



**Post Graduate Diploma
in
Power Plant Engineering**

**Batch 3
2010-2011**

Program Brochure



Post Graduate Diploma

in Power Plant Engineering

Course Overview

In view of the ever increasing demand for energy due to the massive industrial, commercial and domestic growth in the country, Govt. of India plans to almost double the installed power generation capacity by the end of 12th plan. Such an ambitious plan requires massive capacity addition in the public sector and the private sector with a corresponding requirement of trained power professionals. In this scenario, a clear supply-demand gap is seen with respect to skilled and competent manpower available for the power industry in the country.

PG Diploma in Power Plant Engineering has been conceptualized by JSW Energy Centre of Excellence (JSWECE) and M. S. Ramaiah Institute of Technology (MSRIT) to fill the gap and create highly competent & employable manpower for the power sector. A Memorandum of Understanding has been signed between JSWECE and MSRIT to conduct the course at JSWECE premises developed by JSWEL. The course will be conducted under the autonomous status MSRIT affiliated to Visveswaraya Technological University (VTU), Belgaum, Karnataka with faculty assistance from Department of Mechanical Engineering at MSRIT.

The course certification will be jointly done by JSWECE and MSRIT. JSWECE conducts the course at its premises situated in the sprawling O.P. Jindal Centre located adjacent to the reputed JSW industrial complex consisting of the 7 MTPA JSW Steel Ltd., JSW Energy Ltd., Jindal Praxair Oxygen Company Ltd., JSW Cement, JSW Building Systems Ltd., etc. at Toranagallu in Bellary in Karnataka. The course is developed to enhance the employability of engineering graduates by providing the required power plant focussed modules and advanced topics which will provide them a strong foundation in the modern concepts in this specialization. Placement assistance will be provided by JSWECE at the end of the course either at its power projects or with other power generating companies in India and abroad.

The course covers the mandatory requirements under Indian Electricity Amendment Rules, 1981 and certifies the certificate holder to operate a generating station of capacity 100 MW and above.

About JSW Energy Centre of Excellence (JSWECE)

JSW Energy Ltd., the energy vertical of the JSW Group is poised to achieve a generation capacity of over 4000 MW in the next couple of years and has a vision of developing 15,000 MW installed capacity in the country by the year 2015. Having an organizational mission of playing an active role in nation building and with a vision of creating and enhancing intellectual capital of Indian Power Sector, JSW Energy Ltd. has established JSWECE to cater to competent and skilled manpower requirements of the power generating companies as well as creating employability for graduate and diploma engineers in the Power Industry.

JSWECE has an established mission to become world class training & research centre in power generation and energy technologies and to attain global best practices in technology based training interventions to reach millions of engineering professionals across the country. With recognition and certification from Central Electricity Authority (CEA), Govt. of India, JSWECE is destined to build a team of competent, Skilled and professional managers who would lead our country's thrust in developing the power sector to fuel the country's growth.

JSWECE operates from O.P. Jindal Centre adjoining JSW Steel Ltd. and JSW Energy Ltd. at Toranagallu, Karnataka. With its world class training facilities, JSWECE adapts a Blended Learning Model, which is a unique blend of self learning, class room learning and on-site learning to ensure superior knowledge retention among its trainees.

Along with excellent training facilities, JSWECE is lead by a team of highly qualified and experienced faculty members along with core support faculty from JSW Energy Ltd. With 4x300 MW coal fired power plant, 2x130 MW coal/corex gas fired power plant, 2 captive power plants with gas fired and waste heat recovery boilers in close vicinity and direct support, JSWECE makes an ideal place for Power Plant Training.

Training Facilities at JSWECE

Operator Training Simulator: JSWECE has developed a state of the art, high fidelity, dynamic PC-based 300 MW power plant simulator which is the replica of the 300 MW power plant of JSW Energy Ltd. Along with routine plant start up/shut down operations, handling plant emergencies and engineering analysis on the power plant model is possible with the simulator.

Computer Based Training Packages: JSWECE houses about 100 computer based training packages on various power plant topics which are rich with voice, video and media thereby giving a rich learning experience to the users.

Miniature Engineering Models: JSWECE has developed miniature power plant equipment models for a detailed understanding of the plant components.

Library and Information Centre: JSWECE houses a library with over 100 titles on power plant and related topics and subscription to national and international magazines. The information centre is equipped with computers for the use of students.

About M. S. Ramaiah Institute of Technology

M.S. Ramaiah Institute of Technology is a premier engineering institution imparting global quality technical education ever since its inception in the year 1962. The Institution is unique of its kind in securing ISO 9000:2000 Certification and approved by AICTE. MSRIT is one of the few technical institutes in India to receive World Bank Funding through Net Work Institutions under TEQUIP, Government of India.

The Institute offers 13 undergraduate and 8 post graduate degree programs. As many as 8 different departments of the Institute have been recognized by Visvesvaray Technological University as Post Graduate Research Centers. Considering the Institute's overall performance and excellence it has been awarded as an AUTONOMUS INSTITUTE under VTU. The Institute attracts students from all over the country besides few foreign students. The students of the institute have an excellent track record for their extra curricular activities and sports.

About Department of Mechanical Engineering, MSRIT

The Department has a satisfactory and long standing existence of over 47 years serving the needs of the country and the society. The department has several luminous alumni occupying coveted positions in the Industry, Public and Private Sector Organizations besides many being successful entrepreneurs themselves. The department has an excellent campus placement track record with leading companies subscribing to the reputation and excellent quality education offered.

The Mechanical Engineering Department is one of the largest departments in the country with 180 admissions to BE degree every year. Besides BE degree the department offers two M.Tech. Programs in Manufacturing Science (MS) and Computer Aided Manufacturing (CIM). There are 26 PhD scholars perusing for their dissertation research work under VTU and two candidates are in M.Sc degree program.

The department has excellent infrastructural facilities in buildings, class rooms and laboratories. The labs are equipped with the state- of- the art analytical, experimental and workshop facilities. The Computer Drawing facility is the largest hall with as many as 200 students working at a time. The CAD lab is provided with many software tools like CAD, 3-D Modeling (Catia, Inventor, etc.), Analysis (MD Nastram, MSC Mark, Ansys, etc.), Simulation (MSC Adam), Manufacturing (E spirit), Forging (Deform), CFD (Star CD) and many more.

The department has adequate number of experienced and qualified faculty. There are 46 teachers in the department with as many 13 Professors. The faculty has diversified specialization in Thermal Engineering, Material Science, Design Engineering and Manufacturing & Management.

Need for the Course

India is witnessing an exponential growth in the Power Sector with the opening up of power generation, transmission & distribution by the Govt. of India through power sector reforms. The working group on power for the 11th plan has estimated a capacity addition of close to 80,000 MW and indicates a tremendous requirement of skilled manpower of about 8.6 lakh personnel for capacity addition and about 1.40 lakh personnel for accelerating construction activities. According to National Electricity Plan of the Govt. of India, it is envisaged that by the end of 12th Plan, an installed generation capacity of over 2, 68,150 MW would be achieved through Thermal, Hydro and Nuclear power generation. The additional total manpower requirement during 12th plan alone will be in the order of 2.93 lakhs. So, the total manpower requirement at the end of 12th plan has been estimated as 13.22 lakhs for the total installed capacity of 2, 68,150 MW.

Due to the ever increasing technological advancements in the power industry, the expected skill and knowledge level of the workforce is also increasing. Also, the supply-demand gap with respect to trained and skilled manpower for the industry is also increasing.

In this backdrop, with a motive to create greater value for the student community and the industry, MSRIT and JSWECE have conceptualized and designed the Post Graduate Diploma in Power Plant Engineering enabling the certificate holders to be eligible for direct induction into the public, govt. and private power sector utilities.

The course fulfils the mandatory requirements under Indian Electricity (Amendment) Rules, 1981, which stipulates “No person shall be authorised to operate or undertake maintenance of any part or whole of generating station of capacity 100 MW and above together with the associated sub-station unless he is adequately qualified and has undergone the specified training at a recognized institute”

With recognition from Central Electricity Authority, Govt. of India as per the provisions of the Indian Electricity (Amendment) Rules 1981 and with faculty assistance from MSRIT including the experienced full time and plant faculty at JSW Energy Ltd., JSWECE is conducting this course at its premises located adjacent to JSWEL power plants of different capacities and using varied technologies.

Course Conduction

Post Graduate Diploma in Power Plant Engineering is a joint certification course of MSRIT and JSWECE. Department of Mechanical Engineering is the participating department of MSRIT. Faculty from other premier Institutes and professional bodies will be taking classes on some selected courses.

The course will be conducted at JSWECE at its institute facilities by eminent power plant experts at JSWECE, plant experts from JSW Energy’s power plants and faculty from MSRIT. The course will be monitored jointly by MSRIT and JSWECE. Course assessments will be done as per academic requirements & regulations of autonomous status of MSRIT under VTU.

About the Course

Post Graduate Diploma in Power Plant Engineering is a one year full time course. The course will be conducted at JSW Energy Centre of Excellence at the premises of JSW Energy Ltd. and would be completed in two semesters. The course is modular type which covers 14 modules and 30 sub-modules which would be conducted through theory classes, plant visits, and practical and on job training at the power plants of JSW Energy Ltd. The modules and sub-modules are designed in such a way to create competencies in analytical skills, thermal power plant aspects including O&M, project management and quality aspects. The course ensures the development of a modern power engineer with the requisite managerial and technical skills. The entire program is structured for 25 credits each semester and 50 credits in total. It is a residential program.

Lecture and Plant Sessions from JSWECE and Plant faculty

Core faculty at JSWECE will conduct all the power plant related lectures and plant visits. On job training at power plants would be conducted under the supervision of experienced power plant experts. Besides this, power plant experts from across the project locations of JSW Energy Ltd. at Barmer in Rajasthan, Ratnagiri in Maharashtra as well as from its Corporate Office at Mumbai would frequently take lecture sessions on advanced topics through Virtual Classroom facility. In addition, visiting faculty from other power plants and reputed institutes would be sharing their experience with the students. Special emphasis on developing soft skills of the students through visiting faculty and e-learning will be the highlight of this course.

Lecture and Interactive Sessions from MSRIT faculty

The faculty from Department of Mechanical Engineering of MSRIT will take lecture sessions apart from coordinating other practical and in-plant training programs. The student projects will be guided jointly by faculty at JSWECE and onsite faculty of MSRIT. The presentations, seminars and assessments will be conducted by faculty at JSWECE and MSRIT.

Highlights of the Course

Simulator Training: The course includes a module on power plant operations training on a 300 MW state of the art PC-based operator training simulator facility, which is a replica of the 300 MW power plant of JSW Energy Ltd. at Vijayanagar and Ratnagiri. Training on power plant simulator gives an opportunity for the students to get hands-on training on routine power plant operations and handling emergencies.

On the Job Training: Students would get a wide exposure to operation & maintenance as well as erection & commissioning activities at various power plants of JSW Energy with heat recovery boilers, gas fired boilers, and coal fired boilers including exposure to circulating fluidized bed boilers at various power plant locations.

Specialized Modules: The course includes specialized modules such as Project Management and Six Sigma including training on the software tools used for project management and six sigma which would enable the students to get additional certifications in project management and six sigma. These specialized modules would be conducted by professional agencies.

Course Certification

Certificates will be issued jointly by MSRIT and JSWECE under the Autonomous Institute status of MSRIT affiliated to Visvesvaraya Technological University (VTU), Belgaum, Karnataka.

Why you should join this Course?

The objective of the course is to develop highly skilled and competent manpower for the power sector available readily for recruitment at state, central, public and private power utilities and related industries. The course aims at creating an intellectual capital for the power sector and also satisfies the mandatory requirements of Indian Electricity (Amendment) Rules, 1981.

The certificates are issued jointly by JSWECE and MSRIT, a premier technical institute of high reputation, thereby creating the highest value for the certificate holders in both Indian and International power industry. The unique synergy between the academics and industry through this jointly conducted course by MSRIT and JSWECE will create the quality power professionals of the highest order.

Direct interaction with MSRIT faculty and plant experts for enhanced inputs, the state of the art facilities at JSWECE, exposure at varied kinds of power plants, interaction with power plant experts and other professional agencies will have a greater value addition thereby creating a higher employment opportunity and a win-win situation for the student community and the industry.

Placement Services

Career opportunities will be provided to the successful candidates after the completion of the course at power plant locations of JSW Energy Ltd. depending on the manpower requirements and availability of openings. JSWECE/MSRIT will provide placement assistance to the PG Diploma holders by maintaining very close ties with other private, public, state and central govt. power generating companies.

A special placement announcement will also be made at MSRIT placement cell for the information and knowledge of the recruiters about the course.

Course Curriculum

Course Objectives

The participants after completing the course will acquire extensive basic and advanced knowledge of thermal power plants, safety requirements in a power plant, plant equipment details and operation & maintenance of a thermal power plant as well as power plant project management. They will learn to understand the process flow, mechanical-electrical-instrumentation aspects of power plants, power plant schemes and power plant operation. The simulator training will give hands on experience of operating a 300 MW power plant at different plant conditions.

Course Conduction Methodology: Blended Learning Model

- Extensive Classroom Sessions from JSWECE, MSRIT faculty and Power Plant Experts
- Power Plant Visits during each sub-module for practical exposure
- Scheme Tracing in Coal/Gas Fired Thermal Power Plant
- On-Job Training at JSW Energy Power Plants
- Self Learning Sessions on CBTs and other self study material
- Knowledge Sharing Sessions among Trainees
- Study Projects, Seminars and Report Submissions
- Programs on developing soft skills, and other relevant topics

Overview of Course Curriculum

Semester I

Module 1: Industrial Safety

Module 2: Boilers and Auxiliaries

Module 3: Turbines and Auxiliaries

Module 4: Power Plant Electrical Systems

Module 5: Power Plant Instrumentation and Control

Module 6: Power Plant Chemistry and Pollution Control

Module 7: Metallurgy, NDT & Welding

Module 8: Power Plant Commissioning

Module 9: Project Management and Project Financing

Module 10: Maintenance Planning and Cost Control

Module 11: Other Power Plant Technologies

Module 12: Scheme Tracing in JSW Energy's Power Plants

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Course Curriculum

Semester II

Module 13: *Power Plant Operations & Simulator Training*

Module 14: *Power Plant Protection & Load Despatch*

Module 15: *On Job Training – Operation & Maintenance in Power Plants*

Module 16: *Student Projects and Seminars*

Additional Topics to be covered in the course

- Project Management Tools (from external agency)
- Six Sigma – Fundamentals and use of Six Sigma Software Tools (from external agency)
- Visits to Plant Equipment Manufacturing plants
- Managerial development program (from external agencies)
- Advanced topics on Power Plant Engineering are related fields

Assessments

Assessments and Evaluation will be conducted as per the academic regulations of MSRIT.

Project work, seminars and presentations will be evaluated.

Note: The course curriculum can change as per the needs and requirements of the course from time to time and will be at the sole discretion of JSWECE and MSRIT.

Information to Candidates

Eligibility

First Class (60% minimum) B.E./B.Tech or equivalent in Mechanical/ Electrical/ Controls & Instrumentation/ Electronics Engineering discipline.

Application Procedure

Download the application form provided at the website (<http://www.jswel.net/jswece.html> or <http://www.msrit.edu.in/pgdcppe.html>) and send the completed application form along with marks sheets and relevant certificates to the address mentioned at the end of the application form. Application fee of Rs. 750/- should be paid by DD in the favour of “**JSW Energy Ltd.**” payable at **Bangalore**. Attach all requisite certificates along with the application fee and send it to the address mentioned in the form.

Selection Criteria

For Non Sponsored Candidates:

Written Test and University/Institute awarded %age. 50% weightage is given to the written test marks and 50% weightage is given to %age of candidates in their qualifying degree.

The candidate who is selected for the course is allotted a seat after he pays the stipulated 1st instalment fee mentioned in the fee payment schedule.

For Sponsored Candidates:

25% of the seats are reserved for candidates sponsored from power utilities having more than one year experience. Selection is based on written test marks and merit of the candidates applied in this category.

Note: MSRIT and JSWECE will have the final authority on modifying the selection criteria depending on the no. of applications received and other requirements.

Selection Intimation

List of shortlisted candidates will be uploaded on the JSWECE website (<http://www.jswel.net/jswece.html>) on the dates mentioned. List of wait-listed candidates and subsequent selection list in case of failure of selected candidates to register will also be uploaded on the website on the said dates.

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Information to Candidates

Age Limit

30 years of age for non sponsored candidates and No age limit for sponsored candidates.

Total Seats

No. of seats is limited to 60. However, decision over no. of seats rests with JSWECE and MSRIT to increase or decrease the no. of seats.

Course Fees

For non-sponsored candidates: Rs. 1, 30,000/- (paid in 3 instalments; 1st instalment – Rs. 60,000/-, 2nd Instalment – Rs. 35,000/-, 3rd Instalment – 35,000/-)

For sponsored candidates: Rs. 1, 60,000/- (paid in full during admission)

For foreign nationals: US\$ 6,000/- (paid in full during admission)

Important Dates

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|---|--|
| 1. Last Date for receipt of completed application forms: | 26th June 2010 |
| 2. Date of Written Test at MSRIT, Bangalore: | 11 th July 2010 |
| 3. Announcement of selection list on JSWECEs website: | 30 th July 2010 |
| 4. Admission to the course at JSWECE: | 11 th – 12 th Aug 2010 |
| 5. Commencement of Course: | 6th September 2010 |

Payment Schedule

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|---|---------------------------|
| 1. Payment of 2 nd Instalment of course fee: | 30 th Nov 2010 |
| 2. Payment of 3 rd Instalment of course fee: | 28 th Feb 2011 |

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Information to Candidates

Hostel Accommodation

Bachelor accommodation is available on shared basis. Hostels are located at JSW Township. Hostel rent is to be paid by the candidate separately. The rooms are furnished.

Hostel Rent: Hostel rent is paid in full in advance for one year at the time of admission if hostel is preferred. Rs. 24,000/- per candidate per year is charged towards hostel rent.

Boarding: The hostel charges do not include boarding charges. Canteens, hotels and restaurants are available at the Institute, plant area and the township.

Security Deposit

An amount of Rs. 2000/- as security deposit which is refundable has to be deposited by the student at the time of admission.

Internet Facility

Computer facility with internet access is available at the institute at no extra charges.

Refund

Fee once deposited will not be refunded. In case a selected candidate wishes to withdraw from the course for any reason, no part of course fee will be refunded except the security deposit.

Placement Charges

Placement charges @ Rs. 5,000/- will be charged for the non-sponsored candidates being placed other than JSW group companies by placement assistance cell.

Other Expenses

The candidates have to bear charges against uniforms, safety shoes, safety helmets, training manuals and bus facility. Lecture notes will be provided free of charge. The exact amount to be paid will be displayed along with the selection list after short-listing of the candidates for the program.



Location

How to Reach JSW Energy Centre of Excellence

JSWECE is located at the Industrial hub of JSW Group companies, JSW Energy, JSW Steel, JSW Cement and other subsidiaries at Toranagallu in Karnataka. Toranagallu is 30 KMs from Bellary and Hospet, the major cities. Toranagallu is well connected by Road, Rail and Air from Bangalore and other parts of the country. The nearest railway junction is Guntakal Jn and Hubli Jn.

Toranagallu is 265 KMs from Bangalore and Karnataka State Road Transportation Corporation operates a number of buses from Bangalore to Bellary, the nearest city. Besides, private transporters operate a direct bus from the JSW township at Toranagallu to Bangalore. By Rail, Hampi Express connects Bangalore and Toranagallu directly in an overnight journey. The train runs everyday.

Kingfisher Airlines operates a flight from Bangalore to JSW Township every day. The duration of the flight is 45 minutes.

Toranagallu is located in the historic Vijayanagar Kingdom and is just 30 Kms from the famous historical place Hampi. Tungabhadra Dam is around 35 KMs from Toranagallu which holds a very strategic tourist spot.



Hostel Facilities

Two hostel blocks in the JSW Township is dedicated for the institute. The hostel rooms are allotted on shared basis. The hostels are fully furnished with A/Cs, water coolers and TVs, etc.



Cosmopolitan JSW Township

To cater to the living requirements of a large number of manpower who work for these plants, JSW has developed 3 housing colonies viz. Vidyanagar Township, Vijay Vittal Nagar Township and Shankar Gudda Colony near Toranagallu Village. Vidyanagar township houses a large number of families, guest houses and hostels and has won many awards for its beautiful gardens, lakes, sports facilities, etc.

The townships are rich with recreational facilities including shopping centres, parks, state-of-the art sports complex with multi-gym facility, squash courts, table-tennis facilities, lawn-tennis courts, shuttle-badminton courts, cricket/football stadium, swimming pool, basket ball courts, etc. A common library, web-browsing centre, and a cinema theatre with daily movies is an attraction on the township.

The Vidyanagar township has an airport of its own where Kingfisher Airlines operates flights between Vidyanagar and Bangalore.



Address for all Communications

JSW Energy Centre of Excellence

JSW Energy Limited

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