara University, Mansehra	80	-	20	100
29.	Mr. NadeemSiddique	University of Gujrat	80	-	20	100
30.	Mr. Muhammad Awais	Hazara University, Mansehra	80	-	20	100
31.	Mr. Shahzad Ahmad	University of Balochistan, Quetta	80	60	20	160
32.	Mr. Ahmad Bilal	University of Balachistan, Quetta	80	60	20	160
33.	Miss Fozia Sultana	KohatUniversity of Science & Technology, Kohat	-	-	20	20

TOTAL US$	2560	240	540	3340

Glimpse of the IUVSTA TTC-16