SREE VIDYANIKETHAN ENGINEERING COLLEGE

(AUTONOMOUS)

Sree Sainath Nagar, Tirupati – 517 102, A.P.

DEPARTMENT OF MECHANICAL ENGINEERING

A Report on
A Two Day National Level Workshop on
"MATLAB BASED ADVANCED OPTIMIZATION TECHNIQUES"

7th – 08th November, 2013

Inaugural function of MATLAB based Advanced Optimization Techniques held on Nov. 7, 2013.

Session I:

Mr. S.Prasanth Achuthamenon of P S G College of Technology handled the session on Particle Swarm Optimization (PSO). He gave a very lucid presentation covering topics like what is optimization?, overview of metaheuristics, what is particle swarm optimization?, types of PSO and PSO applications. He discussed the

three primary variants of PSO and solved a simple problem manually to explain how PSO works. It was followed by hands on session in MATLAB.

Session II:

Dr. K.C.Varaprasad of Sree Vidyanikethan Engineering College handled the session on Simulated Annealing. His elaborate presentation included Definition of Optimization, Local search algorithms, Hill-Climbing, Problems with Hill Climbing, Definition of annealing, Simulated annealing, Physical annealing Vs. Optimization. He explained how to solve LP problems using MATLAB software. This was followed by hands on session in MATLAB.

Session III:

Dr. G. Paul Raj of J J College of Engineering handled the session on Non-conventional Optimization techniques for Engineering Applications. His presentation included discussion on Types of optimization techniques, Problems with conventional techniques, Non-conventional techniques, Genetic Algorithm, Simulated annealing algorithm, Engineering Applications. This was followed by hands on session: GENETIC ALGORITHM USING MATLAB 7.0b with clear explanation of GA execution steps.

Session IV:

Dr. S.Devaprasad of Vardhamaan Engineering College handled the session on Multi objective optimization using evolutionary algorithms. His presentation included discussion on need for multiobjective optimization, lessons from mother nature, biomimicry and other ideas taken from nature, evolutionary algorithms-advantages and disadvantages and finally explained his real work – Multiobjective Flow shop scheduling: A genetic algorithmic approach.

Valedictory function

Valedictory function of MATLAB based Advanced Optimization Techniques held on Nov. 8, 2013.

Group Photo of participants

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Two-day National level workshop on "RECENT TRENDS IN TRIBOLOGY"

29th – 30th November, 2013

Two Day Staff Training Programme on **"Recent Trends in Tribology"** was inaugurated by the chief Guest **Dr.V.Pandurangadu,** Professor in Mechanical Engineering, JNTUA college of Engineering, Ananthapuramu on **29-11-2013 at 10.00 AM.** A keynote speech was delivered by the Chief Guest on "Tribology of Industrial components". A total of 23 external participants and 33 internal participants were registered for the program. In the first session on 29-11-2013, **Dr. R. Gnana Moorthy,** Director (D & M), IIIT, Kancheepuram delivered a lecturer on Surface Engineering and recent challenges.

The next session on 29-11-2013 was handled by **Dr. C. Vamsi Krishna Balla,** Principal Scientist, CSIR, Kolkata. He discussed various topics related to Bio-Tribology and characterization of surfaces. The last session of the first day was delivered by **Dr.V.Pandurangadu,** Professor in Mechanical Engineering, JNTUA College of Engineering, Ananthapuramu on "methods of reducing friction in various engines"

In the first session of second day on 30-11-2013, **Mr. B.K.C.Ganesh,** Associate Professor, Department of Mechanical Engineering, SVEC, delivered a talk on "Various surface treatments and coating on Titanium alloys" and the afternoon session was delivered by **Dr.Geetha Manivasagam**, Professor, VIT University Vellore on "Tribological issues related to orthopedic implants". The final session was delivered by **Dr. Srinivasarao Bakshi**, Department of Material Science and Metallurgy, IIT Madras on "Issues related to Nano Tribology".

Dr. P.C. Krishnamachary, Principal, SVEC delivering the inaugural address

Dr. R. Gnana Moorthy, Director (D & M), IIIT, Kancheepuram delivering the inaugural address

Dr. Vamsi Krishna Balla, Principal Scientist, CSIR, Kolkata discussing the importance of Bio-Tribology

Guest of Honour Dr.V.Pandurangadu, Professor in Mechanical Engineering, JNTUA, Ananthapur addressing the participants

Dr.Geetha Manivasagam, Professor, VIT University Vellore, delivering a session on Tribological issues.

Dr.Srinivasarao Bakshi, Department of Material Science and Metallurgy, IITM, Chennai, discussing about Nano Tribology

Valedictory Session

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A Two Day National Workshop on "COMPUTATIONAL FLUID DYNAMICS (CFD)"

(Under TEQIP-II)

11th - 12th April 2014

Department of Mechanical Engineering organised a Two Day National Level Workshop on "**COMPUTATIONAL FLUID DYNAMICS**" and was inaugurated by the Chief Guest **Dr. R THUNDIL KARUPPA RAJ,** Professor & Division Chair of Energy Division in the School of Mechanical and Building Sciences, VIT University, Vellore on 11-04-2014 at 10.00 AM. A total of 21 external participants and 37 internal participants registered for the program.

In the Morning session on 11-04-2014, **Dr. R THUNDIL KARUPPA RAJ,** Professor & Division Chair of Energy Division in the School of Mechanical and Building Sciences, VIT University, Vellore delivered lecturer on various issues related CFD and further conveyed the significance of CFD tools to the participants through illustrative examples. He Discussed CFD TOOLS and their importance. He also emphasized on the method of utilizing the CFD tools, Fundamentals of CFD, Governing equations, Discretization Schemes, Finite Difference Method.

In the afternoon session on 11-04-2014, **Dr. R THUNDIL KARUPPA RAJ** delivered the significance of finite volume method to the participants through ICEMCFD. During the session, the participants were given Hands-on-Training on various operations on ICEMCFD. After the demonstration, participants performed the job on their own. He shared few very significant aspects to be considered while meshing the jobs on different Meshing tools

In the morning, first session on 12-04-2014, **Dr. Kulasekharan Narasingamurthi**, Professor & Head, Mechanical Engineering Department, Saveetha Engineering College, Chennai, delivered lecturer on various issues related to Numerical Simulation of conjugate heat transfer in a shell and tube heat

exchanger, turbine blade cooling using FLUENT and the next sessions was given hands on experience on Numerical Simulation of multiphase flows – different case studies like cyclone separator, Diesel Fuel Injectors using FLUENT code by **Dr. Kulasekharan Narasingamurthi**.

In the Afternoon, First session on 12-04-2014, **Balaji R**, CFD specialist, FLSmidth Private Limited, Chennai, delivered lecturer on various issues related to Numerical Simulation of heat and fluid flow in turbo-machinery components using ANSYS CFX and the next sessions was given hands on experience on Numerical Simulation of Compressible flows in a supersonic convergent divergent nozzle by ANSYS CFX.

Dignitaries on the Dais during Inaugural Session

Dr. R THUNDIL KARUPPA RAJ, Professor & Division Chair of Energy Division in the School of Mechanical and Building Sciences, VIT University, Vellore delivering the Lecture.

Dr. R THUNDIL KARUPPA RAJ, Professor & Division Chair of Energy Division in the School of Mechanical and Building Sciences, VIT University, Vellore in his session in the Lab.

Dr. Kulasekharan Narasingamurthi, Professor & Head, Mechanical Engineering Department, Saveetha Engineering College, Chennai delivering the Lecture.

Dr. Kulasekharan Narasingamurthi, Professor & Head, Mechanical Engineering Department, Saveetha Engineering College, Chennai in his session in the Lab.

Balaji R, CFD Specilalist, FLSmidth Private Limited, Chennai delivering the Lecture.

Balaji R, CFD Specilalist, FLSmidth Private Limited, Chennai in his session in the Lab.

Valedictory Session

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A report on "OPTIMIZATION OF PATENT SEARCH"

(Expert Lecture)

4th December, 2013

An expert talk was organized on "**Optimization of Patent Search**" by Dr.G.Saravanan, Operations Group Manager, Caterpillar India Pvt. Ltd., Thiruvallur, Tamil Nadu on 4th December, 2013 by the Department of Mechanical Engineering, Sree Vidyanikethan Engineering College, Tirupati.

Dr.G.Saravanan, delivering a talk on Patent Search

The main objective of the lecture is to

- To sensitize about Intellectual Property Right and their protection.
- To identify protectable innovations.
- To suggest steps for transforming innovations into proprietary assets.
- To use IP information, particularly relating to patents and designs, for further research and development in developing new product and process.

The increasing significance of intangible assets in the global economy is forcing business organizations to actively manage their IP as a key driver for

building and sustaining their competitive advantage and achieving superior performance.

Traditionally, patent information searches are done, if at all, as a part of the application drafting process before filing patent applications, or while planning and preparing for patent litigation. With the rapid expansion of information technology resulting in increasing availability of on-line databases of patent information, this micro-level use of patent information has evolved into a much more strategic use of patent information.

Patent information includes not only the content of published patent documents but also bibliographic and other information concerning patents for inventions, inventors' certificates, utility certificates and utility models. It is the largest, well-classified and most up-to-date collection of technical documents on new and innovative technologies.

Patent applications are filed in accordance with the requirements of national or regional patent laws. An applicant may be a public and private company, government agency, researcher in a university or in a research and development institution, or even individual inventors.

Dr. Saravanan stressed that an important step before filing a patent application is to conduct a patent search. Just as companies need to do due diligence before taking on any business venture, likewise patent owners need to do patent due diligence before filing a patent application. A patent search is a search conducted in patent databases as well as in the literature available, to check whether any invention similar to the invention in respect of which patent is to be obtained, already exists. In other words, it evaluates inventor's chances of getting a patent grant. Therefore, instead of going forth with the filing, if one conducts the patentability search, one can get a clear idea about the patentability of the invention; whether the application should be filed and the strengths and weakness of his invention.

Since patenting is an expensive procedure, it is prudent to conduct a patentability search before filing an application. Although there is an additional expense associated to have a patent search performed, it can potentially save the inventor's money down the road.

Patent information is made available to the public through a variety of databases. Each database covers a particular set of patent documents. At present no database has complete coverage of all patent documents ever published

worldwide. Thus, it may be necessary to consult multiple databases in order to find and then access patent documents relevant to your interests.

The resource person shared the following information regarding the Indian Intellectual Property Office:

The Office of the Controller General of Patents, Designs & Trade Marks (CGPDTM) is located at Mumbai. The Head Office of the Patent office is at Kolkata and its Branch offices are located at Chennai, New Delhi and Mumbai. The Trade Marks registry is at Mumbai and its Branches are located in Kolkata, Chennai, Ahmedabad and New Delhi. The Design Office is located at Kolkata in the Patent Office. The Offices of the Patent Information System (PIS) and National Institute of Intellectual Property Management (NIIPM) are at Nagpur. The Controller General supervises the working of the Patents Act, 1970, as amended, the Designs Act, 2000 and the Trade Marks Act, 1999 and also renders advice to the Government on matters relating to these subjects. In order to protect the Geographical Indications of goods a Geographical Indications Registry has been established in Chennai to administer the Geographical Indications of Goods (Registration and Protection) Act, 1999 under the CGPDTM.

The students of Mechanical Engineering got enriched by the interaction with Dr.G.Saravanan. His knowledge and experience helped them in appreciating the significance of optimizing patent search.

Students listening the lecture