

SPT MIRROR

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SPE Student Chapter



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Pandit Deendayal Petroleum University
SPE Student Chapter

An official publication of
Society of petroleum engineers
Pandit Deendayal Petroleum University Student Chapter

Mirror Team (SPEcial Edition)

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Special thanks to
SPE PDU Student Chapter

Message from SPE PDPU SC

The hiatus gets over here with the next issue of SPT Mirror. Amiable greetings to our readers and reviewers. It is a matter of colossal pride for us to bring up this special issue of SPT Mirror. The beginning stones laid by School of Petroleum Technology for the SPT mirror and turning platform achieved till date shows the endeavor by each and every one associated with it. It is the immense pleasure to share laurel with all our readers, reviewers and connoisseurs. SPT Mirror today, stands as an important medium of connect between all the affairs of the SPT and our beholders. It is actually gratifying to receive appreciation and accolades from different quarters of industry and academia. SPT Mirror has always been a reflection of the activities going on in PDPU together with a stage to baffle brains and respond with different perception and will continue to carry this benign mantle in the coming years of future, this edition is specially focused on the activities organized by SPE PDPU SC.

We sincerely hope that you would appreciate our endeavors and find this issue worthwhile. We humbly beseech your feedbacks.

With Regards
SPE PDPU SC



Pandit Deendayal Petroleum University
SPE Student Chapter

Message from Editor



Ms. Shreya Sahajpal
Faculty, School of Petroleum Technology
Pandit Deendayal Petroleum University

Dear Readers,

It gives me immense pleasure to present you all with a "SPEcial" edition of SPT Mirror. On behalf of the SPT Mirror Team, I would like to extend a very warm welcome to the readership of SPT Mirror. The current edition covers the recent activities and initiatives of SPE PDU Student Chapter. Since its inception, Society of Petroleum Engineers (SPE) PDU Student Chapter has been actively trying to bridge the gap between industry and academia. SPE PDU Chapter organizes various events and activities throughout the year to keep the students updated about the recent practices in Oil & Gas Industry. The chapter also tries to give students a hands-on experience on software, interpretation through interactive and practical sessions conducted by industry experts.

Through this special edition we would like to update all our readers about the efforts SPE PDU Student Chapter has made in the recent past. I take this opportunity to thank our authors, editorial team, designing team and SPE PDU Student Chapter, and all of those who have volunteered to contribute to this edition, with their undying spirit, enthusiasm and efforts.

This issue of SPT Mirror attempts to illustriously cover all the major events and drives conducted by SPE PDU Student Chapter in recent past. This issue covers the flagship event of SPE PDU Student Chapter, PDU SPE FEST 2015 in detail. Through this issue, we would like to thank all the people who made the fest successful and memorable. This issue covers the other notable events organized by the chapter viz. SPE Week; Distinguished Lecture Series; SPT Alumni Meet 2016 amongst others. The current issue would also give a glimpse of the upcoming events planned by the chapter.

I hope that our readers would appreciate the efforts of our editorial team who have worked day and night to put up this issue. I along with the entire editorial board of SPT Mirror humbly welcome your suggestion and feedbacks.

Regards
Shreya Sahajpal

Events

PDPU SPE FEST' 15

30th October to 1st November

SPE PDPU SC successfully concluded its maiden three day technical fest pertaining to oil & gas industry, The SPE Fest 2015 from 31st October to 1st November. The fest saw participation by some of the brightest minds from colleges around the country with a footfall of more than 300 participants. The three day fest included technical as well as non technical competitions. Events were judged by Industry veterans, experts & college alumni. Apart from competitions, there were technical sessions, HR round table & Gala night. The fest created a learning cum fun filled atmosphere for the students, enabling them to showcase their talent and competence thus bringing in new ideas & innovations for overcoming the present challenges in the oil & gas industry. It also helped create an interaction between students from various universities pursuing degrees in petroleum & geosciences. The fest was a **grand success**.

“Expanding the horizon towards
revolutionary future”

PDPU
SPE 2015
FEST



Inauguration

The unbroached petroleum fest of PDPU, "PDPU SPE FEST'15" with its glorious & excellent percept of 'IMAGINE, BELIEVE, SUCCEED' began by welcoming the guests, delegates from renowned oil and gas companies, faculties and all the participants. The Welcome Address was given by Dr. Anirbid Sircar, Director, SPT, PDPU and Mentor PDPU SPE FEST'15. The address was followed by lighting of the auspicious lamp by dignitaries on the dais, through which the 3 day carnival was declared open. The beautiful trophy of the fest, 'THE CHALICE', was unveiled by the guests of honour. The fest witnessed over 250 brilliant minds together from all over the country and more than 50 enthusiastic adroits from various national as well as international companies. The opening ceremony advanced with the address by Shri R.K Sharma, Executive Director, Head IRS, Ahmedabad, ONGC. A Memorandum of Understanding (MoU), for Knowledge Exchange was also signed between IRS, ONGC and SPT, PDPU. Shri Sanjay Parulkar, Secretary, SPE India Section addressed the gathering and briefed about the benefits of becoming a member of SPE International and its regular activities. Shri B.T.V Sheshavtaram, Director G&G ,GNRL Oil and Gas gave the keynote address on the topic "**Energy Options 2040 : Global versus Indian Scenario**". Shri Yash Malik ,Executive Director, Ahmedabad Asset, ONGC

and Shri Subash Shah ,Emeritus Professor, University of Oklahoma (Distinguished SPE Lecturer 2012-13) also addressed the gathering and inspired the crowd and encouraged them for participating in the upcoming events of the fest. At the end of the inaugural ceremony, Shri. D. J Pandian, IAS (Retd.) Ex-Chief Secretary, Govt. of Gujarat, Director General, PDPU mesmerized and stimulated the crowd. PDPU SPE FEST'15 was an amalgamation of powerful eminences of the petroleum industry with the ignited, zealous minds of students all over the world.

The fest had a plethora of events ranging from paper/poster presentation, model making, case studies, mud preparation and many more. As an attempt to connect industry to the academia, the organizing committee invited industry experts as judges for various events, from companies such as ONGC, GSPC, Aimil, ONGC Videsh, Gujrat Gas , Adani Gas GSPC LNG and other companies as well academicians from leading universities like Nirma, LD college and Indus were also invited as judges.



Mr.Sanjay Parulkar addressing the gathering



A glimpse of the inauguration ceremony

Panel Discussion

With the theme of **“Local Talent, Global Opportunities”**, a Panel Discussion was organized under PDPU SPE Fest 2015, on 30th October 2015. The round table was planned to create a platform for exchanging ideas between the corporate leaders across the oil and gas sector. HR Professionals from ONGC, GSPC, L&T, Gujarat Gas, Jubilant, Essar, Reliance, Inox India Ltd., were invited for the panel discussion.

The discussion was moderated by Dr. Anirbid Sircar, Director SPT, PDPU. The panel members were – Ms. Preeti Nar, Head HR, Jubilant Enpro Pvt Ltd; **Shri Hardip Baria**, Manager HR, Gujarat Gas Limited; Ms. Vimla Kurup Nigania, Head HR; L&T Hydrocarbon Engineering Ltd.; Shri Chandrajit Pati, Head HR, Reliance Project Management Group; Shri Sudhir Sethi Vice President-HR, Administration & Legal, Inox India Limited; Shri Bharat S. Goswami, Sr. VP HR, GSPC; Shri S Velchamy, DGM (HR), ONGC, Cambay Asset; and Shri Prashant Arya, Head – HR, Essar Oil Ltd. The objective of organizing the discussion was to understand the talent requirements of the oil and gas industry

The panel members encouraged the students present at the fest, to widen their horizon and explore opportunities. They motivated students to enhance their interpersonal as well as technical skills, which can help them in getting jobs in international (global) firms and acceptance in reputed research and educational institutions across the world. Topics such as Importance of Value Added Courses; Personality & Skill Development; Women Empowerment at workplace; Talent Management etc. were discussed. One of the panel members also emphasized upon the phenomenon of **Glocalization**. He also explained how, *local talent* and the broader community prosper as a result of the employment, development advancement and *global opportunities* that MNCs have brought to the world. The panelists urged the students to mould themselves according to the dynamic needs of the industry. The current scenario of Oil & Gas industry was also discussed at length.



A glimpse of Panel Discussion

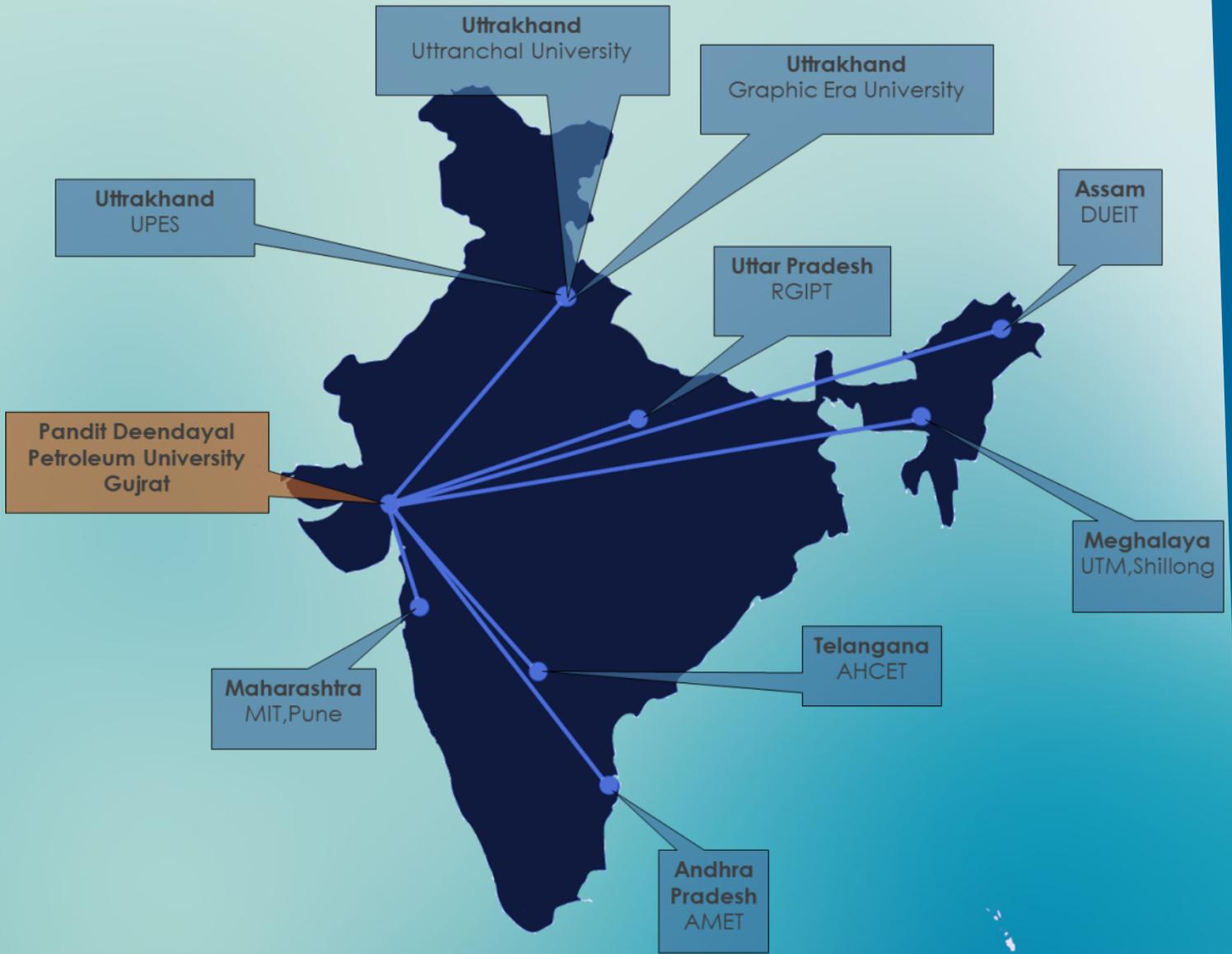


A glimpse of Panel Discussion



A glimpse of Panel Discussion

Participation



Shri R.K Sharma addressing the crowd during the Inauguration ceremony

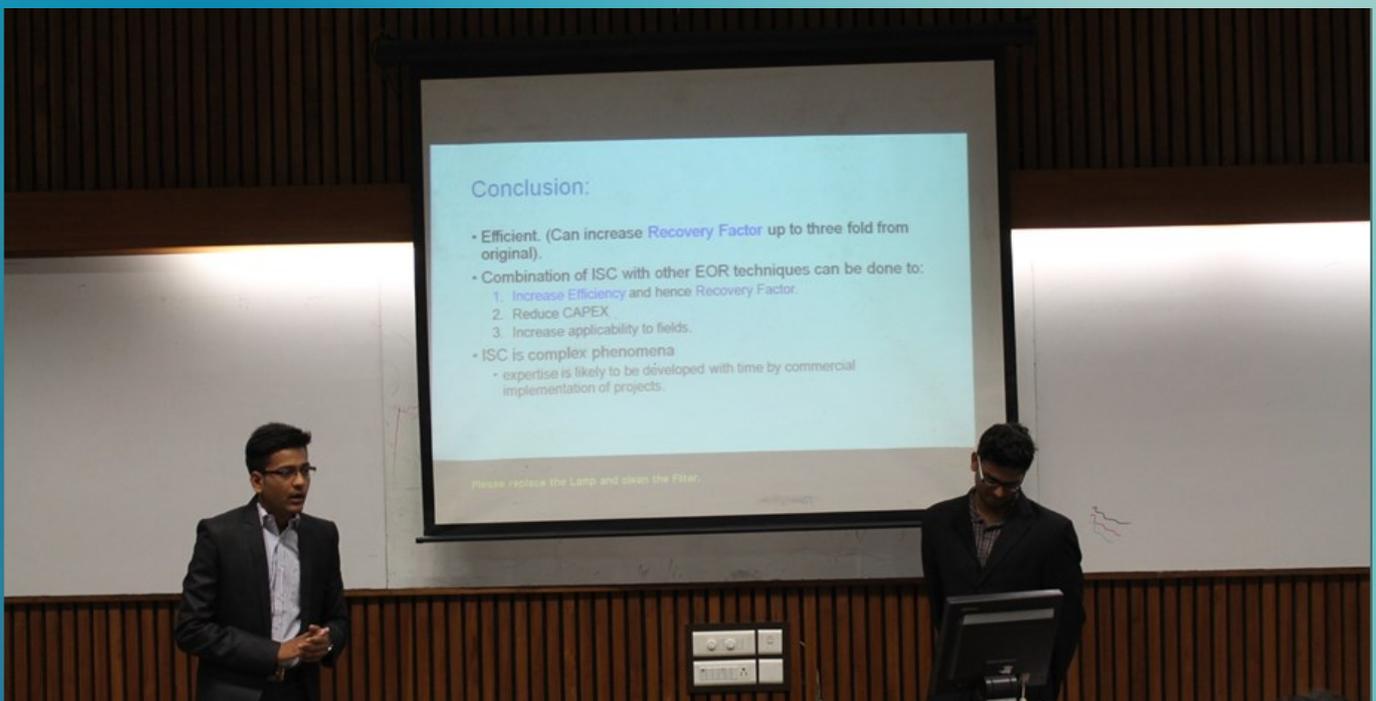
Showcase

Paper Presentation Competition

The success of your presentation will be judged not by the knowledge you send but by what the listener receives

Showcase: The Paper Presentation competition was the **flagship event** of the fest which observed a great participation from diverse universities. Many students from various universities displayed their knowledge and submitted abstracts in various sectors of oil and gas industry. After a thorough review by esteemed reviewers, selected papers were submitted in SPE format and were presented during the fest. The event was conducted in five sessions, each session consisting of 12 participants and a respective panel of judges from industry as well as academia. Participants from various universities/ institutes across the nation displayed

Their presentation skills and knowledge regarding their topic. Duration of each presentation was 8 minutes followed by question and answer session. Based on the cumulative marking of all the judges' panel, Top 3 presentations from each session were declared as winners.



Students presenting their paper

Showcase

Poster Presentation Competition

“Design is not just what it looks like or feels like. Design is how it works.”

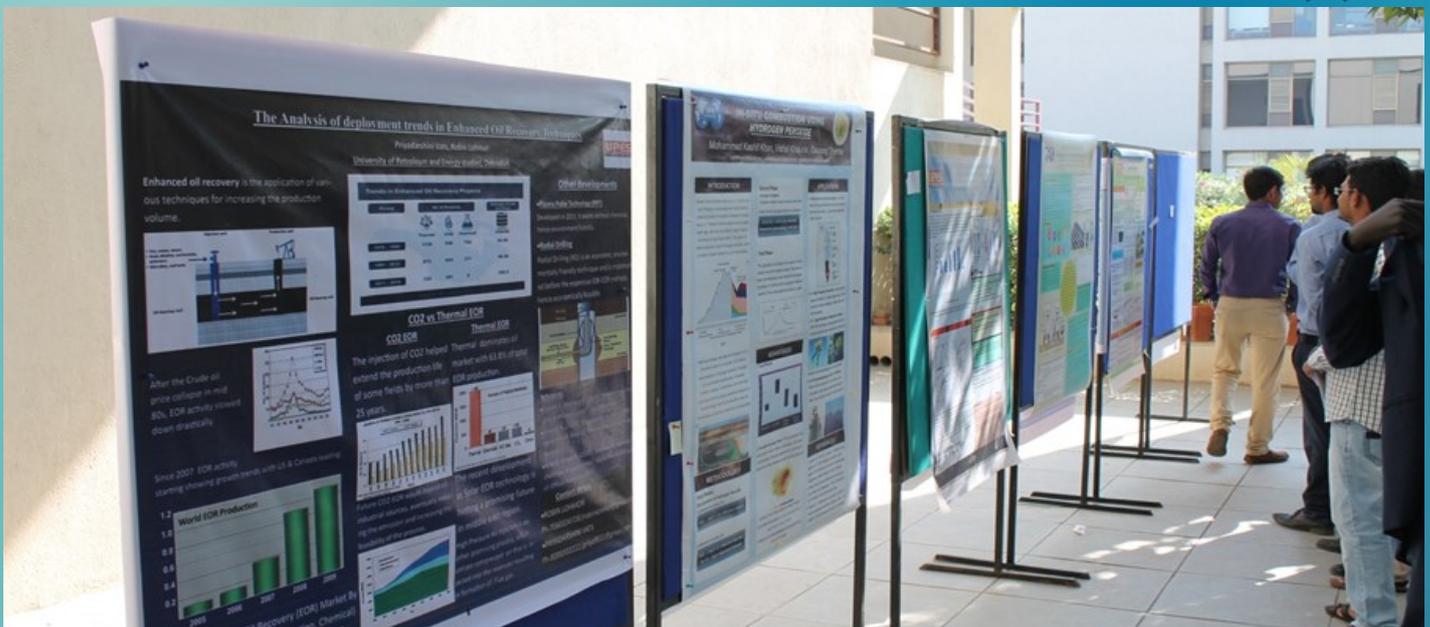
The Poster Presentation competition provided the participants a great platform to display the inhibited skills graphically or in a simple pictorial representation. Teams from across the country participated in this event. Participants used their logical, technical as well as designing skills in order to present their ideas through technical and artistic posters. The event received a tremendous response, with around 40 posters presented in the fest. Two panels of judges tested the participants on their technical understanding of the presented topic, graphical skills, logical ability, understanding of the topic, applicability, presentation skills and response to questions. Participants showcased their competitive spirits and brilliant talent.

Apotheosis

Model Making Competition

The Model Making Competition gave an opportunity to students to build an effective solution to the problems and challenges faced by Petroleum Industry. There were some outstanding models presented in the fest. The participants had the choice of presenting either a dynamic or a static model. Models like gas injector, enhanced oil recovery, stabilizing the deep offshore rig etc. were presented. A very rigorous evaluation and inspection was done by the judges followed by question answer session with each team. The winners were decided based on the technical knowledge effort, ease of application and response to questions.

“Invention, it must be humbly admitted, does not consist in creating out of void but out of chaos.”



Display of posters during Fest



A jack up Rig model presented during the Fest

Technical Sessions

By Shri. Rajan Desai

International coordinator, HTRI India
 Mr. Rajan Desai, International Coordinator, HTRI India conducted an interesting session on "Heat Exchanger Designing through HTRI". Heat Transfer Research Inc. (HTRI) is a unique industrial research and development consortium, founded in 1962 and stationed at Texas, USA, which serves the thermal process engineering needs of nearly 1,500 Member Companies world-wide. HTRI Xchanger Suite software is a brilliant tool for designing, rating and simulation of heat exchangers and is widely used by leading industries across the world.

Mr. Desai provided detailed information about features of HTRI and its use in the process industry. He explained how the software helped in understanding heat exchangers, heat transfer and other thermal process.

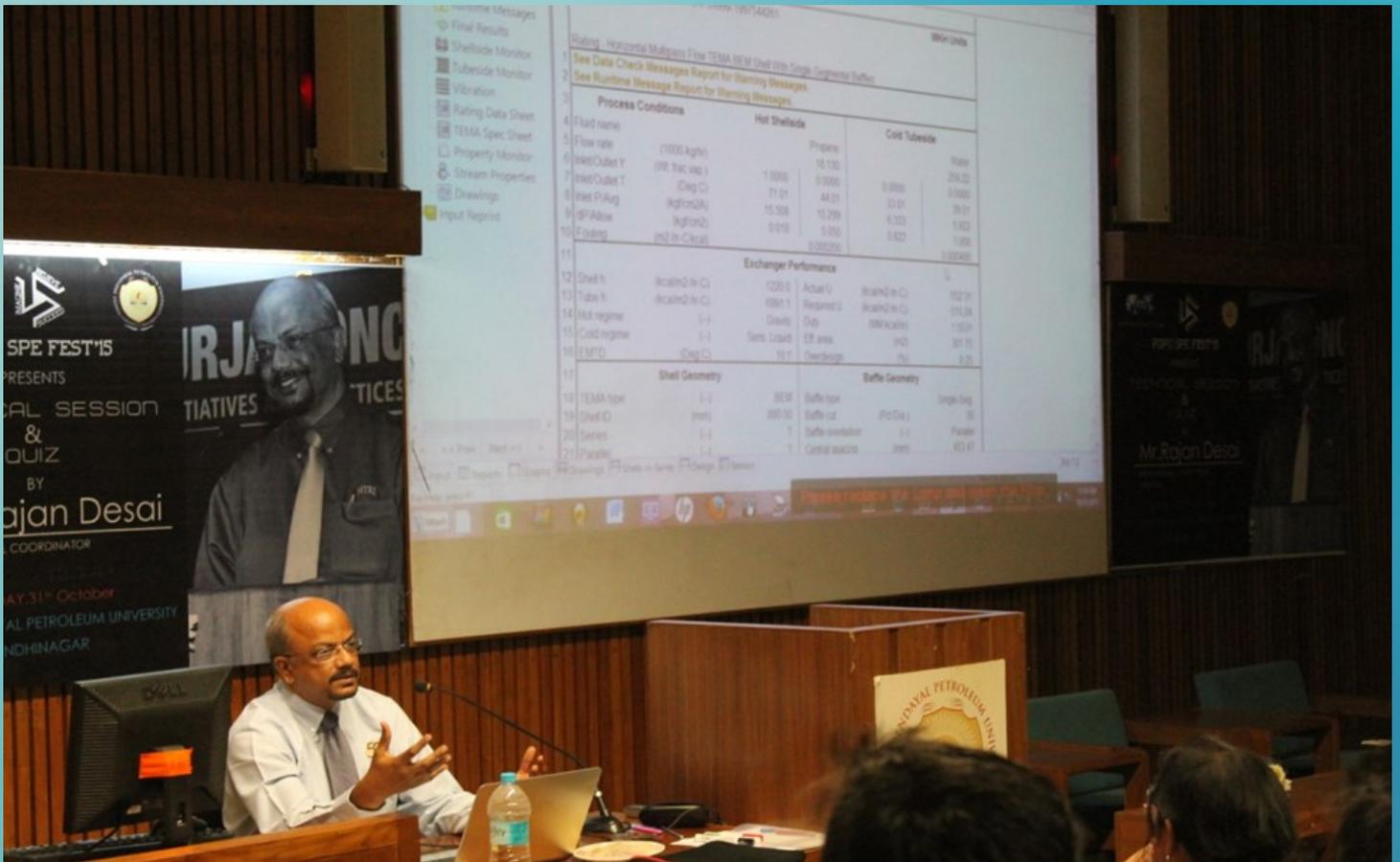
Real time situations were explained by him with the help of examples and case studies. He also explained the design procedure for a simple shell and tube heat exchanger. He explained that HTRI Xchanger Suite provides tools for wide variety of heat transfer equipment including shell-and-tube and non-tubular exchangers, heat recovery bundles, fired heaters and many more.

Based on the technical session, he conducted a technical quiz where the participant's grasping power were put to test. According to the marks obtained by the various teams the winning team was announced.

“Inability to make decisions is one of the principal reasons executives fail. Deficiency in decision making ranks much higher than lack of specific knowledge or technical know-how as an indicator of leadership failure”



Shri. Rajan Desai(Center) in a group photo with the participants



Shri. Rajan Desai(Center) explaining the HTRI software

By Mr. Haresh K Sippy

Chairman & MD, TEMA India Ltd.

A technical session was conducted by Mr. H K Sippy, Chairman and Managing Director, TEMA India Ltd on **"Innovating & Making In India"**.

Mr. Sippy's session was very motivating. The way he explained about screw heat exchangers, with such ease was just flawless. He discussed that how Indians can be employed, and suggested to follow the "Earn while you learn" formula. He said that research and development will always be successful only when you have an initial funding to the innovation project, hence earning is always an important aspect. His session was filled with humor but he tried to give a lot of information on how the "MAKE IN INDIA" concept is very much important for the young minds of India. He encouraged the students to think laterally.

For those who are in the marketing arena, he suggested to spread the word of mouth, about the product production and its uniqueness. The responsibility of the young ignited minds in the innovation extravagance was explained by him with such ease. He explained his point of view with real life example of screw plug exchanger. Mr. Sippy holds a coveted Indian Patent on his name for "Added Steel on Channel Barrel 'Shrink Ring' For Screw – Plug Heat Exchangers", for which he has earned well-deserved world-wide recognition too. The session was followed by questions from the students. Finally he concluded the session only with one phrase that **"Apply Basic Science and Engineering, as Smallest Idea Can Bring the Revolution in the Generation."**



A glimpse of the Lecture by Mr. Haresh K Sippy

Examen

Case Study Presentation

"EXAMEN" was one of the most innovative events organised in the fest. The main objective to conduct this event was to check the problem solving skills of the various young minds. On the first day of the fest students were given a case study and they were asked to evaluate it and submit their solutions and recommendations within 24 hours.

“Case studies of failure should be made a part of the vocabulary of every engineer so that he or she can recall or recite them when something in a new design or design process is suggestive of what went wrong in the case study”

The highlights of the case study were to illustrate the topography on a map, using Contour lines to connect a series of points of equal elevation; Calculating Oil or Gas in place from petrophysical analysis results such as reservoir thickness, porosity, and water saturation; Life cycle of a field: Production Ramp Up – Peak Production Level – Plateau Period – Ramp Down – Natural Decline In Production; Calculation of Revenue Generation and Cost Recovery Teams with the best possible solutions were selected for a presentation in front of a panel of judges from industry, on the next day. The case that was provided to them was a real life situation faced in the oil and gas industry. Thus the students had to try hard to understand that problem and solve for it and present it perfectly.



Team presenting their interpretations to the Case

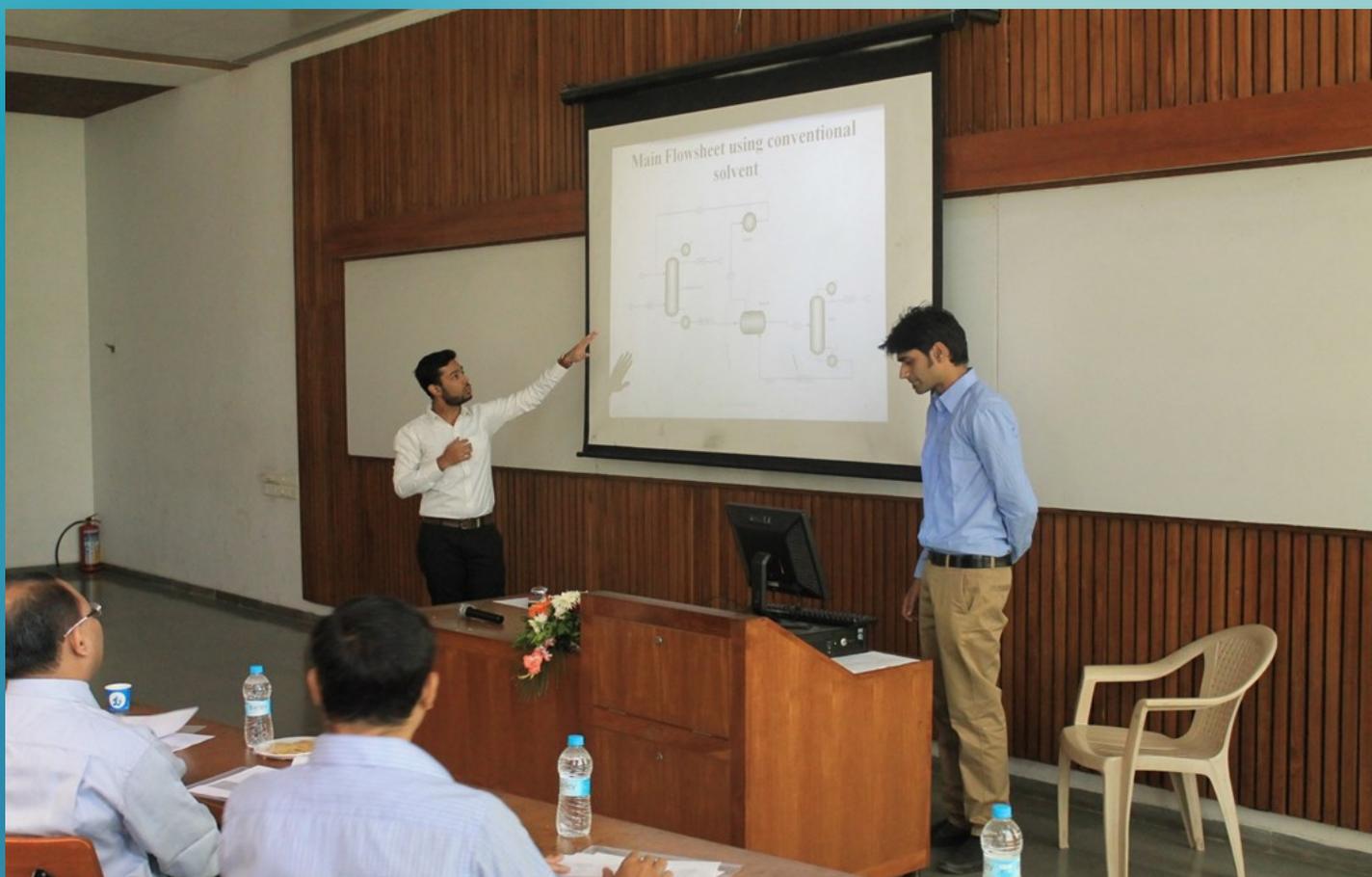
Final Project

A Final year project competition

Young graduating students are always a reservoir of knowledge filled with passion and they have various new ideas that need to be exhibited in the oil and gas industries that will rule out some of the critical problems in the present day scenario. This event was a great opportunity for the final year undergraduate students to

explore and discuss their research project or the final year project. All participants presented their respective projects in front of an esteemed panel of judges from industry and academia. The final year students had come up with very fresh ideas which might prove to be a key to success for the oil and gas industry. The projects presented were innovative as well as thought provoking. Some of the projects showcased in the competition were Harnessing Energy from Low Enthalpy Geothermal Reservoirs; Extractive Distillation of IPA & Water; Rheological Characterization of Pseudo Oil Based Muds; Hydraulic Fracturing; Natural Gas Processing etc.

“Without tradition, art is a flock of sheep without a shepherd. Without innovation, it is a corpse.”



Team presenting their Final Project in front of Judges

Bid Your Block

Virtual block bidding competition

Bid your block was aimed at exposing students to the bidding process in the oil and gas industry. The event was conducted by Mr. T P Rao, DGM, ONGC, where he delivered a very lecture on NELP Bidding. In his lecture he discussed about how bidding is conducted with respect to today's scenario and also explained how it is used by various economic functions for determining the demand and hence the value of the article or property. Through his talk the students were able to understand the various set of regulations, understandings and agreements assigned to calls and sequences of calls used by a partnership.

“If fighting is sure to result in victory, than you must fight, even though the ruler forbids it; if fighting will not result in victory, then you must not fight even at the ruler's bidding”

After the lecture, the virtual bidding event, "BID YOUR BLOCK" commenced. The purpose of bidding is for each partnership to ascertain which contract, whether bid by them or by their opponents, would give the partnership their best scoring result. In this event, a number of teams participated where each team was provided with certain blocks. Each team was allotted a mentor from industry to guide them and help them throughout the process. After the bidding process was completed, evaluation was done by the judges to interpret the error and the maximum profit earned by each team. Each team gave a small presentation and defended their case. The presentations displayed the calls that are made during the bid which is public and known to the opponents. The team with the maximum profit was declared as the winner.



Group photo with the dignitaries during Bid your Block

Quid Pro Quo

Spot trading competition

“Having trading discipline is the beginning; keeping discipline is the progress; staying discipline is the success.”

QUID PRO QUO competition was an excellent opportunity for the participants to learn and understand the working of a Finance and Trading company in the field of oil and gas trading. The event provided hands-on experience of commodity trading in the terms of different grades of the crude. The event was one of its kind in trading simulation, in which the students from various universities across the country competed with each other. It was an online event, which started early morning with participants registering on the "QUID PRO QUO DASHBOARD". The event dealt with equity market but the participants had to deal with the real market with the use of the virtual money. This was a new and a tricky event as the participants had to carefully trade as no extra money was available to them. The participants played till 3.15 pm. The main objective of the event was to gain maximum profit. The event was well appreciated by all the participants as it allowed them to strategize and plan. Participants tried their level best to obtain a maximum profit with no loss and winners were also decided accordingly.

Exegesis

Well log interpretation competition

Exegesis allowed participants to utilize basic principles of well logging in deciphering petrophysical properties of formation such as porosity, formation factor, saturation and hydrocarbon type for, essentially clean reservoirs. The competition was highly productive from the perspective that participants gained realistic experience by working in teams on a comprehensive log interpretation exercise. Prior to the event a qualifying round of quiz was conducted where the students had to participate in order to go the final round of the well log competition. The quiz was conducted by Dr. Anirbid Sircar, Director, SPT, PDP. The final round of exegesis – The Log Interpretation – was organized by Mr. Rajesh Kumar and Mr. P P Deo from ONGC. 'EXEGESIS' commenced with an expert lecture by Mr. P.P Deo where he provided detailed information on logs and discussed the procedure of well logging and how it is interpreted. The participating teams were provided with log sheets where they had to make a detailed record of the geological formations penetrated by the borehole.

“Interpretation is the revenge of intellectual upon art.”

The theoretical reservoir conditions of the borehole were provided to the participants. Participants had to put a lot of effort, as it was a real life situation that was faced in oil and gas industry.

Judges made and presented the accurate graph that was plotted. Based on the accuracy of the graph plotted by the participants, the winners were declared.



Shri P.P Deo explaining concepts of well logging



A Glimpse of Exegesis

Mud-O-Gee

Mud making competition

In order to understand the reservoir properties one should be an expert in understanding the drilling mud compositions. Keeping this in mind, MUD-O-GEE event was conducted with an aim to test participant's knowledge about drilling fluid additives and exhibiting properties. Prior to the event a qualifying quiz round was organized to shortlist teams for the final round of the event.

The participants were provided with the mud compositions and according to that they had to prepare the mud samples carefully. The event was conducted in the morning, while the evaluation and testing was done in the evening so that the judges could understand the strength and deteriorating properties of the drilling mud, based on which the winners were declared.

Catechize

Quiz competition

“*Grades do not define intelligence, knowledge does.*”

Catechize, a Petroleum based quiz, was organized as an event in the PDPU SPE FEST 2015, which had three rounds.

The first round consisted of the online quiz which was organized in coordination with "DARE2COMPETE.COM". In this, the participants had to visit the given website and had to attempt a 20 question quiz in a time limit of 15 minutes. The quiz was open to all the participants in the world and had an overwhelming response. The 10 top scoring teams in the online quiz were invited for the second round of the CATECHIZE event during the fest. The final round of CATECHIZE was conducted by Mr. Prakhar Sarkar, and he made sure that all the teams were on their toes throughout the buzzer based quiz.



Students discussing Mud properties



A glimpse of Catechize

Ethnic Night & Gala Dinner

“All work and no play, makes jack a dull boy” – As the fest saw a plethora of technical events, the SPE PDPU Student Chapter decided to host a gala dinner to give all the participants a chance to unwind, relax, rejoice and party. PDPU SPE FEST organizing committee hosted its first ETHNIC NIGHT AND GALA DINNER along with a musical performance of MAGAN Band. It was a very special night for all the participants and judges who attended the dinner. A very calm and soothing music was played by MAGAN band which was followed with a GALA DINNER. The theme of the night was ethnic and witnessed the participants dressed in traditional and colorful attire. Participants from various universities bonded over dinner and spent quality time with each other. The ethnic night was like a celebration for specially the organizing committee, volunteers and coordinators, who had put in a lot of hard work day and night for organizing various events.

The night concluded with a speech and vote of thanks by Mr. Palash Agarwal, Vice – President, PDPU SPE STUDENT CHAPTER. He also invited the PDPU SPE STUDENT CHAPTER on the stage and thanked them for making the event successful.

Futsal Fun Event

FUTSAL event was organised for all the football enthusiasts, to showcase their athletic skills. As the fest comprised of so many technical events, this recreational event was a breath of fresh air for the participants. Many teams participated in this event sportingly and exhibited their talent. Teams from various institutes played football against each other. Team UPES secured the 1st place and Team PDPU secured the 2nd place.

“Word hard, Play Harder..”



Performance of Magan Band during the Ethnic Night

Closing Ceremony

After a successful escapade of events finally the exultant winners of various events were felicitated, at the closing ceremony of the PDPUSPE FEST 2015.

All the participants were quite excited to know the results of the events, as well as the championship trophy of the PDPUSPE FEST 2015, "THE CHALICE".

The event was graced by Shri.Sanjay Parulkar, Secretary, SPE India Section, and other dignitaries from ONGC, GSPC and other companies.

Mr. Abhishek Juneja, President PDPUSPE STUDENT CHAPTER, addressed the gathering and thanked all the participants for being a part of PDPUSPE FEST 2015. He also urged all the SPE Student Chapter representatives present, to join hands and work together for knowledge exchange.

The anxiety of result declaration was clearly visible on the faces of participants. Gradually the results of various events were declared by Mr. Palash Agarwal, Vice – President, PDPUSPE STUDENT CHAPTER, and prizes were handed over by dignitaries from industries.

The overjoyed Team PDPUSPE came out as the Champions of PDPUSPE FEST 2015. The trophy, "THE CHALICE" was handed over to Team PDPUSPE by Shri.Sanjay Parulkar.

Dr. Anirbid Sircar, Director SPT, PDPUSPE, felicitated the PDPUSPE STUDENT CHAPTER members and appreciated them for their hard work and congratulated them on the grand success of the fest.

With this PDPUSPE FEST 2015 came to an end, making it a grand and successful extravaganza.



PDPUSPE Students celebrating the victory

Score Table

S.No	University	First Prize (5 points)	Second Prize (3 points)	Third Prize (2 points)	Total Points
1.	PDPU (1st)	7	10	9	5.515
2.	UPES (2nd)	7	4	3	2.425
3.	MIT (3rd)	2	1	2	1.565
4.	RGIPT	0	1	0	0.225
5.	Graphic Era	0	0	0	0
6.	DUIET	0	0	1	0.6
7.	AHCET	0	0	1	0.6
8.	DIT	0	0	0	0
9.	UTM	0	0	0	0
10.	ITM	0	0	0	0
11.	Aditya Engg.College	0	0	0	0
12.	AMET	0	1	0	0.15

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Reviews



I feel privileged to share my views on the amazing experience attained during PDPU SPE FEST'15. The events were undoubtedly competitive and we had a great exposure. The icing in the cake was we came third best in paper presentation. We thank the organizing committee for their cooperation. We would love to come again.

Thanks and good luck.

-Nizamul Bhuyan , DUIET , Assam

PDPU SPE fest was one of the best tech fests I have ever visited. Right from the organizers to the teachers, everyone were kind spoken and knew exactly how to make the fest worthwhile. The hostel facility was simply amazing. We got to meet so many people from different states. Truly, the hard work of every volunteer and organizer payed off!! If I got another chance, I will surely visit PDPU again.



-Syed Basharith , AIHCET , Telangana



PDPU SPE Fest was an interactive experience. It was organized to help students to experience strategies and ways to approach various problems with the help of different case studies, unlock the real commercial value of oil industry data by bid your block competition and seamless interaction with different professionals across nation. Paper and Poster Presentation were organized in an effective manner enlightening the students about various different

horizons of Oil and Gas industry by focusing on HSE, R&D, and Drilling etc. Competitions related to well logging and mud challenge were good initiative to introduce people to real industry practices. Apart from academia the interaction with students was quite well, accommodation was well managed and Gala night was an ever remembering experience. I would recommend next coming batches of MIT to attend PDPU SPE fest next year.

-Amit Narwal , MIT ,Pune

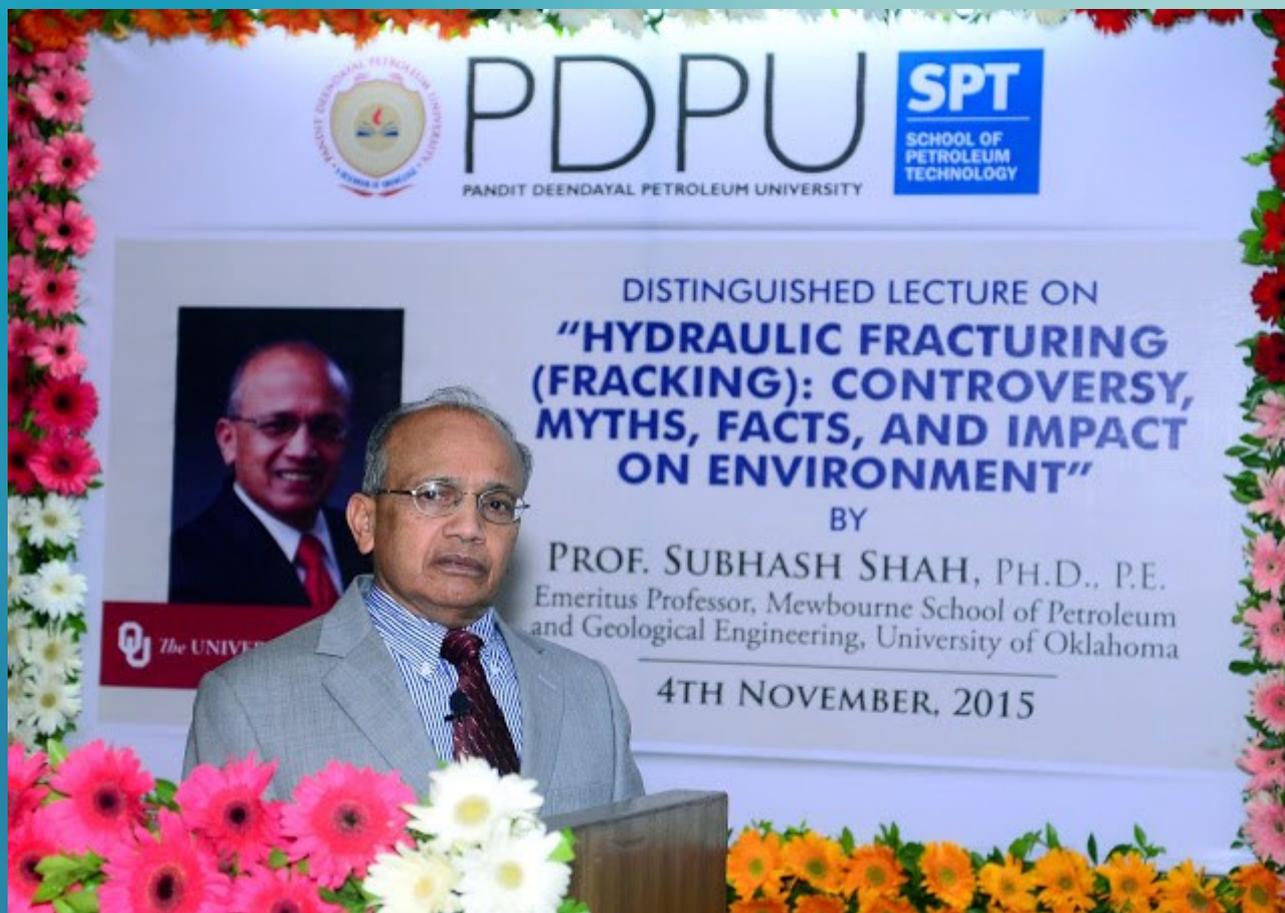
Esteemed Lectures

By Dr. Subhash Shah

Emeritus Professor, University of Oklahoma

SPE PDPU student chapter in collaboration with School of Petroleum Technology held a lecture series and seminar by Prof Subhash Shah, Ph.D., P.E. who was an Emeritus Professor at the Mewbourne School of Petroleum and Geological Engineering at the University of Oklahoma (OU). He recently retired from OU after serving 22 years as Stephenson Chair Professor and also as the Director of OU's Well Construction Technology Center. Prof. Shah delivered an expert lecture on "Hydraulic fracturing: controversy, myths, facts and impact on environment" on 4th November 2015.

He also highlighted about the controversies created by drilling companies by not disclosing the exact composition of the fracturing fluid, discussed about the various issues related to radioactivity of the waste water and various methods undertaken by companies for reducing the impact of waste water on environment and health. The session even witnessed the presence of Shri Atanu Chakrawarty, IAS, MD GSPC Group along with many industry experts. Prof. Shah delivered a two day lecture series on "Drilling and Completion" and "Shale gas development". He explained the different type of completions, directional well planning and new technologies associated.



Prof. Subhash Shah delivering the lecture

By Mr. Mark Salkeld

CEO, PSAC, Canada

This lecture was organized as a part of SPE WEEK on 25th November, Mr. Mark Salkeld, President and CEO, Petroleum services and association of Canada talked on "HR practices in Oil and Gas industry" with the audience which comprised of students as well as some industry personnel who came specially to attend this informative session. He provided a deep insight about the Human resources in Canada and their engagement with the petroleum industry in the country.

Some of the topics he had covered :

- 1) The key challenges faced by the industry in the present scenario.
- 2) The labour supply / demand challenges.

3) The four key terms that were found out by the survey -

- i) Managing change is a dominant issue
- ii) Companies are finding success with new approaches to managing the talent issue .
- iii) Potential high value in industry collaboration.
- iv) Employee engagement and capability is a concern .

He addressed the questions raised by students and faculties. His approach in clarifying his points with a smile on his face, took the session to another level. The event was attended by almost 200+ audiences thus making the event as grand success.



Mr. Salkeld delivering the Lecture

Other Events Organized

- **Tarkshastra** – It was a initiative to enhance the soft skills of the budding petroleum engineers. The event presented a stage and opportunity for the students to express their thoughts and ideas over the issue of falling crude oil prices. The event mainly concentrated on the public speaking and presentation skills of the students.
- **SPE Membership Drive**
- **Petroquest** –It was for SPT-2015 on 12th August 2015 as a part of its initiative to enhance the knowledge about petroleum sector and to give them all a brief idea about petroleum industry. This event mainly concentrated on the general knowledge of the students and also the coordination between them as this event was conducted in pairs.
- **SPE Distinguished Lecture by Dr. Anil Ambastha on “Uncertainty assessment using reservoir simulation “**
- **Intern Talk**—SPE PDPU Student Chapter conducted intern talk in collaboration with the other PDPU student chapters Petrotech, SEG-SPG-EAGE and AAPG, the focus of this event was to provide an insight to the second and third year students about the internships that they will undergo at the end of their sixth semesters. The speakers of the event were the fourth year students who provided their juniors with valuable information gained during the internship period.
- **Technical Session by Mr. Deepak Chaudhary, Driller, Schlumberger, Iraq**
- **SPE Week-** This was a week dedicated towards bringing together technical, recreational and social activities for SPE members, SPE week was organized from November 23rd to November 28th, 2015.

23rd Nov- SPE Green campaign tree plantation

24th Nov- Scavenger Hunt

25th Nov-Expert talk by Mr. Salkeld on HR Practices in oil and gas industry.

26th Nov-Friendly cricket match

27th Nov-Social Initiative

28th Nov-Mock Interview

- **SPE PDPU Student Chapter anniversary celebrations and “SPT Bookshelf” App launch**

Noteworthy Representations

OGCE 2015 , Univesiti Teknologi PETRONAS, Malaysia

Oil and Gas competition and Exhibition, 3rd-6rd November



Competing with so many diverse and bright minds from around the world in the OGCE 15 provided us the a fair oppotunity to learn and understand the kind of research as well current global industrial trends going on, OGCE 15 brought people from all the corners of the world together not only for sharing the technicalities of the oil & gas Industry but also for a cultural exchange and developing international contacts. We would like to thank SPE UTP Student Chapter for the hospitality and SPE PDU Student Chapter for the opportunity.

-Palash Dhurvey,SPT-13

-Jai Mehndiratta,SPT-13

-Harsh Vyas,SPT-13

OGIC 2015 , Mumbai

Oil and Gas India Conference and Exhibition, 24-26 November



A high quality, multi-disciplinary technical conference with an exhibition showcasing state-of-the-art, fit-to-purpose and innovative technologies and was a perfect platform for forming connection which will become fruitful in future, we recommend all the PDU students to attend these informative and enticing conferences for their all round development.

-Palash Agrawal,SPT-12

-Abhay Jani, SPT-13

Technical Articles



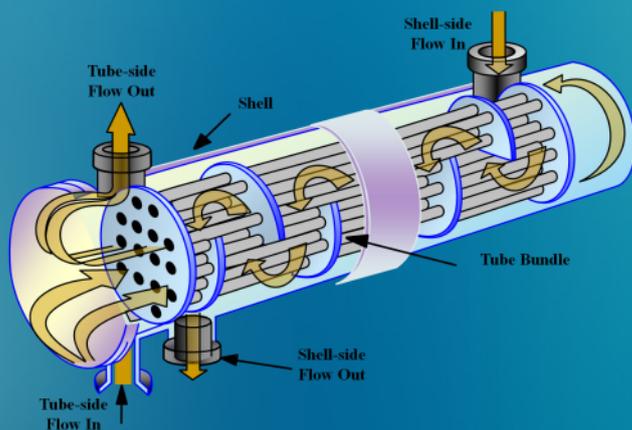
VIBRATION IN SHELL & TUBE HEAT EXCHANGERS

Ms. Shreya Sahajpal

Faculty, School of Petroleum Technology
Pandit Deendayal Petroleum University

The thermal design of a heat exchanger is complex and tedious, but it is quite an interesting thing to learn and get a hands-on experience. Thermal and process engineers are usually asked to recite the lessons they were taught in class and repeat numerous rules of thumb that have been in use for years. But, designing a heat exchanger is an art and can't be mastered in one day. Numerous parameters have to be dealt with and a simultaneous sensitivity analysis has to be carried out as well. While designing, an engineer faces many challenges such as high pressure drop; maldistribution of flow; low heat transfer coefficient; fouling and vibration; which may not be addressed by the general design procedures and requires in-depth knowledge of each and every component of a heat exchanger.

One of the major problems in shell and tube heat exchangers is flow induced vibration of the tubes, which may lead to serious consequences. Vibration analysis is the most important check point for thermal design of a heat exchanger before its fabrication is started. Flow induced vibration is basically of two types; one is tube vibration and the other is acoustic vibration. Tube vibration again can be explained by the following has three phenomena – fluid elastic instability, vortex shedding and turbulent buffeting. If the tubes in a heat exchanger vibrate in an orbital motion, it is evident that the exchange is facing Fluidelastic Whirling. The flow across the tubes may cause a combination of lift and drag displacements of the tubes at their natural frequencies; which may lead to runaway condition as well as well. Flow across a tube may also produce a series of swirls (of air, water, etc.) in the downstream wake. This alternate “Shedding of Vortices” produces alternating forces and occurs frequently with increase in fluid velocity.



Certain unsteady forces also act on the exchanger tubes, when the flow on shell side is extremely turbulent, and this gives rise to the phenomenon known as Turbulent Buffeting. When the shell-side fluid is a vapour or a gas, Acoustic Vibration occurs. Acoustic vibration is related to sound generated in tubes, and depends upon shell diameter, and the velocity of sound in the shell-side fluid.

In simple language, vibration can be explained as a phenomenon, caused by repeated unbalanced forces (eddy motion of the fluid being the most common) being applied to the tubes. The unbalanced forces may be small in magnitude but they occur hundreds of times a second, and their magnitude increases with increase in fluid velocity. The high value of ρV^2 and unsupported tube span causes vibrations which ultimately lead to various types of damages. The tubes may vibrate against the internal baffles, which will eventually cut holes in the tubes. Excessive vibration can also lead to the tubes coming loose from the tube sheet that holds them inside the shell. This can cause tube rupture, and the exchanger will fail. Extreme vibration could even cause the tubes to hit each other and break. Fluid-elastic instability is by far the main cause of vibration-induced tube damage, followed by vortex shedding. Shell acoustic vibration very rarely leads to tube damage but in severe cases can exceed recommended health and safety sound levels in the work-place.

In order to mitigate/minimize vibration, it is important to analyse the effect of all the design parameters on the output parameters simultaneously; which is best done in sophisticated software. For determining the potential of vortex shedding and turbulent buffeting, it is important to calculate the tube natural frequency at inlet, outlet and central spacing, and apply lowest of these values to the entire exchanger. Once a designer understands the extent and magnitude of vibration the exchanger may encounter; certain design modifications can help mitigate the problem. Some good engineering practices that can be followed are – using partial support plates; providing strip baffles at U-bend; placement of multiple spans between supports; reducing fluid velocity; making passages for the fluid in tube assemblies; replacing damaged tubes; changing the baffle spacing; use of helical baffles; use of deresonating baffles and many more. But the designer has to be very careful while choosing the method of vibration prevention, and should weigh the pros and cons of each of the above mentioned methods. For example, reducing the fluid velocity, and making passages for the fluid in tube assemblies both result in a decrease in heat transfer coefficient.

The best way to carry out vibration analysis and mitigation is to “Investigate, Research, and Validate”, and reach beyond the established rules and design practices. The answer to this problem is only a belief in **“Discovery as Adventure”**.



EFFECT OF SLUMPING CRUDE OIL PRICES ON VARIOUS SECTORS OF INDIAN ECONOMY

Aman Raj

BT13, SPT Third Year (Downstream)

The only thing that comes as a guarantee with any commodity is the vagaries that are tagged with it. And in case of crude, the vagaries have been rampant and enormous. Crude oil certainly has had the tendency of being a huge market changer in the past and it continues to gnaw on the people who rely on it the most. The cause of such slump is mostly ascribed to the supply and demand chain, but high level political levers can never be neglected. Moving on, today we try to decipher how it affects the sectors other than the oil and gas industry and its impact on Indian economy.

The Indian economy has so far been able to remain more or less phlegmatic to the crude slump. They have certainly smiled to belie the general consensus of a drastic economy slump and have paper over any whimpers to give signs that things remain to be hunky dory for the country. The reasons have been pretty obvious, the nation whose crude imports account for 30 per cent of its import bills, the exchequer smiles on even a dollar drop saving around 4 billion from the process. This gives a breathing line to the government and to ameliorate the macro economics of the nation. It gives us as a nation to look upon various sectors which seek for immediate attention and to refurbish the plunging industrial sector.

The people, who really don't mind the crude prices crashing, are the oil marketing companies, the auto mobile sector and the cosmetics and the fast moving consumer good companies. It has been a while since the oil marketing companies have been pushed to bear the brunt of lofty prices and the subsidies only managing to survive on the fine lines. This quarter of slowdown has helped them to tackle their subsidy issues and boost up their numbers, as they need to incur momentarily inventory losses and then could escalate on the profit charts without much of a concern. Similar has been the case with the aviation fuels and the paint industries, albeit the fall in crude oil prices have seldom resulted in any drastic plunge in the crude derived products. Still they see their numbers boosting up as they get the raw materials at much cheaper rates.

It has given a discernible edge to the commercial airline industry as they have often posited that the high aviation fuel rates have irked them and made the industry vulnerable to insolvency. Others who have also be in jaunty mood in the present scenario are the cosmetic and the FMCG companies, as the derivatives such as LAB and LLP, have implied direct profits to the cosmetic industry.

Products such as LDPE have offered companies a solution to cut short on their production cost (reduced packaging rates). Sectors such as automobile are also enjoying a share of the boom, as the falling crude oil prices always mean a decline in the petrol and diesel prices and considering the government choose to get more growth incentive and decides to get down on interest rates, the tendency to purchase are always high on the charts.

But things are not as calm and comforting as few of us consider it to be. Acting flippantly on such alarming scenario and rebuffing the portent signals would be the last thing the newly elected government should be inclined to do. First, the situation would have been different if we would have been conferred with a stable currency, but the fact that the rupee continues to get soft, means the gross profit for the exchequer goes on to be leaner. Second, the simple business sense would tell us that a nation can only be looked upon as a profiting one, if our import bills continue on the downward slope and our exports remain more or less stable. But people look to paper over the later part, the world economy has been plagued and there is no way that India can go on its usual niche without catching some of it. Basically its export rates have been far from being pass muster and it has simply battered from the decreasing demand and insipid foreign economies. Third, it is no secret on how strongly smitten India is to its foreign investment. But guess what, you can't boast about being the biggest market and flaunt your foreign notes if the institutions and the market which are the very spine of your economy, are trembling and looking for covers.

Thus it's time to act perspicaciously and have a profound feel of the economy. India needs to invest smartly in sectors such as infrastructure to get adept to face the inevitable. Indian Economy would be unwilling to rest on its laurels and behave as a sacrosanct institution that can wade through these deep waters. It seriously looks to check upon its bad debts, and stress on a more progressive approach with the interest rates and maintaining a more liquefied driven market.

If we don't act now, and look on the veracity of the situation, the plague of the slowdown may take over our economic levers and orchestrate yet another economic breakdown.



SPT Alumni Meet 2016

With a motive of bringing old friends together and providing an opportunity to current lot of students to interact with their seniors, School of Petroleum Technology and SPE PDPU Student Chapter hosted SPT Alumni Meet 2016 on 23rd January 2016. The meet was attended by SPT Faculties, Alumni and Final and Pre-Final year SPT students.

The meet was a great opportunity for all the students to interact with alumni who are well positioned in various job profiles and are leading a successful life. The primary aim of organizing the meet was to create an opportunity for all of the undergraduate and postgraduate students to understand the market scenario from the people who they can relate to and who are getting a hands-on experience on the job – The Alumni. The highlight of the event was a panel discussion on the theme '**Career Planning During Downturn in Industry**'. The panelists were Aayush Bhatnagar - EY, Saroj Chaudhary- Weatherford Engineered Systems Support, Kush Desai- University of Southern California, Hiren Patel- Al Mansoori Specialized Engineering and Akash Shrivastava, Baker Hughes; all alumni from batches 2011-2014.

Dr. Anirbid Sircar, Director SPT, moderated the session. The objective of the discussion was to give Final and Pre-Final year Petroleum Engineering students some advice on career planning in the back drop of slowdown in the oil & gas industry.

The panel discussion was followed by a presentation on "New Alumni Connect Initiatives" by Mr. Harsh Vyas, Secretary, SPE PDPU Student Chapter. The chapter also initiated and launched **SPE Mentor Circle** - an Alumni-Student and Peer Mentorship Program, for career guidance through various mediums.

Dr. Anirbid Sircar, Director SPT addressed the gathering and talked about "Growth Plans of SPT" and Shri D J Pandian, Director General, PDPU encouraged the students with his motivating words.

The night moved on with a 'Back to School' theme with an alluring Photo-Booth and fun games like Tug-of-War, Tying-The-Knot and Darts. There was a fun filled ambience towards the end with everyone tapping their feet on peppy numbers and a gala dinner to conclude.



Alumni Meet 2016

TECHNICAL INTERVIEW QUESTIONS

While the joy of landing the first job is the best feeling ever, pre-interview jitters are also a part of the package. Keeping the on-going placement season in mind, here are a few technical questions that are usually asked by companies dealing in downstream operations and process engineering companies. Hope this helps in preparing accordingly. Read on!

- Fluid allocation in heat exchangers.
- Basic laws of thermodynamics.
- Differentiate between vacuum distillation, reactive distillation, extractive distillation, and azeotropic distillation.
- Explain the steps involved in designing of a tray column.
- McCabe-Thiele method for calculating number of trays in distillation column.
- What is the significance of q line in distillation? Values of q for different feeds.
- What is the difference between packed and tray towers?
- Explain flooding, weeping, coning, dumping, channelling in columns.
- Questions on types of valves, applications, advantages, disadvantages and working.
- Basic types of pumps, classification, applications, advantages, disadvantages, working, affinity laws and NPSH.
- How is efficiency of a pump estimated? Explain performance curves for a pump
- Temperature and pressure measurement instruments used in the industry.
- Basic controls in oil and gas industry.
- Basic testing of crude oil properties.
- What are the required safety aspects in any company?
- Differentiate between Newtonian and Non-Newtonian fluids.
- Laws of heat transfer
- Dimensionless numbers in heat & mass transfer
- Difference between Types of reactors – CSTR, PFR, Batch
- Rate of reaction, order, yield, selectivity, activation energy, residence time
- Definitions of Diffusion, diffusivity, Fick's law, mass transfer coefficient
- Operation of Grinders, crushers, cyclones, sedimentation, filter press
- Refinery operations in details
- Operation of Horizontal, vertical and inclined condenser.
- Major difference between Urea and NPK Fertilizers
- How is the operating pressure of a distillation column decided?
- Basics of pipeline design. Diameter calculation. Line Pack Volume calculation.
- Why we use LMTD to calculate overall heat transfer coefficient in shell and tube than arithmetic average?
- What is critical insulation thickness for pipes?
- What is dew point and why it is important in instrument air?

SPE PDPU Student Chapter's Future Endeavors

February 2016

- Grand Social Outreach in collaboration with Envirocrats PDPU
- Field visit focusing on industrial exposure to the members.
- Guest Lectures

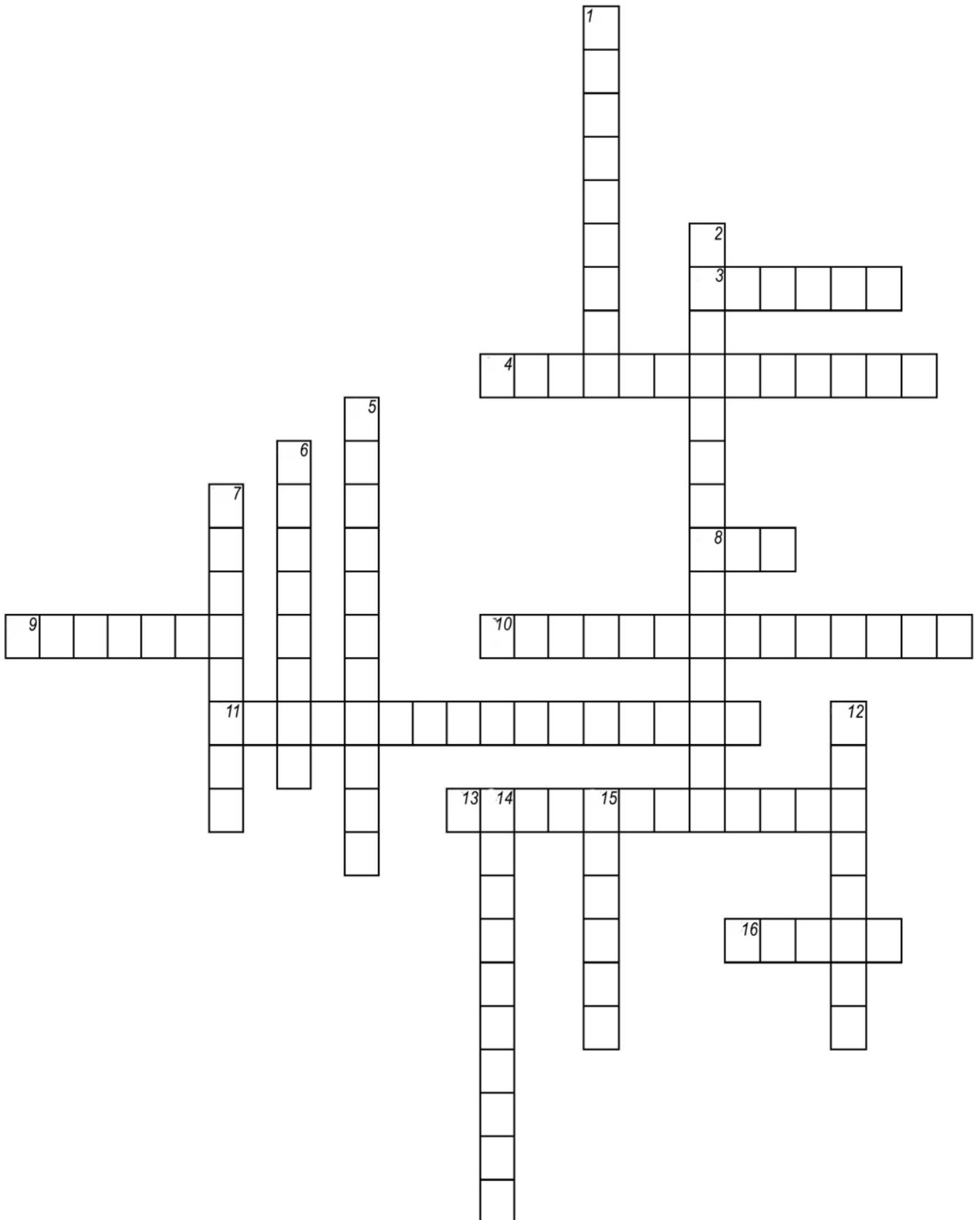
March 2016

- Kappa Software Workshop
- Distinguished Lecture Series
- Career Enhancement Seminar
- SPE WEEK 2.0

Others

- PDPU SPE FEST 16
- SPE Mentor Circle
- Case study contest
- Debate Competition
- Geology week
- SPE Photo contest
- Personality development seminar

Crossword



Hints :

Across

3. A base with an oil refining place
4. Only solid fuel made in a refinery
8. This many gallons of recycled motor oil can power average house for 24 hours.
9. Colloid stored and transported at 300 degrees Fahrenheit.
10. Russian Oil Minister
11. A place that has heavy oil yet accounts for only 10% of US Oil Extraction.
13. Used in cassettes, tapes and water bottles and polyester
16. Long chain hydrocarbon that represents "bottom of the barrel"

Down

1. Using this type of gasoline it takes 33 new cars to equal the air emissions of just one car made on 1970.
2. What's a well without casing, perforated pipe or screen called.
5. The person who designed the first oil tanker in Sweden.
6. The operation of hoisting the drill string and pulling it back is called.
7. Its Athens or bust to find a source of oil and gas
12. 19.4 gallons of this fuel can be created from one barrel of crude oil.
14. American author who played an important role in revealing of the secrets of Standard Oil Company.
15. A wax like mixture of oil and tallow for softening leather



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/spe_pdpu