

SCOPE

4th Quarter 2017
MCI(P)140/12/2017

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2017 PERFORMANCE REVIEW AND MANAGEMENT DIRECTIONS FOR 2018

Mr Akira Yonemura
Managing Director



REVIEW OF 2017

2017 was a very good year for us. With our diversified sales portfolio together with optimal feedstocks, stable and high operating load, we have made the most out of the exceptional high product margins, particularly in ethylene. We ended 2017 with the best financial performance since our start-up.

We have also successfully commissioned the Naphtha Import Facilities, a strategic project to strengthen our import logistics and at the same time gives us opportunities for more feedstock optimization. Four of the older furnaces in PCS-I have been revamped to improve olefin yields and together with the optimization of recycle streams between the 2 plants, higher ethylene production has been achieved.

We continue to strive to improve specific energy consumption through investments as well as implementation of the utilities optimizer. In recognition of these efforts, we received two awards, namely, Excellence in Energy Management Award and Honourable Mention in Best Practices categories under the Energy Efficiency National Partnership (EENP) program.

On safety, we are very close to another historic HSE milestone of 40 million work-hours without lost time incident (LTI) for PCS employees and contractors, having recently clocked nearly 39 million work-hours without LTI. One medical treatment case involving one of our contractors in 2017 is however a stark reminder to be more vigilant and cautious in our activities. We were conferred another Workplace Safety & Health Performance (Silver) Award 2017 by WSH council. We also received the Excellence Award in all six Responsible Care Codes of Management Practices and the SCIC Responsible Care Leadership Award.

DIRECTIONS FOR 2018

Global GDP growth in 2018, barring any unforeseen geopolitical events, is projected to be higher though below historical norms, indicating continued healthy demand growth for petrochemical products. On the supply side, the majority of new additions in ethylene will come from US ethane crackers. Their impact will be mainly in polyethylene and indirectly in ethylene due to their ethylene export logistic constraints. More propylene capacities, mainly from new CTOs, MTOs and PDH plants in China, are expected to come on stream but at a slower pace than the last few years. Butadiene balance is likely to remain healthy until new capacities utilizing C4s from new naphtha crackers and MTO's come on-stream in 2019 while benzene is forecasted to remain long.

Our main concern next year is rising naphtha prices as it is likely to remain high if crude continue to remain strong. Naphtha balance is also likely to tighten due to declining surplus from Middle East with their own domestic demand as well as high cracker run rates.

Looking further outwards, towards the next decade, there are a number of developments which we have to be mindful as they will have significant impact on us, namely:

- ▶ More new capacities – with the high crackers margins over the last few years, a large number of new capacities, particularly in China and this region, are either under construction or awaiting final investment approval.
- ▶ More refinery/petchem integration projects (in Middle East and China), impacting both naphtha and petrochemicals.
- ▶ New technology and innovation – in addition to MTO's, CTO's, PDH's, new olefin plants utilizing C5 feed, BD extraction from C4 from MTOs, etc.
- ▶ More backward integration by industry players such as building of more new Butene-1 capacities, etc.

For 2018, the record product margins achieved early last year which has already come down, will be under pressure, particularly if naphtha remains high. But, overall margins are still expected to be relatively healthy. We thus need to continue to work closely together and respond to the changing market conditions by adjusting and optimizing our operations to capture all the available product margins.

We have to also safely and successfully complete and start-up PCS-I after its SDM and revamp of its compressors and opportunistic rejuvenation works. Another challenge is achieving our next HSE milestone of 40 million work-hours without LTI amid longer period of activity during the PCS-I SDM.

THE KEY FOCUS AREAS FOR NEXT YEAR ARE THIS:

- (i) Good Health, Safety and Environmental performance
Reach next safety milestone of 40 million work-hours without LTI and continue to maintain good HSE performance thereafter
- (ii) Achieving budgeted profit by
 - ensuring safe, smooth and stable operation;
 - optimizing feedstock purchases;
 - responding nimbly to changing market conditions and customers' operations; and
 - maintaining cash cost within 1st Quartile of Solomon's unit operating index.
- (iii) Safe and successful completion of PCS-I SDM, together with its compressor revamp, and other Projects

Looking further ahead towards the end of this decade and beginning of the next, several threats as listed above looms. We need to redouble our efforts to ensure that PCS continues to remain competitive by not only doing what we are doing well now but looking for other new areas of significant improvements to hopefully give us a quantum leap in performance.

Last but not least, we must continue to conduct our business and operations ethically, professionally and with integrity.

Exercise Merbau 2017

– Complex Counter Terrorism Security Exercise



Christopher Heng
Fire & Security



Simulated gunman attack in building.



GM(Plant) Mr. Lucas Ng administering Improvised First Aid Skills (IFAS) on the injured person.



Exercise participants started "Run, Hide, Tell" in response to the terror attack.



"Perpetrators" neutralized by security forces.



"Live Firing" Display at Complex Internal Bus Bay.



More than 200 employees and contractors from the 9 companies (PCS, MELS, TPC, SCA, CPSC, SEPL, DSPL, RHCS & EMPL) within the Singapore Petrochemical Complex (SPC) participated in the Complex Counter Terrorism Security Exercise on the 8th Nov 2017. The exercise, known as "Exercise Merbau" was conducted annually to enhance awareness and strengthen our capabilities for responding to various emergencies. This exercise showcased the growing importance of the **SGSecure** movement at workplaces, which were not spared from the threat of terrorism. The exercise was also part of the implementation of the Responsible Care[®] Security Code of Management Practices to help protect people, property, products, processes, information and information systems by enhancing security throughout the chemical industry value chain.

This exercise tested participating Complex Companies response to handle such crises and to quickly recover from it. We were honored to have strong support from government and security agencies such as, Singapore Police Force (SPF), Singapore Armed Forces (SAF), Singapore Civil Defence Force (SCDF), JTC Corporation and AETOS Holdings Pte Ltd to simulate a "live firing" display at the Complex internal bus bay. The exercise also showcased the government agencies capabilities to handle a terror attack involving armed attackers.

The exercise has taken several months of planning with the representatives from various government agencies and the

participating Complex Companies. The participants underwent **SGSecure** training before the exercise, which taught them to "Run, Hide, Tell" in emergency situations, among other lessons including Improvised First Aid Skills (IFAS) which utilize any common available items such as neck tie, belt or sling of a bag to stop any excessive bleeding during a firearms or weapons attack. Special moulage wounds were applied on the role players to provide elements of realism (such as dripping blood, gunshot wounds, and slash wounds) to the training simulation.

The exercise ended with a debrief session with representatives from all the participating Complex companies and supporting government agencies at the Fire Station

Incident HQ. GM (Plant) Mr. Lucas Ng said, "... although we have a good security system in Jurong Island, however we cannot eliminate the possibility of a terrorist attack and must be alert and prepared to handle the situation when it happens." Key learning points and positive feedbacks from the exercise were shared by the participants for continuous improvement to strengthen vigilance at our properties and boost our ability to respond effectively to crises.

Our utmost thanks and sincerest gratitude and appreciation to all participants and external government agencies for their participation, relentless support and excellent teamwork to bring about the smooth execution of this exercise.

15TH ASIA PACIFIC RESPONSIBLE CARE CONFERENCE



Tok Ai Tee
QC



PCS delegates for the conference.

The Asia Pacific Responsible Care Conference is a biennial regional event that aims to connect the leaders and practitioners from the region, providing them with a platform for sharing and exchanging their views on Responsible Care implementation and the way forward for a sustainable chemical industry.



GM(Plant) delivering his presentation speech.

This year, the 15th Asia Pacific Responsible Care Conference (APRCC) was hosted by Singapore Chemical Industry Council (SCIC) and held on 30 & 31st Oct 2017 in Singapore at the Carlton Hotel. As one of the key sponsors for the event and a strong advocate for Responsible Care® (RC) initiatives in Singapore, PCS sent 10 delegates including all 6 RC code custodians to participate in the event.

The theme for 2017 is "Responsible Care – The Way Paved for Business Sustainability".

The two-day event started with an opening speech by Ms Suiniaty Basirun, the Chairperson of SCIC, followed by Mr Patrick Vandenhoeke, the Chairman of Responsible Care Leadership Group (RCLG) and International Council of Chemical Associations (ICCA) speaking on the emerging trend in Responsible Care.

Day 1 morning was lined up with presentations by senior executives from the regional companies with decades of RC experience, sharing on their RC programmes and the challenges they faced. In this session, our GM (Plant) Er Lucas Ng, presented on the topic "Quest for beyond Process Safety Excellence through Responsible Care". He shared on PCS RC Journey, emphasising on the programmes for the 6 RC codes and the



Panelists sharing their insights at Q&A session.

absolute necessity of senior management's commitment to the Top-down and Bottom-Up two way approach in driving Responsible Care excellence.

There were 2 parallel afternoon breakout sessions on both days, allowing the participants to choose their preferred topic to attend. For Day 1, I attended breakout session 2 covering the topic "Regional Emerging Regulations Development and Responsible Care Programme – Where is the Balance?" Several presenters shared their approach in managing domestic or overseas regulations, stressing that RC is dynamic and has to be kept aligned with changing regulatory environment and expectations from stakeholders.

Day 2 was kicked off with the presenters sharing their perspectives of Responsible

Care in relation to Sustainability, followed by the afternoon breakout sessions covering 2 topics of discussions. I sat in for part of the breakout session 3 and listened to our HSE Manager, Er Bernard Leong, presenting on the topic "Developing Process Safety Competency, A Company's Journey". He highlighted PCS's efforts in developing workforce competency and ensuring the sustenance of the organisation learning culture through the 3Ts approach – Training, Retraining and Retaining. It is interesting to look at how deeply involved our company is in driving in-depth training of the workforce with the well rounded training programmes.

In view of the rapidly changing global security challenges, many participants chose to attend the breakout session 4 on "How Security Practices can be managed by building on

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HSE Manager, Bernard Leong, speaking on Process Safety Competency.

to the current 6 codes of Responsible Care management practices?" Three speakers shared their experience in implementing/driving the security enhancements within their capacity. I was particularly impressed by the extensive supply chain security measures taken by Rhenus Logistics. They have fixed routes with geo-fencing, GPS monitoring for transport security and stringent hand-over procedures to the extent of weight and photo verification of individual packages and capturing the entire hand-over process with

CCTV to ensure items especially controlled hazardous substances do not fall into the wrong hands.

For both days, the Q&A sessions were interestingly carried out with the use of the interactive Q&A platform "Pigeonhole". Participants could submit their questions anonymously to the pigeonhole link via their own smartphones at any point of time during the presentation. The questions were then collated for the panel discussions. Many interesting questions were garnered and the panelists were insightful in their responses. In all, the underlying message for the

conference is clear, i.e. RC provides a robust foundation for sustainability developments, and must be actively driven for global unifying commitment.

As the Employee Health and Safety (EHS) code custodian for PCS, I really appreciate the given opportunity to hear about the high level perspectives and views from the leaders in the regional chemical industry. While I may not be able to fully comprehend all the views that were presented, it is still a good exposure for us as Responsible Care code custodians to learn of the evolving landscape in the RC of Chemical Industry.



PCS RC code custodians enjoying the event.

BBS SHARING WITH DORMA PRODUCTION SINGAPORE



Bernard Leong
HSE

Following the publication, and the subsequent exposure at the XXI World Congress, several companies approached PCS for informal discussion on BBS. One particular company, Dormakaba (DORMA Production GmbH & CO KG, a German-Swiss company involved in manufacturing of door closers), requested for a site visit to further explore BBS implementation process and challenges.



GM(Plant) Er Lucas Ng HK has recently summarised and shared our Behaviour Based Safety journey since rolling out the programme in 2004. The chronological progress is described in the Issue 3/2017 of Safety Matters, a publication of the Singapore Institution of Safety Officers (SISO).

At the visit on 9 Oct 2017, they were warmly welcomed by GM(Plant), BBS then-Facilitator Ho Jia Quan, HSE staff and two PCC Contractors representatives. Dorma is desirous to introduce BBS, as a driving force and an initiator of change to reduce incident frequency rates. PCS shared its BBS journey, including challenges and sustenance. BBS has brought about numerous benefits to our workforce, among them a sharp decline in overall "At-Risk behaviour" right after introducing BBS. The overall "At-Risk behaviour" is now hovering around 3-5%, which is healthy, weighing the maturity and transitional workforce. This trend is analysed and reviewed at monthly BBS Steering Committee meetings.

We now see wider acceptance of BBS in the industry. For us, we need to continue sustenance efforts, as it is one of the pillars of a healthy and safe workforce.

RESPONSIBLE CARE OUTREACH: CAPACITY BUILDING THROUGH SHARING OF GOOD PRACTICES



Benjamin Tan - T&O



Code Custodian, Ai Tee, sharing on the EHS code.



Process Safety Code Custodian, Leonard Chong, and the attentive audience.

PCS received the Leadership Award for the Year 2016 in the annual SCIC Responsible Care Awards, after having achieved the Excellence Awards for all 6 codes in the past 3 years. The Responsible Care Leadership Award was introduced to recognise companies who have demonstrated their continued outstanding performance in the Responsible Care (RC) programme. Being conferred the Leadership Award is a recognition of the efforts of PCS towards developing and maintaining a sustainable and consistent practice of Responsible Care.

As a recipient of the Leadership Award, PCS is committed to share its RC approaches and programmes with other companies within the chemicals industry. With the close proximity of the various companies within Jurong Island, and the high degree of integration, the old adage is true that "a chain is only as strong

as the weakest link". A robust practice of RC throughout the industry ultimately benefits all who might be impacted, including PCS. Thus, it is with this aim that PCS embarked on its outreach programmes, and to help contribute in industry capacity building efforts on RC implementation.

Working together with the Singapore Chemical Industry Council (SCIC), sharing sessions were organised and held at the SCIC office in JTC Summit to share with fellow Responsible Care signatories, the experiences and good practices adopted by PCS in its implementation of the six Responsible Care codes of Management Practices.

The first sharing session on the Employee Health and Safety (EHS) and Process Safety (PS) codes was organised on 20th October 2017. PCS was represented by the EHS

code custodian (Ms. Tok Ai Tee) and PS code custodian (Mr. Leonard Chong), and I was also involved to support Leonard in the presentation on the PS code. This was my first involvement in external outreach of our RC efforts, and I was pleasantly surprised to see the healthy numbers in attendance. While we had prepared presentation material, the overall atmosphere was certainly not one where we were preaching from a pedestal. There were lively discussions throughout, as participants shared candidly on some of the practical difficulties experienced along their RC journey, as well as openly sharing some of their own good experiences.

On a personal level, participation in this outreach activity was an exercise of the Latin principle *Docendo discimus* – "the best way to learn is to teach". By being involved in the preparation and sharing of the presentation material, I have gained a deeper understanding on our RC programmes, especially in regard to the Process Safety Code.

A second sharing session was organised on 3rd November 2017 on the Distribution (DIST) and Pollution Prevention (PP) codes. PCS was represented in this second session by the DIST code custodian (Mr. Foo Suan Kim), PP code custodian (Ms. Ng Chai Ling) and also Ms Joyce Lee, representing the Product Stewardship code.

PCS has subscribed to the Responsible Care programme since 1999, and as PCS continues along its RC journey, external engagement and outreach activities will continue to play a part in its strife for continual improvement and excellence in RC implementation.

4TH CCPS GLOBAL SUMMIT ON PROCESS SAFETY



Bernard Leong
HSE

2020 into result oriented actions for achieving excellence in Process Safety. The Summit provides a common platform to Process Safety leaders and experts from industry, government and regulatory authorities, and academia to share advancements in the field of Process Safety. Perceived outcome include knowledge sharing, awareness and uniting for the common cause of process safety.

A novel feature of the Summit is a closed-door Leadership Forum, where 10-12 industry leaders participate in open discussion, where they express their vision on the future of process safety and share their experiences on how they drive Process Safety within their organisations. The outcome of the discussions in the leadership forum were presented to the delegates in a plenary session announcing a call for action.

GM(Plant) Er Lucas Ng HK and HSE Manager, Er Bernard Leong LW, represented PCS at the Summit. Two technical papers were presented – "Experience Sharing on How to Ensure Asset Integrity of Ageing Facilities" and "Benefits Sharing and Congruence Seeking on Process Safety Performance Indicators".

At the Summit, CCPS also announced the collaboration between itself and SCIC. PCS representatives, who also hold key positions within SCIC, accepted a plaque commemorating this union, from CCPS Executive Director, Mr Shakeel Kadri.



Against the backdrop of Okayama (岡山), where throughout the year, it is blessed with minimal rain and a mild climate, earning it the nickname the "Land of Sunshine", a similar outlook can be said of Process Safety. As evergreen too, as Okayama's most famous attraction, Korakuen Garden (後樂園), which is ranked as one of the three best landscape gardens in Japan.

Over the past several years Process Safety has taken on increased importance. Today companies large and small, in the traditional process industries and in emerging areas, all put a premium on improving their Process Safety performance.

The Center for Chemical Process Safety (CCPS) is a not-for-profit, corporate membership organisation within the American Institute of Chemical Engineers (AIChE) that identifies and addresses process safety needs for a variety of facilities handling hazardous materials. PCS is actively involved in CCPS activities as well as playing a key role in the collaboration between the Singapore Chemical Industry Council (SCIC) and CCPS.

The 4th CCPS Global Summit on Process Safety (GSPS) was held in September in Okayama, Japan, with the theme "Process Safety Vision 2020". GSPS is one of CCPS' initiatives to transform process safety vision

2017 PRODUCT STEWARDSHIP HIGHLIGHTS



Joyce Lee
Marketing & Sales



Attentive audience, mainly comprising plant colleagues, at the Employee Training.

2017 has been yet another fruitful year for Product Stewardship Code, which successfully carried out its programme with the strong support of Management and collaboration with enthusiastic colleagues from the various functions.

We continued our in-house training session on 18 August. The yearly "Product Stewardship Employee Training" is in its third year of running and was held for 30 employees. The half-day programme strives to give our employees a better understanding of our products with regards to their hazards, product risks, proper handling, storage and transportation. There is always something new to learn for everyone, especially since the safety features of the newly commissioned Naphtha Import Facilities were also shared.

On 15 September, we welcomed 18 fellow Responsible Care® signatories and 15 business partners to PCS. This Product Stewardship Outreach event is part of PCS's continuous efforts to contribute to SCIC Capacity Building program, which is also a commitment of being a Leadership Award recipient. This was also the third time that

PCS has organised the Outreach, with the objective of encouraging business partners to adopt good health, safety and environment practices.

Topics shared included introduction to the Globally-Harmonised System and the 16 elements in a Safety Data Sheet; familiarization of products (such as Toluene and Propylene), their product characteristics and risks; terminal operations, berth rules and regulations, as well as emergency response plan. The half-day program was well-received by the 33 representatives from 22 companies and it was indeed a good opportunity for PCS to share and showcase our HSE efforts.

The eventful year ended with an Outreach by Product Stewardship and Distribution Codes and representatives from Fire & Security, Olefin-I and HSE to the Pearl of the Orient



Mr Lucas Ng (GMP) giving the opening speech for the Employee Training (18 Aug 2017).

- Penang, to visit our long-time Butadiene ("BD") customer, Toray Plastics Malaysia Sdn Bhd ("Toray").

Toray's Acrylonitrile Butadiene Styrene ("ABS") plant started commercial production in 1992 and received its first shipment of BD from PCS then. The Outreach team had a fruitful day exchanging views with Toray's production, safety and commercial representatives. A short site visit to the plant and the Penang Port, where our BD shipment is discharged also gave good insight to the team. Overall, the visit went very well despite us having to travel to various sites, thanks to the efforts of our gracious hosts. A report was subsequently shared with Toray with some recommendations for improvement.

In the spirit of Responsible Care®, PCS continually strives to promote interaction within the petrochemical industry. Outreach programmes by Product Stewardship is one of the initiatives launched for customers and business partners to promote better understanding and insights into the hazards of the products manufactured by PCS, for the betterment of the industry.

We look forward to another year of support and active participation for Product Stewardship programmes from fellow PCSians.



PCS Outreach team members at Toray's ABS plant in Penang (17 Dec 2017).



SCIC invited guests and PCS's business partners at the Outreach in PCS (15 Sep 2017).

TEAM EXCELLENCE ASSESSMENT ON 10 OCT 2017

Chong Hon Yeng - T&O, Plant Services



From left: Noryazid, Mohd Khair (Team Leader), Steven Soh, Nordin (Advisor), Wong Seong Lock, Benjamin Tan, Leonard Chong (Advisor).

Olefin-II PEPS workgroup Unit-B received the 'Star Award' for their presentation in the Team Excellence Assessment, organized by Singapore Productivity Association.

The Team Excellence Assessment (previously known as Team Excellence Symposium) is a closed door assessment platform which allows teams from various organisations to present their Team Excellence projects to a panel of judges. Through this assessment, they will be awarded either Star, Gold, Silver, Bronze or Certificate, according to their presentation and project report.

PCS has been participating in the assessment since 1999. In all, we have received seven Gold, five Silver and four Bronze. Adding to this year is the Star Award, the highest accolade and a first for our company.

Unit-B workgroup members consist of Mohd Khair (Team Leader), Steven Soh, Wong Seong Lock and Noryazid, with support from Senior Engineer Benjamin Tan.

Olefin-II Manager, Leonard Chong and Team Superintendent, Nordin provided the group in the capacity of advisory and leadership roles.

The workgroup worked fervently from August this year, with countless practice and rehearsal prior to their presentation on 10 Oct 2017. They presented the topic 'Extension of 3WP Unit (No. 3 Pure Water Plant) Runlength'.

The objective of this project is to extend the 3WP unit throughput from design of 3000 m3/service cycle to 4000 m3/service cycle. Test was carried from July 2015 up to end of August 2015 and the results were positive. The optimization of this project was significant as it does not compromise on pure water quality plus a substantial amount of chemical and water cost savings.

Further extension up to 5000 m3/service cycle is in the pipeline.

Well done, Unit-B!

PEPS DIALOGUE SESSION ON 24 NOV 2017



Chong Hon Yeng
T&O, Plant Services

The value of an idea lies in the using of it — Thomas A Edison

A quote by Thomas A Edison, man of many ideas and considered by many to be America's greatest inventor and the theme for PEPS Dialogue Session 2017. An original verse on the theme was specially commissioned for the dialogue.

PEPS Dialogue, held on 24 Nov 2017, is an annual event organized by T&O Plant Services. The objectives are sharing of good ideas and good work practices among functions, recognition of outstanding suggestions and suggestions that add values to our company and learning from others.

In GMP's opening address, he highlighted the journey of PEPS through the year and the various programs for the continuation and sustainability of our scheme. He also cited



Q&A session chaired by (from left) PEPS Steering Committee Secretary, Chairman and PEPS Award Council Chairman.

several issues related to the MRT system, such as the frequent train breakdowns, the tunnel flooding and the recent train collision. And that these incidents are lessons we can learn to enhance our company's integrity and reliability programs. He further stressed that the references can be used for ideas and suggestions for PEPS submissions.

Also on the agenda was the 'Ten Years Journey of PEPS Suggestion Management System' that was launched on 3 Jul 2007.

The system has many merits, such as: all suggestions in the powerful database can be tracked, accessible for reference and evaluation by relevant parties. Our scheme has indeed generated millions of dollar cost benefits for the company.

The main highlight of the dialogue session was the small group sharing, where 14 topics were presented by work groups from various functions. Examples of topics shared were flashing and warning lights installed at Complex's vehicle gantries for better visibility, revamping of PCS corporate website and a unique numerical identifier assigned by Chemical Abstracts Service (CAS) for chemicals in QC lab.

The dialogue session was certainly a good platform for sharing of ideas and learning from others.

PEPS - OUR SUGGESTION SCHEME

Ideas can come
At any time
At moment of perspiration
Comes the inspiration

Instant in the morning
When your mind just woke
At the break of dawn
When the first light broke

Moment at work
When you patrol to log
You encounter a line
That was badly blocked

Even at moment
When you're answering nature's call
Or at any other moment
When you are walking tall

The value of an idea
Lies in the using of it
Make it simple and make it clear
From it the bulb will brightly lit

PEPS is our scheme
We learn from each other
By sharing our ideas
We progress together

14 PRESENTERS FROM WORK GROUPS OF VARIOUS FUNCTIONS



CHEMEX 2017



Benjamin Tan
T&O



Sim Kai Sheng
T&O



Group Photo at the C2 Molecule, One of the Largest Volume Petrochemicals Produced.



PCS Management Team with Guest of Honour Mr Lim Hng Kiang (Center) and SCIC Chairperson Ms Suinaty Basirun (Right).



Kudos to the PCS Team that Makes this Event a Great Success!

The Chemical Industry Experience (ChemEx) 2017, was held on 21st October 2017 at Oasis @ Sakra, Jurong Island. This event was organised by the Singapore Chemical Industry Council (SCIC) to raise awareness of career opportunities in the Energy & Chemicals (E&C) industry among tertiary and ITE students and provided valuable opportunities for students to engage the industry and appreciate how classroom learnings can be put into practice.

The event was separated into two parts; students were given an introduction of their respective sponsored company, followed by the chance to tour the chemical plant. After the tour, the students got to visit different company booths at Oasis and enjoy the sumptuous lunch provided. PCS was very honoured to be one of the participating companies for this annual event.

This year, PCS hosted about 40 students from Ngee Ann Polytechnic. At the PCS reception area, breakfast was specially catered by HRA, taking care of the students' welfare as they slowly settled down. Subsequently, an introduction to PCS was given by HRA, followed by interesting presentations from two process engineers from T&O. This gave the students some insights on the job scope and challenges of being a process engineer in PCS, as well as what motivates them

to work in PCS. Before leaving for Oasis, the students were given a bus tour around the complex, where they got to see real life structure of things being taught in textbook, allowing them to appreciate the integration of sophisticated equipment and pipelines around the complex.

At Oasis, company booths were set up where students were able to interact more with representatives from the different companies. Mass games were also included to engage them and encourage them to know more about the chemical industry. Similar to last year, PCS also organised a lucky draw where two lucky winners who answered all the PCS quiz questions correctly got to walk away with an iPad each. This attracted majority of the crowd to the PCS booth, generating huge interest for students to get to know more about PCS and helped to create awareness for PCS' role in the industry.

The highlight of the event was the arrival of the special Guest of Honour, Mr Lim Hng Kiang, Minister for Trade and Industry (Trade), where he addressed the student crowd and officially launched the E&C Industry Transformation Map (ITM). Mr Lim recognised the E&C industry as a key pillar of Singapore's economy and that Singapore remains committed to positioning its E&C industry well for the future through the Industry Transformation Map, aiming to achieve a manufacturing value-added of S\$12.7 billion and create 1,400 new good jobs by 2025. To achieve that, innovation will be a key driver of the E&C ITM, be it in the transformation of existing manufacturing operations to drive productivity, or in the development of new chemical products and solutions for new growth markets.

This event provided the rare opportunity for students to set foot in the ever elusive Jurong Island, creating more awareness for the companies and most importantly, promoting the chemical industry. It was a fruitful experience for the PCS team to witness the success of ChemEx 2017 along with SCIC, participating institutions and companies in the industry. PCS looks forward to participate in this event again next year and play its important role in attracting students to the E&C industry.



Sharing of Personal Experience by the Process Engineers.



Students Waiting Patiently to Enjoy their Breakfast.

PCS 3RD GOLF TOURNAMENT 12 OCTOBER 2017



Charlie Chua
ENG



Jessica Tan
T&O



Golfers' cheers in the skyline.



GMP Opening speech.

The tournament was held at the Marina Bay Golf Course, which is located near to the city, provides a scenic panoramic view of the Central Business District buildings including the Marina Bay Sands .



MD tee-off.



GMP tee-off.

For the past weeks in early October, it had been raining daily.

On the 12th October's morning, we witnessed thundery showers from 6am to 9am and PCS was blessed with fine and cool weather to commence our Golf Tournament at 1pm.

Indeed the weather was merciful to us. It not only stopped the rain, but provided a cool environment around 25°C. All golfers played well with no perspiration and with high spirits.

We were also blessed in our previous 2 tournaments in year 2014 and 2015, from rainy and hazy weathers respectively.

This is the 3rd Golf tournament with 13 participants from Management, HRA, Engrg, OLE I, OLE II, and Maintenance. We were honored to have our MD Yonemura-san to grace the golf event. It was a memorable time to rekindle our camaraderie spirits to play and socialize together with senior management and various functions' members.

To avoid undue stress amongst golfers and to avoid a competitive game, we introduce a new "Honest John Game" where each golfer has to predict his own score before game and

to tally with his final score at the end of the game. Golfer with closest scores (predicted and final) wins.

Tournament game commenced at 1.24pm and ended at 6pm. Results of 3rd Golf Tournament "Honest John Game" winners as follows:



1ST Chan Chee Wing

2ND Daniel Puah

3RD Ng Mong Hen

All golfers were awarded with participation prizes and enjoyed this fun game. A good opportunity to eat, drink and socialize with fellow colleagues.

Feedback from golfers that this is the first time that the weather was not only kind to us but also provided us an air-conditioned environment to play comfortably.



Golfers night cheers.



Prize Award Session.



MD closing speech .



Baking class

The first baking class organized by SSRCC was held on 26 August 2017 at Creative Culinaire, and we were in for a treat! 20 colleagues had gathered into teams to learn how to make Choux puffs of a variety of colours and flavours. We were impressed by how the instructor made every step seemed so simple; and I finally witnessed how the hollow centre in choux pastry was created by rising steam. There was a good mix of both new and experienced bakers in the class, and it was a nice surprise that some of the regular bakers are actually our male colleagues! Overall, we thoroughly enjoyed the bonding experience, and not forgetting the taste experience too!



Rockclimbing

On 16 Sep 2017, we were back to rockclimbing in Climb Central at Kallang Wave Mall. Participants were led through 3 stations together with our friendly trainers, namely the auto-belay platform (8m), the BelaySafe walls (12m), and finally the bouldering wall. The bouldering wall was a new station included this year and an interesting experience involving strategic climbing. Although it was the first time for many, it did not stop us from overcoming the fears/soreness and attempting to reach the top. Albeit challenging for some, but for the muscle guys (and some muscle ladies), it was a fast climb up! Overall, it was a fun work-out!



GMP CHALLENGE TROPHY FUTSAL TOURNAMENT 2017



Group shot to celebrate the spirit of camaraderie among functions.

It was an energetic day at Ubersports Recreation Centre for the 2017 GMP Challenge Cup, which was held on 18th November 2017. A great day of amazing competition with 8 teams pitting their skills against each other to be crowned the league's Champion.

This year TNO increased their power gear and sent in two teams, namely TNO-1 & TNO-2. Fire Fun (team from Fire & Security) did their part as usual, bringing about much fun and cheering. A pleasant surprise this year from Olefin-II,



Sargunan Gunaseelan
Ole I

who formed three teams, namely Elites, Masters, Legend, to participate in this annual tournament.

Olefin-I fought till the very last game, but despite stiff challenge from them, it was the 'Elites' Team (from

Olefin-II) who ultimately emerged as the Champion, securing the GMP Challenge Trophy yet again. Team Olefin 1.1 (Olefin-I) and Team Masters (Olefin-II) came in 2nd and 3rd place respectively. Congratulations to all the winners!

The game of Futsal creates an environment that allows players to develop various skills & proficiencies that are transferrable to the more extensive 11-a side game. One of the core attributes teaches young players the importance of ball retention due to the threat of an immediate counter-attack.

The game is inexpensive, safe, simple and fun to play. I am glad that PCS encourages sports activities such as Futsal which is a



Champions: Team "Elites" from Olefin-II.



1st Runner up: Team "Olefin - 1.1" from Olefin-I.



2nd Runner up: Team "Masters" from Olefin-II.

friendly competition for the employees, and promotes the spirit of teamwork among staff.

See you again in the coming year, Futsal!

Wine Appreciation 2017



Jessica Tan
T&O

Cabernet Sauvignon. Conversations through the night with those more familiar with their wines, allowed us an insight to tannins and acidity of red wines. We were told that swirling red wines in the glass before we drink will allow it to "breathe", which can help soften flavors and release aromas.

The first of the reds was the Chianti Classico Reserva, paired with thin crust meaty pizza. Next up, was Angus the bull - Cabernet Sauvignon, which was a good accompaniment to the three cuts of steak; Tenderloin, Sirloin and Ribeye, in which the Tenderloin, had just a right amount of marbling, and was juicy and tender. The wine's tannins supposedly bind with the protein and fat in the steak, which should make the wine taste softer and smoother.

For dessert, we had brownie with ice-cream and Moscato. The Italian wine was semi-sweet and lightly sparkling, which was a refreshing way to end the night.

Although we did not manage to have a private room this year, it was a very interactive night of cheering and bantering. There were many new faces amongst old ones, to celebrate a good year together, and to embrace a new one that is to come. Many had flushed faces, myself included, but we were glad everyone made it home safely, and had a good time.



Wine appreciation this year was held at Wine Connection Bistro at VivoCity on 8 Dec 2017. Wine Connection has been developing expertise in wine and has had a strong presence in South-East Asia for almost 20 years!

The menu this year included five types of wines and respective food pairing. We started our first pairing with Cotes de Provence Rosé and an assorted Cheese Platter. The Rosé from France is a pale hint of pink, leading most to think it is a blend of red and white wine. The intensity of the pink tinge however lies in the duration of red grape skins that

initial impression of "smelly socks" had to first be overcome.

The second wine of the night was the Riesling from Mosel, Germany, and was paired with Spanish style Gambas. It was sweet, and a [female] crowd pleaser, but was said to be "dangerous" to drink because before you know it, you would have unknowingly drank the entire bottle!

Mid-way was the introduction of the red wines, including the "star of the night": the

sit with the wine. The savoury cheeses went well with the dry Rosé, although to some, the

Reflection OF MY INTERNSHIP IN PCS



George Kua
3rd Year Undergraduate
National University of Singapore
Chemical & Biomolecular Engineering



Being an undergraduate in chemical engineering, I have always been looking forward to working in the petrochemical industry. I was delighted to receive my internship acceptance to PCS as it is an eye opener to work in one of the pioneers of the petrochemical industry in Singapore.

Before embarking on my internship, I attended the Apply Workplace Safety and Health in Process Plant (AWSHPP) course and the Safety Induction Training (SIT) to gain awareness of the potential safety hazards and existing safety practices. As part of my orientation into the company, I felt a strong emphasis on safety and soon understood its importance.

I was assigned to Technology & Optimization (T&O) and was tasked on a project to identify possible sources of water in Product Fuel

Oil (PFO) and its countermeasures. The first step of familiarizing with the process and the engineering flow diagram of the plant was a steep learning curve for me as I was not familiar with the many piping details and designations. Fortunately, after repeated review and with the helpful guidance of my mentor, I managed to understand how PFO was produced. I was also glad to be exposed to the PCOS system which allowed me to look at the trends of plant operating conditions. Coupled with the tank water draining trends, it allowed me to establish a general trend in

the operating conditions of the fuel oil towers and the high water content observed, albeit with some complications and anomalies.

I then studied various separation methods and their effectiveness to remove water in PFO. I very much appreciated the opportunity to design and conduct my own mini experiment using a lab-scale centrifuge to assess its effectiveness and to determine the saturation level of water in PFO. The members of the QC team were very helpful as they guided me through the procedures and clarified my queries.

The compiled report was presented to PCS Management with the presence of General Manager of Plant (GMP), Er. Lucas Ng, towards the end of my internship. The comments given by GMP and Managers were very encouraging and it allowed me to have a better understanding of the project.

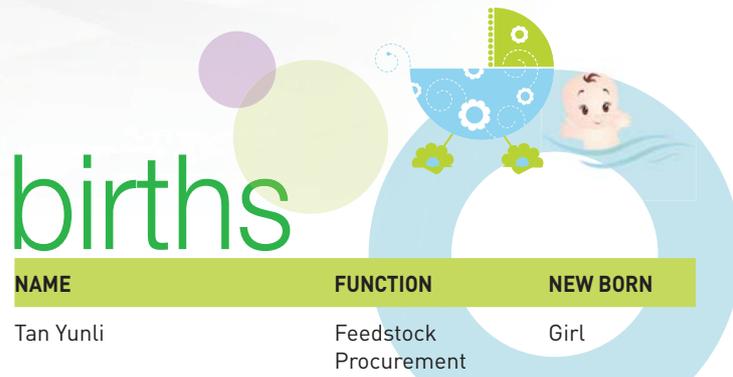
Besides the technical leaning opportunity, this internship had allowed me to gain insights regarding real working experience, where I could better understand challenges faced by Process Engineers. All in all, this internship was a fruitful experience. I would like to express my sincere gratitude to PCS's Management, my mentor and the other colleagues for their care and guidance. Thank you!

EMPLOYEE NEWS



marriage

NAME	FUNCTION	SPOUSE
Chee Guo Liang	Olefin II	Le Thi Thuy Van
Liwaunnasri bin Jumani	Fire & Security	Noor 'Ain bte Noorul Islam
Peh Hui Juan	Feedstock Procurement	Zou Li



births

NAME	FUNCTION	NEW BORN
Tan Yunli	Feedstock Procurement	Girl
Sarimah bte Sulaiman	Purchasing	Boy