



One-Week Hands-On Training Program on “High End Machining Centers for Computer Integrated Manufacturing” (28th
November – 04th December, 2022)

The Department of Science and Technology, Government of India, has given the responsibility to IIT (ISM) Dhanbad to build human resources and its knowledge capacity using open access science and technology infrastructure through the scheme "*Synergistic Training Program Utilizing the Scientific and Technological Infrastructure (STUTI)*". Thus, under the DST-STUTI program of IIT (ISM) Dhanbad, a one-week hands-on training program on "*High End Machining Centers for Computer Integrated Manufacturing*" was organized from 28th November to 04th December, 2022 at Department of Mechanical Engineering, BITS Pilani, Pilani Campus.

This training program was coordinated by Prof. B. K. Rout, Prof. T. C. Bera, and Prof. Srikanata Routroy from BITS Pilani and Prof. L. A. Kumaraswanidas and Prof. A. R. Dixit from IIT (ISM) Dhanbad. This program includes thirty participants (Faculties/Research Scholars/Industry Personnel) from various universities/Industries in India.

Highlights of the Day-1 (Dated: 28th November, 2022)

Before the formal inauguration of the program the participants were provided a welcome kit that included a notepad, a power kit (pen, pencil, eraser, and sharpener), and a program pamphlet. Then the training program was inaugurated by Prof. Srikanta. Routroy (Head, Department of Mechanical Engineering, BITS Pilani), Prof. Sudir K. Barai (Director, BITS Pilani), Prof. Souvik. Bhattacharyya (Vice Chancellor, BITS Pilani), and Dr. R. N. Sharma (Chief Guest, Head R & D, JTEKT India Limited). Prof. B. K. Rout, the local programme coordinator, welcomed all participants and speakers, while Prof. L. A. Kumaraswamidhas, the external programme coordinator, explained the aim and objective of such program and its significance in achieving the developmental goals of our country. Following that, two consecutive lectures were scheduled. The first lecture (from 10:30 AM to 11:45 AM) was based on a case study from the automotive sector, which was delivered by Dr. R. N. Sharma. The second lecture (from 12:00 PM to 01:15 PM) was based on the internet of things (IOT) for additive manufacturing and was delivered by Prof. L. A. Kumaraswamidhas.

After the lunch break, a laboratory demonstration (from 02:30 PM to 05:30 PM) was conducted to provide hands-on training with CAM software and the session was conducted by Prof. T. C. Bera and his PhD research scholar Mr. Srikant Pawar.

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Highlights of the Day-2 (Dated: 29th November, 2022)

Similarly, on the second day, two lectures were scheduled. The first lecture was from 09:30 AM to 10:45 AM which was based on smart machines, smart machining, smart factories and this lecture was delivered by Prof. K. S. Sangwan. After tea break, the second lecture was conducted between 11:00 AM to 12:15 PM. The lecture was delivered by Dr. Divyansh Patel, which was on Electrochemical micro-manufacturing processes.

Post lunch session was from 02:30 PM to 05:30 PM and hands on session was conducted by Prof. T.C. Bera and Dr. R.R. Mishra with the help of their PhD scholars Mr. Pawar and Mr. Dora. The topics of the hands on session was on microwave processing of material for manufacturing and CAM programming with DMG Mori.

Highlights of the Day-3 (Dated: 30th November, 2022)

On the third day, two lectures were delivered. The first lecture was conducted from 09:30 AM to 10:45 AM) and the topic was based on microwave energy-based manufacturing. This lecture session was delivered by Dr. R. R. Mishra. The second lecture was from 11:00 AM to 12:15 PM and the lecture focused on energy storage devices and their application in electric vehicles. This lecture was delivered by Dr. Tribeni Roy. Subsequently, Mr. Anand Pujari of M/s Autodesk delivered a technical talk on CAM software modules available in Autodesk between 12.15 PM to 1.00 PM.

Post lunch, a hands on session was conducted from 02:30 PM to 05:00 PM. The topic of session was on working with the ABB1410 industrial manipulator and session was engaged by Prof. B. K. Rout and PhD scholar Mr. Chetan Jalendra.

Highlights of the Day-4 (Dated: 01st December, 2022)

On the fourth day, two lectures were delivered.. The first lecture was from 09:30 AM to 10:45 AM and the lecture focused on the fabrication & use of texture cutting tools in manufacturing. This lecture was delivered by Prof. S. Ghosh. The second lecture was organized between 11:00 AM to 12:15 PM and the lecture focused on the working of thermal evaporator. This lecture was delivered by Prof. S. Belgamwar.

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Post lunch, a hands on session was organized between 2:30 PM to 5:00 PM. This session focussed on working with Thermal evaporator for MEMS applications. The participants were provided with hands on session by Dr. Sachin Belgamwar and PhD scholar Mr. Ayush Ohwal.

Highlights of the Day-5 (Dated: 02nd December, 2022)

On the fifth day, the first lecture was conducted between 09:30 AM to 10:45 AM. The topic of lecture was on “Some Studies on Sustainability: Issues and Solutions” and it was delivered by Prof. Srikanta Routroy. The second lecture was from 11:00 AM to 12:15 PM and it was based on modelling the energy consumption & associated carbon emissions of CNC machine tools. This lecture was delivered by Dr. Girish Kant. Subsequently, Mr. Amit Jha and his team from of M/s Edutech presented a technical talk on Products and Hardwares for Automation between 12.15 PM to 1.00 PM.

Post lunch, a session from 02:30 PM to 05:00 PM was conducted to provide hands on exposure to work with ECM and wire EDM machines. This session was engaged by Dr. Divyansh Patel.

Highlights of the Day-6 (Dated: 03rd December, 2022)

On the sixth day, two lectures were delivered during pre lunch session. The first lecture was from 09:30 AM to 10:45 AM and it focused on the hydrodynamics at nanoscale. The lecture was delivered by Prof. J. S. Rathore. The second lecture was delivered by Prof. B.K. Rout from 11:00 AM to 12:15 PM and the lecture focused on the role of industrial manipulators in CIM environment.

After the lunch break, a hands session was conducted by Prof. T.C. Bera and PhD student Mr. Srikant Pawar on KODI 40 machining center between 2:30 PM to 5:00 PM.

Sachin Belgamwar
21/12/22

AM Jha

Divyansh Patel
21-12-2022



Highlights of the Day-7 (Dated: 04th December, 2022)

Likewise on the seventh day, two lectures were delivered. The first lecture was from 09:30 AM to 10:45 AM and focused on the readiness of Indian manufacturing organizations for industry 4.0. This lecture was delivered by Prof. A. K. Digalwar. The second lecture was delivered by Prof. T.C. Bera from 11:00 AM to 12:15 PM that focused on Energy efficient machining systems through CAPP.

After the lunch break, a doubt-clearing session was conducted by Prof. B.K. Rout and Prof. T.C. Bera for one hour after which the valedictory session was conducted. In this session, the certificate distribution ceremony took place in presence of Prof. S.K. Verma, Dean Administration BITS Pilani, Pilani Campus. Followed by a session on Feedback collection from the participants. In general the participants were happy with the accommodation and food served during their stay at BITS Pilani, Pilani Campus. Throughout the training program, a formal and healthy environment for discussion was established for the exchange of scientific and technological knowledge.

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