ISSUE 72 April 2022

ALMOHANDIS

Published By The Bahrain Society Of Engineers

A Special issue on the Golden Jubilee

تميّز وعطاء

Under the patronage of His Majesty the King the Bahrain Society of Engineers celebrates its Golden Jubilee

Announcement of winners of:

- BSE Distinguished Engineer Award
- Best Graduation Project Award
- Engineers' Memorial Competition Award

bsemohandis

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Around 700 participants attended the General Engineering Conference organized under the title of: "Towards a sustainable engineering environment and a promising engineering future"

تميّز وعطاء

Issue 72 April 2022

ALMOHANDIS

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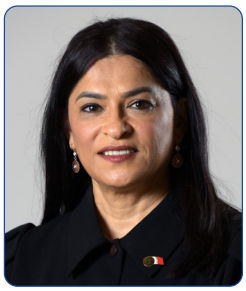

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Editor-in-chief Message

Eng. Hamad Bado

Dear Readers,

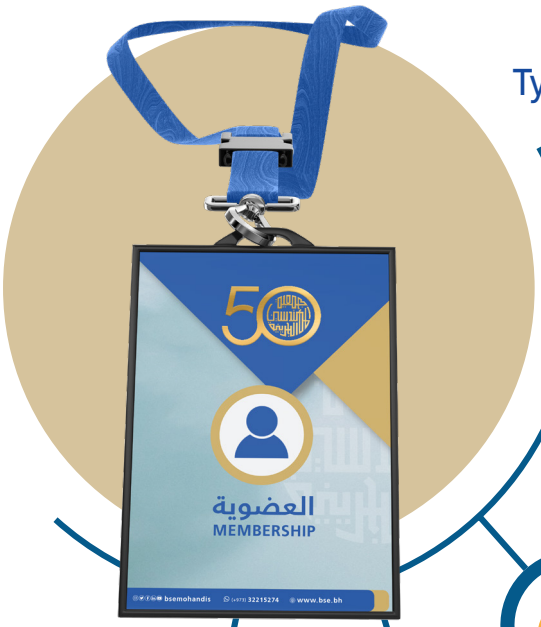
I am glad to congratulate you all for the success that was registered during the BSE Golden Jubilee's ceremony, which was held under the auspicious of His Majesty King Hamad bin Isa Al Khalifa, King of the Kingdom of Bahrain at the Bahrain International Convention and Exhibition Center. I would like also to congratulate you for the success achieved by the engineering conference "Towards a Sustainable Engineering Environment and Promising Engineering Prospects" that was held on 16-17 March 2022.

The ceremony was organized in the presence of the His Excellency Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, who attended on behalf of HRM to patronize the event, and a number of honorary guests from the Arabian Gulf countries. During the Golden Jubilee ceremony, some of the BSE's achievements and contributions throughout the last 50 years on both local and Arab levels were highlighted. The ceremony also witnessed the opening of the accompanying exhibition which contained the history of engineering and architecture in the Kingdom of Bahrain and its development since the 20th century until today. Also, a historical tape highlighting the major events witnessed by the BSE since its inception in 1972 was displayed. Previous issues of Al Mohandis magazine until issue No. 71 were exhibited in addition to a number of paintings that were presented to the government authorities that are concerned with the engineering sector.

The General Conference of Engineers that was organized in parallel with the Golden Jubilee ceremony concluded with remarkable outputs to raise the standard of the engineering sector. The main topic targeted the human resources which are the fundamental pivot for proceeding forward. The conference concentrated on the engineer's learning, training and preparation and providing him with the expertise and knowledge that are required in today's environment, in line with the tremendous technological development worldwide.

Finally, all thanks go to the first founders of this edifice, who exerted all efforts to promote the engineering sector in Bahrain and introduced international expertise to exchange knowledge with them. Due to their efforts we maintain now a rich heritage and Arab appreciations for the achievements that have been registered by the BSE since its inception. I call upon all the young engineers to maintain this heritage and to be ready to carry the flag and continue recording achievements and promote the engineering sector since the current stage witnesses substantial challenges and difficulties mainly protecting the environment and creation of sustainable solutions so our Society could win world recognition and the name of the Kingdom of Bahrain will be on the frontier in various fields including engineering.

Have a good day



أنواع العضوية
Types of Memberships

- زميل — Fellow
- عامل — Active Member
- خريج — Graduate
- طالب — Student
- مؤازر — Affiliate

50 جمعية المهندسين البحرينية
تميّز وعطاء

المستندات المطلوبة
Required Documents

1. نسخة من شهادة البكالوريوس
   Copy of Degree Certificate
2. نسخة من كشف الدرجات
   Copy of Transcript
3. شهادات الخبرة
   Experience Certificates
4. صورة فوتوغرافية واحدة بمقاس 4 × 6 سم بخلفية بيضاء
   One Photograph size 4 x 6 cm with white background
5. نسخة من البطاقة الذكية
   Copy of ID / CPR
6. نسخة من جواز السفر
   Copy of Passport
7. شهادة التسجيل في الجامعة (للطلبة فقط)
   University Registration (Students only)

المستندات الإضافية (إن وجدت)
Additional Documents (If any)

1. نسخة من عضوية مجلس تنظيم مزاولة المهن الهندسية
   Copy of CRPEP Membership
2. نسخة من شهادة عضوية المعاهد
   Copy of Professional Institution Membership
3. خطاب تأكيد الوظيفة (لغير البحرينيين)
   Employer Acknowledgement Letter (fon Non-Bahrainis)

استمارة طلب الحصول على عضوية
Application for Membership

امسح الكود
Scan Me

ترسل الاستمارة على البريد الإلكتروني التالي:
Please Send your application by email to:
sajeda.alaali@bse.bh

Under a royal patronage and in the presence of the Vice Deputy Minister

Golden Jubilee Celebrations

* Honoring the founders of the BSE, being a remarkable professional edifice

* Honoring all engineers and the voluntary professional activity and all people involved in the engineering sector

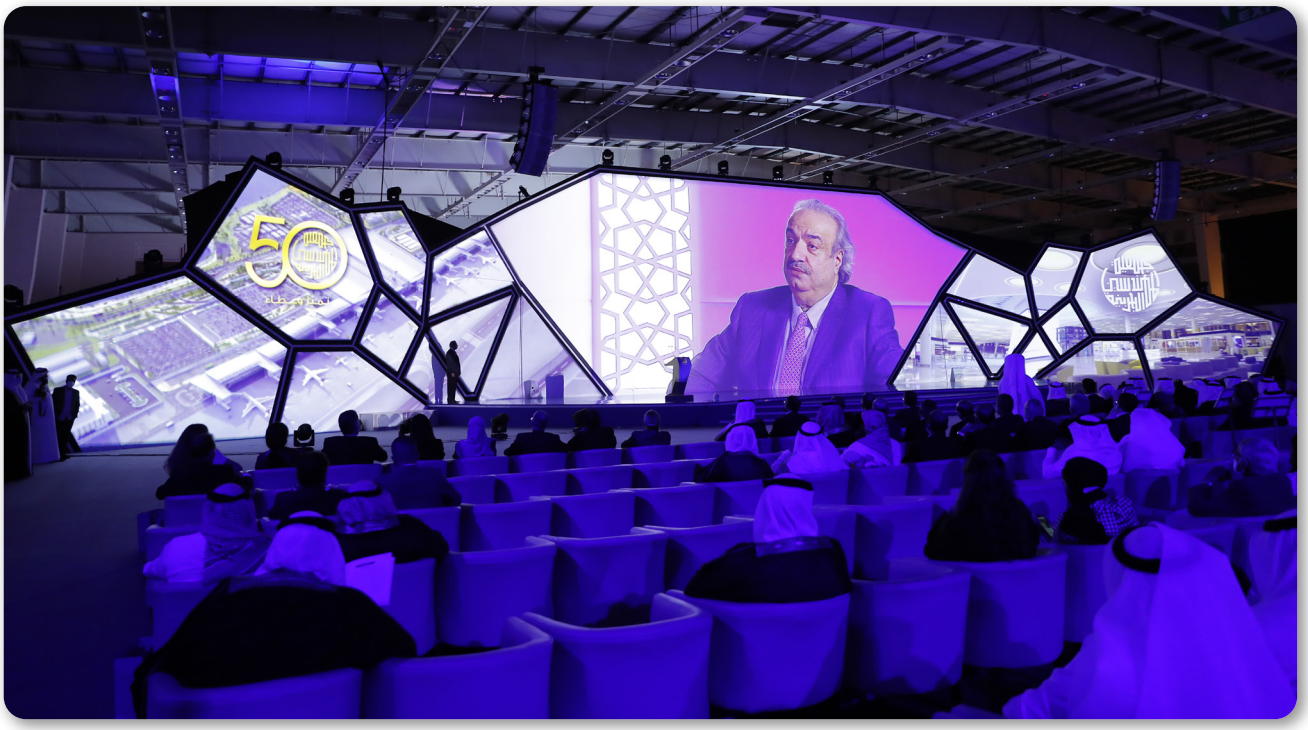
By: Husain Ismail

The Bahrain Society of Engineers organized a large ceremony to celebrate its Golden Jubilee to commemorate its 50 years anniversary on Tuesday 15th March 2022 at the Bahrain International Convention and Exhibition Center under the theme "50 Years of Excellence and Achievements". The event was organized under the auspicious of His Royal Majesty King Hamad bin Isa Al Khalifa, King of the Kingdom of Bahrain who deputized Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, to patronize the event on his behalf.

Following the royal anthem and recitation of verses from the Holy Quran, His Excellency Engineer Abdulla bin Mohamed Juma delivered the founders' speech followed by the message of the BSE's President, Dr. Dheya Tawfiqi. During the ceremony a number of persons and institutions that continued supporting the BSE throughout its long journey over a half century. The winners of the BSE Award and Engineers Monument Award were also announced.

The Golden Jubilee celebrations also witnessed a number of accompanying and related events. The main ceremony included a number of programs such as the documentary film that covered the history and achievements of the BSE since its inception in 1972 and launching the documentary book "50 Years of Excellence and Achievements". Furthermore, the "Bright Decades" exhibition was opened covering the history of engineering in the Kingdom of Bahrain over the last fifty years and displaying its publications throughout such period. A large mural was also launched highlighting the major events that embody the progress of engineering sector on the island. The sponsoring companies also displayed historical and modern engineering equipment that had served the engineering sector in Bahrain. The event received an overwhelming response and a large number of guests and public attended the events.

His Excellency Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister who deputized HM the King in patronizing the Golden Jubilee Ceremony of the BSE and a large number of invitees including official, dignitaries and chairmen of engineering organizations in the GCC countries and a large number of engineers who attended the BSE's Golden Jubilee ceremony that was held at the Bahrain International Convention and Exhibition Center on 15th March 2022.



During the Golden Jubilee Ceremony a documentary film was displayed covering the history of the BSE over 50 years and the former presidents of the BSE spoke about such development, the story of incorporation and the role it has undertaken in the comprehensive development process in the Kingdom of Bahrain.

His Excellency Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister who deputized HM the King in patronizing the Golden Jubilee Ceremony with a number of former BSE presidents who have been honored and some supporters of the Society.

The General Engineering Conference was also organized during the period 16-17 March 2022 where a number of speakers from the Kingdom of Bahrain and from a number of countries took part. More than 800 engineers and interested parties from the engineering and industrial sectors attended.

The BSE would like to take this unique opportunity to release this special issue of "Almohanis" Magazine to document all the Golden Jubilee's events so this issue would remain a unique document of this major event in this history of the BSE.

The Bahrain Society of Engineers also take this opportunity to express its thanks and gratitude to His Royal Majesty King Hamad bin Isa Al Khalifa, King of the Kingdom of Bahrain for his royal patronage of the BSE's Golden Jubilee celebrations and His Majesty's continuous support to the engineering sector in Bahrain.

Undoubtedly, this major ceremony or this beautiful engineering festival is a sort of recognition of the efforts of the BSE founders, being a remarkable edifice in the Kingdom and the region. It is also a recognition of the efforts of all engineers affiliated to the BSE, which is an incubator for each Bahraini engineer. It is also a recognition of all those who have left their fingerprints with the fingerprints of their living colleagues in all the projects that have been executed and in this voluntary work that aims at the standard of Bahraini engineers and the engineering profession in general.

Organizing this major ceremony and the different events and initiatives, which will extend throughout the year 2022, is also a recognition to all the engineers in the country and the professional voluntary activities in Bahrain and all the individuals involved.

It is worth noting that the Bahrain Society of Engineers is the first professional society established in the country and one of the civic society's association that contributed in promoting the name of the Kingdom of Bahrain in all forums. It has organized more than 130 engineering conferences in addition to a large number of international participations in which the BSE had active contributions. It also contributed in the

His Excellency Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister (one of the BSE founders) who deputized HM in patronizing the Golden Jubilee while receiving a souvenir from the BSE President Dr. Dheya Tawfiqi.

Honoring Dr. Abdillatif Jassim Kanoo, founder and first president of the BSE during the period 1972-1973 and 1976-1977.

progress of engineering disciplines and actively participated in executing the development and urbanization plans.

On this occasion the BSE would like to emphasis that it is heading forward to attain its mission in supporting Bahraini engineers and overcoming all the obstacles that they may encounter.

In summary, the thing that added more glare to the beauty of the BSE's Golden Jubilee is the royal patronage that we consider the most prestigious recognition to the engineers and the engineering sector in the Kingdom of Bahrain. That is why the celebration emerged as planned, clearly recognizing the efforts of the founders of the Society, being a remarkable professional edifice in the island and a recognition to all the engineers and their professional voluntary activities and to all those working in the solid engineering sector in Bahrain.

The President of the BSE and the members of the Board of Directors would like to express their thanks and appreciation to all the committees of the BSE that were formed by the High Golden Jubilee Committee, who exerted all efforts to execute the programs and events so the ceremony would be seen ultimately in a splendid manner that reflects the pioneering role of the Society in the Kingdom of Bahrain and the region in line with its active role and its distinguished contributions in all local, regional and international spheres.

Message of the Founders in the Official Opening Golden Jubilee's Events of the Bahrain Society of Engineers

In the Name of Allah The Most Gracious The Most Merciful

Alsalaam ealaykum warahmat Allah wabarakatuh

Your Excellency Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, the acting patron of our ceremony

Your Highnesses and Excellencies,,,

Our Distinguished Guests,,,

Ladies and Gentlemen

Good Evening,,

It is my pleasure to welcome you all in this official opening ceremony of the Bahrain Society of Engineers, marking fifty years anniversary, having been established in 1972. In my capacity as one of those who participated in establishing this Society, I am pleased to express my deepest honor and sincere pride for laying down the first constituent blocks in the road of the fifty years and its growth just from merely initial ideas to aspiring dreams until the Society occupied its existing presence.

We are more proud and thrilled to celebrate this important event under the auspicious of His Majesty King Hamad bin Isa Al Khalifa, King of the Kingdom of Bahrain.

On this remarkable historical occasion, I would like to mention some reminiscences of the Society's incorporation, the best

His Excellency Engineer Abdulla bin Mohammed Juma delivered the founders' speech

of which, I want to cite is the part of that was stated in the first annual report of the Society: "Twenty Bahrain engineers held a meeting at 8.00 pm on the evening of Wednesday, 1st of March, 1972, in the Alumni Club for studying and ratifying the articles of association proposed for submission to the Ministry of Labor and Social Affairs to establish a society for engineers residing in Bahrain. The articles of association was set by a temporary quadripartite committee, and after it was studied, a quinquepartite committee

was entrusted to follow up the subject matter with the Ministry of Labor and Social Affairs until it was publicized and published in the official gazette, in its issue dated 1st of July, 1972. Later another meeting of the general assembly was held where it elected the first board of directors in the Alumni Club on 21 July 1972 presided by Dr. Abdullatif Jassim Kanoo". Accordingly, the first professional society in Bahrain was launched.

The Society commenced its activities rapidly and became active on all levels, locally or in the GCC countries through the Gulf Engineering Union or in the Arab countries. Engineer Abdul Rahman Fakhro presided the Federation of Arab Engineers in 1974, and at a later stage, at the world level through the World Federation of Engineering Organizations represented by the Society's member the late Engineer Hesham Abdul Malik Al Shehabi.

On the other hand, when we established the Society, the number of Bahrain engineers was modest but it was doubled in number every month till the number of engineers registered in the Society became more than three thousand engineers from different disciplines.

Your Highnesses and Excellencies,,,

Our Distinguished Guests,,,

Ladies and Gentlemen

Talking about this professional society touches our feelings and takes us back to the warm and dear reminiscences where we were energetic, young and enthusiastic to work actively, besides the doors were opened to the engineers in the ministries and industrial establishments. As a result, our members had active participation in the rapid urban and industrial growth rapidly. The pioneers of such development were the young engineers from the Society who had several opportunities to lead the engineering and industrial path in the Kingdom and who were encouraged and welcomed by our wise leadership. They were sponsored to study overseas to obtain higher academic degrees, and specialize in the engineering fields that are required by the Kingdom. Consequently, those engineers occupied senior positions, some of them became ministers, under-secretaries, assistants and directors.

Ladies and Gentlemen,,,,,

Message of President of the Bahrain Society of Engineers in the Golden Jubilee's Official Celebration

In The Name Of Allah The Most Gracious The Most Merciful

Alsalaam alaykum warahmat Allah wabarakatuh

Your Excellency Shakh Engineer Khalid Bin Abdulla Al Khalifa, Deputy Prime Minister, Ceremony's Deputy Patron

Your Highnesses and Excellencies,,,

Our Distinguished Guests,,,

Dear Members of BSE

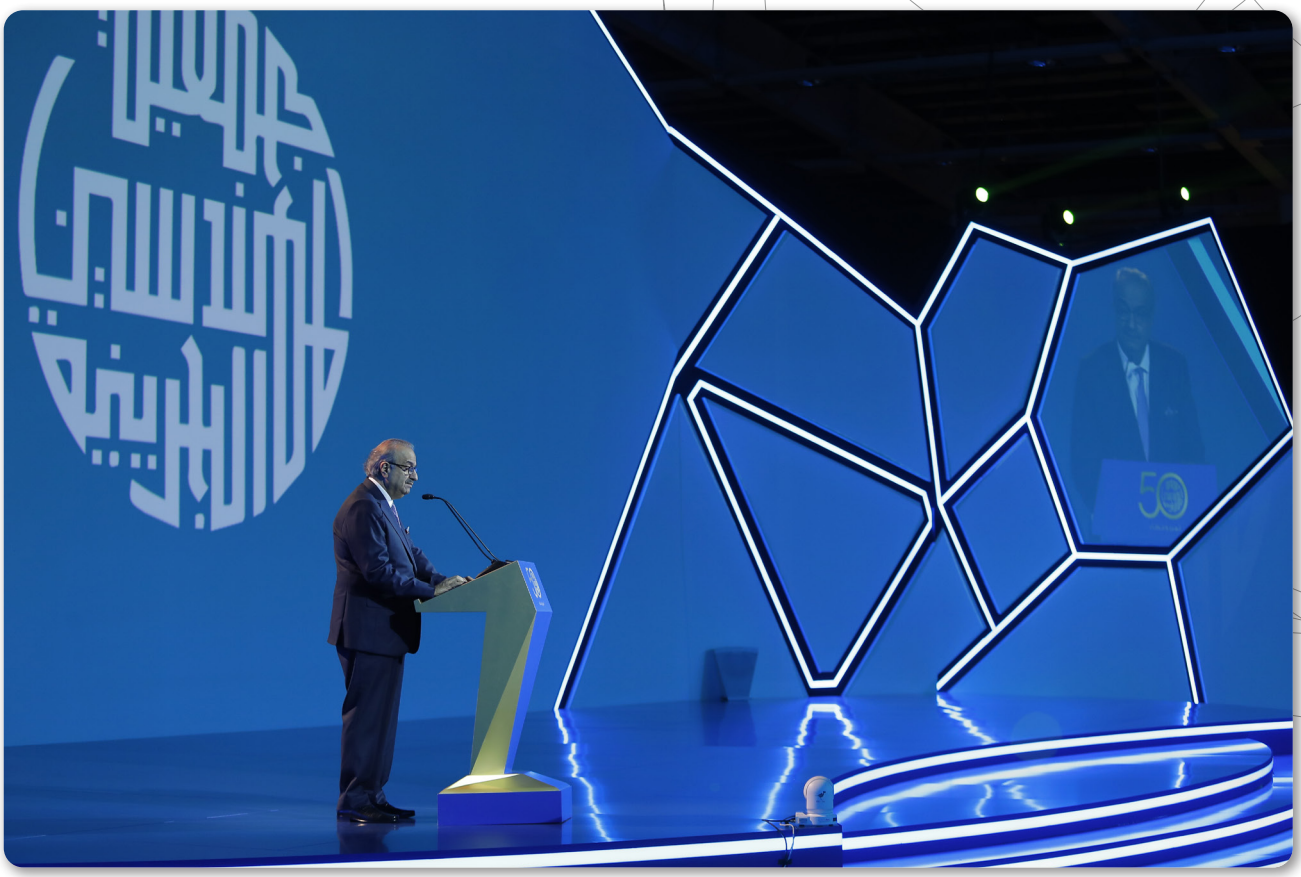
I have great honor to stand in front of you and present this word on behalf of the Bahrain Society of Engineers, its Founders, Presidents and Members.

At the outset, I would like to extend my deepest and sincere appreciation to His Majesty King Hamad bin Isa Al-Khalifa – King of the Kingdom of Bahrain for holding the golden jubilee celebrations under his auspices. We are now celebrating the Society's history of half a century, a period full of contribution, distinction and sacrifices in the filed of voluntary professional work participated by a number of generations in the course of the economic and developmental growth of the Kingdom of Bahrain, so all thanks to Your Majesty for this noble auspices and for your support to us.

Please permit me to express my greatest thanks and gratitude to my colleges of engineers and gratulate them on the occasion of the golden jubilee of their society, where they are founders, members of boards of directors or participants in the activities of committees. To all of them I convey my love and gratuity for their efforts in building this engineering edifice.

Dr. Dheya Tawfiqi, President of the Bahrain Society of Engineers delivered the BSE's' speech

We have passed through several stages of the voluntary professional work and confronted many obstacles and difficulties, however, we were able to overcome them, thanks to the members for their cooperation and to the channels of communication with the authorities and the governmental persons who comprehended our role, where all of them presented all aspects of cooperation with generosity. We have worked in different conditions from the beginning of incorporation in a temporary headquarter, then in the (RAF) headquarter, till we moved to the



new headquarter in 1992 that was opened under the auspices of the late Amir Shaikh Isa bin Salman Al Khalifa (May Allah rest his soul in peace). We celebrated our silver jubilee in 1997 under the auspices of the late Amir as well. We also celebrated the 40 years of incorporation under the Honorable auspices of His Majesty King Hamad bin Essa Al-Khalifa – King of The Kingdom of Bahrain.

Our members occupied different positions in the regional, Arab and international engineering organization like Gulf Engineering Union, Federation of Arab Engineers and the World Federation of Engineering Organizations. All this gave our Society a great momentum in its capacity as a leading and distinctive professional organization. We have organized a large number of international conferences, as a result of which the Society gained a world-spread reputation, and also organized many workshops and training courses through the training center that had a separate commercial registration. We also provided scholarships to university students and proposed employment and training courses to the fresh graduates of engineers. We also organized other different courses such as the Society Award, forums, exhibitions, “Almonhanis” Magazine and a monthly online bulletin "AlMohandis Times", and we had positive contributions and participations in different government councils and committees. Furthermore, the

«We have passed through several stages of the voluntary professional work and confronted many obstacles and difficulties, however, we were able to overcome them».

Bahrain Society of Engineer proposed the draft law of Regulating the Practice of Engineering Professions, that was adopted by the Government and came into effect in 1982. The BSE also took part actively in the revision and updating this law in subsequent years.

It is worth noting that the Society had, by a call from different ministries and government authorities, the honor to participate in several significant activities such as the High Committee for Preparing the National Action Charter and National Dialogue and others, besides its representation in several specialized official councils and committees such as the Council for Regulating the Practice of Engineering Professions, and qualification assessment committee. Nevertheless, and despite all such participations, we believe that the Society needs more representation in major authorities and committees that are directly related to the engineering affairs for maximizing our participations through the expertise of the Society's members.

On this occasion, let me discuss the forward-looking vision, particularly, what is related to the activities of this deep-rooted Society after half a century and raise the following questions: Does the Society needs to continue its work by using the same method and bylaws or we must review the models of work of other engineering authorities in very advanced countries and select the best model that suits us and apply it in the Kingdom of Bahrain, while maintaining our privacy so that we will be able to drive the caravan to the future and to the next generation with stable paces. Working by an advanced and new model is a top priority for creating a suitable engineering environment and realizing the goals of economic plan 2030.

Through this view, organizing the general conference of engineers is the first activity of the Society under the theme "Towards Sustainable Engineering Environment and Promising Engineering Future" in which the engineers from different disciplines will meet to discuss their profession and make use of local and international experiences in order to submit their recommendations and opinions to the higher government authorities with regard to the requirements of development of engineering work.

On behalf of the Society's Board of Directors, it is my pleasure to announce some new initiatives of the Society in this ceremony:

First: In recognition of the role played by engineers, a monument for engineers will be built, and the names of the winning design will be announced during this ceremony.

Second: Releasing the "Golden Jubilee Version" of the Society Award which will be in a new form having different categories and awards.

Third: Announcing additional scholarships to university students as well as private universities students.

Fourth: Sign a memorandum of understanding with the Council for Regulating the Practice of Engineering Professions, to execute a number of major programs, that are: qualifying the engineers for some specialties like experts, arbitrators and quantity surveyors and qualifying courses for obtaining professional membership in some engineering specialties from the international institutes and cooperating in proposing engineering-related researches and studies and sign a memorandum of understanding with the Capital Municipality to render the Society services for sake of community partnership. Furthermore, a memorandum of understanding was signed with the Civil Engineers Institute of Britain to obtain a professional qualification where the BSE will arrange to offer a number of complementary scholarships for the members to enable them to obtain a professional international certification.

Fifth: Announcing the "Youth Engineers Forum" under the umbrella of the Society in order to support the youth and offer them the opportunity to create a distinct generation having the capability to confront the challenges of the next stage.

Sixth: Grant an annual award to outstanding students in engineering disciplines in their last year from different government and private universities.

Seventh: Starting the application of quality program for obtaining international certification relating to the development and promotion of work efficiency.

Your Excellencies,,,,,, Our Distinguished Guests,,,,, Dear Members of the Society,,,,,

Before I conclude, it is necessary to thank the leader of development process His Majesty King Hamad bin Isa Al-Khalifa – King of the Kingdom of Bahrain for his unlimited support to the Society which have had good and encouraging impact on continuation of the Society's work. Moreover, we thank His Royal Highness Prince Salman bin Hamad Al Khalifa, Crown Prince, Deputy Supreme Commander and the Prime Minister, for his understanding and support to the Society.

I would like also to express my gratitude to His Excellency Engineer Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister and one of the founders of the Society for inaugurating this ceremony and for his limitless and continuous support to the Society.

In addition, I extend my thanks to all ministries, government authorities and companies inside and outside the Kingdom of Bahrain for their support to the Society, whom without their cooperation and support to us, we would not have been able to realize all these achievements and successes. I also extend my deepest appreciation and thanks to all companies who patronized this ceremony.

Further, I express my sincere love and respect to every member in the Society, especially those who exerted considerable endeavors in serving this Society and who are the cornerstone in everything the Society has achieved, so a thousand greetings, appreciation and praise to them for taking part and attending this ceremony.

Finally, I extend my deepest appreciation and sincere thanks to all members and employees who have arranged this historic ceremony over more than one year.

Thank you for your attendance.

Alsalaam alaykum warahmat Allah wabarakatuh

During Golden Jubilee Celebrations

Distribution of the BSE's third version Award

During its Golden Jubilee celebration that was held under the auspicious of His Majesty King Hamad bin Isa Al Khalifa, King of the Kingdom of Bahrain who deputized Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, to patronize the event on his behalf, the BSE announced the winners of its third engineering' version awards for outstanding engineer category and the best graduation project for each of the following disciplines: architecture, civil, mechanical, electrical, electronic and chemical engineering. The winner of the outstanding engineer was Engineer Ebrahim Burshaid.

The winning projects:

During its Golden Jubilee celebration that was held at the at the Bahrain International Convention and Exhibition Center on Tuesday 15th March 2022, the winners of the BSE awards under the best graduation project received the awards from the ceremony's deputy patron Shaikh Abdulla Al Khalifa, Deputy Prime Minister, and in the presence of a large number Kingdom's officials, dignitaries and presidents of the GCC engineering societies and a large number of engineers.

The awards were distributed during the Golden Jubilee Ceremony that was held at the at the Bahrain International Convention and Exhibition Center on March 15th 2022 and attended by a large number of officials, dignitaries and and presidents of the GCC engineering societies and a large number of engineers.

Dr. Dheya A.Aziz Tawfiqi believes that the distribution of the BSE Award during the Golden Jubilee celebrations, held under the auspicious of HM the King and in the presence of the deputy patron is a great honour for all the engineers including the winners of the Award. This is due to the fact that this event was exceptional and symbolic in the BSE's 50 years history and the serios and exhaustive efforts exerted by the founders and the consecutive boards of directors in addition to the dedications of the members throughout that period.

Dr. Tawfiqi congratulated all the winners and wished them further success in their professional lives. He also expressed his thanks to all those who made the BSE's Award initiative successful particularly the award supervising committee and the two judging committees, emphasizing the role of the BSE to continue launching professional

HE Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, honring the BSE Award winners of its third version for outstanding engineer category Engineer Ebrahim Burshaid.

programs and initiatives for the benefit of the engineering sector in general and the Bahraini engineer in particular. He wished continued success to the winners and confirmed that the BSE is continuing to develop this specialized professional award, seeking to increase the award's categories, motivate engineers and to attract a larger number to take part in the award.

Engineer Emad A.Rahman Al Moayyed, chairman of the award supervising committee, congratulated the BSE's Award winners of all categories. He expressed his pleasure of announcing the names of winners during the Golden Jubilee ceremony, being a dear event for all the engineers in the island. He was also pleased for the success of the award, in its third version and congratulated all the winners and hoped to see more participations by members in the next versions of the award.

It is worth noting that the BSE had launched its engineering award for the first time in the Society's engineer day celebrations that took place on 15th October 2018 to motivate engineers to excel and be more creative in the engineering sector and to mobilize the capabilities of Bahraini engineers to serve the Kingdom of Bahrain, raise the standard of engineering profession and to develop the levels of Bahraini engineers professionally, socially, culturally and academically. All these will lead to the progress of the engineering sector to contribute in the comprehensive

HE Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, honring the presenters of the winning project in Chemical Engineering, titled (STATICAL ANALYSIS OF THE TISSUE SOFTNESS PROCESS IN A YANKEE DRYER USING R-PROGRAMMING), presented by: Eng. Zahra Ali Al Basri, Eng. Batool Sayyid Husain Al Qssab, Eng. Fatima Al Oraibi, in the presence of Dr. Dheya A.Aziz Tawfiqi, the President of BSE, and Engineer Emad A.Rahman Al Moayyed, chairman of the award supervising committee.

urban development in our beloved country.

"Winning this award is a value added to the record of the winners. This award was designed to motivate Bahraini engineers to excel and be creative in the engineering field and to promote their levels professionally, socially, culturally and academically and to mobilize their capabilities to serve the Kingdom of Bahrain in the development process and also to promote the engineering profession and raise its academic and professional levels. Participation and competing on this award is a real gain for all the participants from amongst the engineering students from all disciplines while they are paving their ways in the engineering sector, which is rapidly progressing to serve the national development effectively. Engineer Emad A.Rahman Al Moayyed, chairman of the award supervising committee said.

HE Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, honring the presenters of the winning project in Architecture Engineering, titled (The Micro Disrtrict), presented by Eng. Fajer Fareed Al Meamari.

HE Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, honring the presenters of the winning project in Mechanical Engineering, titled (Design and Analysis of an Emergency Kinetic System for Marines), presented by: Eng. Mahmood Taher Ali, Eng. Mahmood Mahdi, Eng. Ahmed Ibrahim Ahmed, in the presence of Dr. Dheya A.Aziz Tawfiqi, the President of BSE, and Engineer Emad A.Rahman Al Moayyed, chairman of the award supervising committee.

HE Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, honring the presenters of the winning project in Civil Engineering, titled (Design of a Sustainable Stormwater System), presented by: Eng. Maasooma Abdulsahib Marhoon, Eng. Fatima Husain Al Faraj, Eng. Rawya Mohammad Fakhro, and Eng. Amina Mohammad Al Bastaki in the presence of Dr. Dheya A.Aziz Tawfiqi, the President of BSE, and Engineer Emad A.Rahman Al Moayyed, chairman of the award supervising committee.

Engineer Ebrahim Alburshaid Winner of Outstanding Engineering Award In its third version

Alburshaid is an example of outstanding Bahraini engineer, professionally, academically and socially

Engineer Ebrahim Alburshaid won the third-version engineering award. He was among a number of applicants who have been accepted and reviewed by the BSE Award Supervising Committee. The Award was launched on 15th October 2018.

This award aims at encouraging Bahraini engineers to become creative in the engineering field and to mobilize their capabilities to promote the name of our beloved country and shed light on the professional and scientific achievements. The award does not ignore the contributions and the social role that the engineers must play to create an integrated and interconnected community.

An example of distinguished Bahraini engine engineer:

Engineer Ebrahim Alburshaid is an example of distinguished and outstanding engineer in both engineering and social spheres and other fields. He has more than 15 years experience, during which he worked hard and efficiently that qualified him to gradually progress until he joined the Bahrain Space Team with the National Space Science Agency (NSSA) as senior data analyst.

Engineering and professional qualifications and certificates:

Engineer Alburshaid is a holder of Bachelor Degree in survey and geomatics and a master degree in engineering management from the University of Bahrain in 2021.

He also holds a number of professional certificates such as PMP, RMP which is accredited by PMI, Prince 2, green built certificate in Quality Management and Operations Improvement, recognized by ASQ in addition to Operations Development Management Certificated from George Washington in collaboration with BIPA. He has also expertise license from Waqf and Islamic Affairs as an approved expert before the law courts of Bahrain.

The expertise of Engineer Alburshaid, who is one of the leaders, founders and senior

analyst in the data laboratory and satellite images team in NSSA, is concentrated on the infrastructure projects, feasibility studies in the real estate investment fields, and earth and space surveying sciences in addition to data analysis sciences and artificial intelligence.

Fingerprints on a Number of Government Projects:

Engineer Albursha id has had a fingerprint on a number of government projects such as the 3D National Maps Project, aerial photography, Re-engineering of Operations throughout the Kingdom of Bahrain. This is in addition to some projects concerning employing the space applications to serve sustainable development such as automated inventory of agricultural land, oil exploration and environmental projects such as studying air quality by using fluid data and space sensors in addition to the sustainable energy projects through estimating the energy that could be generated from solar panels in the Kingdom of Bahrain.

Solid Scientific and Research Contributions:

Engineer Albursha id has various scientific contributions through publishing many solid researches, varying between the spatial forecasting of urban growth, economical feasibility studies, remote sensing and artificial intelligence. All these entitled him to receive recognition from the Institute of Electrical and Electronics Engineers (IEEE) for the field studies and researches in the field of engineering and sciences. This was also a recognition of the efforts of Bahraini youth who is able to convert the challenges to opportunities and achievements being the guaranteed bet and future harvest.

Well Deserved Recognition and Local and International Acclaims

Engineer Albursha id was the winner of the third-version Engineering Award. Tis was not the first recognition as he has previously received local and international acclaims including the recognition by His Royal Highness Prince Sulman bin Hamad Al Khalifa, Crown Prince and Prime Minister as part of the government innovation competition (“Firkra”).

Engineers Monument

*A coemption that triggered the creativity of engineers

*In recognition of the role of engineers in the development process

As part of the BSE's Golden Jubilee celebrations, the winning design of the engineers monument was announced and the winner was Engineer Ahmed Salauddin. His Excellency Shaikh Khalid Bin Abdulla Al Khalifa, Deputy Prime Minister, Ceremony's Deputy Patron, presented the award to the winner whose idea was the best design in a form of cube, among 17 engineering designs which were received and were in compliance with the competition criterion.

The concept of designing and building a monument for engineers was amount various initiatives that were launched to celebrate its Golden Jubilee. It was part of the BSE's desire to honor and recognize the engineers in Bahrain through designing and building and edifice that symbolizes the role of the engineers and their major contributions in the urban development that is witnessed by the Kingdom of Bahrain, particularly in the prosperous era of His Royal Majesty King Hamad bin Isa Al Khalifa.

The idea was materialized through the fruitful co-operation and co-ordination between the BSE and Ministry of Works, Municipalities Affairs and Urban Planning to ensure this initiatives will come to light. A work team was formed for this purpose between the BSE and Ministry to chose an appropriate location. The Ministry approved the proposed location for the monument north Manama, in the intersection of Shaikh Isa bin Sulman Al Khalifa Causeway leading to Muharraq with the extenstion of Al Fateh Highway towards Bahrain Bay. The BSE will consequently co-ordinate with the Ministry on the next steps for the detailed designs and to build the monument at the proposed location.

On the other hand, a judging committee was formed for the competition, consisting of seven members, 2 members from Ministry of Works, Municipalities Affairs and Urban Planning and 2 from Cultural and Antiquity Authority.

Almohandis magazine contacted the winner, Engineer Ahmed Salahuddin. Who praised the BSE and its pioneering role in the development of the engineering sector and the engineers in the Kingdom of Bahrain. He expressed his pleasure about his concept "Cube" that won in this competition from amongst all the concepts presented and that he is fully prepared to provide his services and engineering expertise in a manner that benefit of our homeland and citizens.

Regarding his concept (Cube) , he said that the idea emerged from the fact that the cube is a simplest 3D forms, and its angles are linked through three dimensions, and this reflects the role of engineering, significance and its interconnection with other disciplines that complement each other to attain an engineering achievement. He said that the people normally tend to consult engineers for they are able to add value to the engineering projects. He applauded the efforts exerted to execute this initiative and to build this engineering edifice that embodies the position of engineers in the community.

His Excellency Shaikh Khalid Bin Abdulla Al Khalifa, Deputy Prime Minister, Ceremony's Deputy Patron of the BSE's Golden Jubilee Ceremony, presenting Monument Award to Engineer Ahmed Salauddin in the presence of Dr. Dheya A.Aziz Tawfiqi, BSE President and Engineer Emad A.Rahman Al Moayyed, chairman of the award supervising committee.

Bright Decades" Exhibition, which accompanied the Golden Jubilee Ceremony

* Evocation of Engineering History in the Kingdom of Bahrain

* Large attendance by guests, participants and audience

The Golden Jubilee celebrations, His Excellency Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, deputy patron, inaugurated the "Bright Decades" exhibition in the presence of the guests.

The exhibition contains the publications released by the BSE throughout the last fifty years in addition to the historical documentation of major events since the inception of the BSE. It also documents the remarkable events linked to the urban development on the island. A number of the sponsoring companies took part with old and modern equipment. The exhibition is considered as an evocation of the engineering history in the Kingdom of Bahrain.

The 3-days exhibition received an overwhelming response and the guests of the main ceremony, participants in the general engineering conference and also the public who had the chance to visit in the evening, were impressed with the displays.

The "Bright Decades" exhibition was held during the period 15-17 March 2022 at the Bahrain at the Bahrain International Convention and Exhibition Center. The exhibition displays electronically and in documentary manner the history and achievement of BSE over the passed 50 years.

The exhibition also included a special suit containing al the publications of the BSE effective the issuance of the first issue until issue No. 71 of Almohandis Magazine in 1975 in addition to "Almohandis Times" since the release of the first issue in 2012 together with the remaining publications and books issued by the BSE. A large mural was also launched highlighting the history of the BSE throughout the passed 50 years, through its major events.

On the other hand, the sponsoring companies took part with old and modern equipment displaying their services and achievements with some samples of different equipment and tools related to engineering field that forms one of its strong pillars.

Click here or scan QR code for more photos

His Excellency Shaikh Khalid Bin Abdulla Al Khalifa, Deputy Prime Minister, Ceremony's Deputy Patron of the BSE's Golden Jubilee Ceremony, listening to the explanation by Engineer Effat Redha during his tour in the "Bright Decades" exhibition, that accompanied the Golden Jubilee ceremony that was held at the Bahrain International Convention and Exhibition Center on 15th March 2022 in the presence of Dr. Dheya A.Aziz Tawfiqi, BSE President and the guests.

Honoring the BSE Supporters

Among the honorees were the ex-presidents, ex-members, and members of the BSE, engineering bodeis

The Golden Jubilee ceremony, which was attended by His Excellency Shaikh Khalid bin Abdulla Al Khalifa, Deputy Prime Minister, who attended on behalf of HRM the King to patronize the event, witnessed honoring the winners of the BSE's Award, Monument Design Award, the founders and ex-presidents. During the event, the patronizing establishments, ministries, government bodies, members of the board of directors and members.

Among the honorees were the ex-members, ex-presidents and members of the BSE for their contributions throughout the passed years, since the BSE was established, 50 years ago until today and exerted all efforts to serve the Society's activities and goals.

Due to the large number of honorees and limitation of space, Almohandis Magazine is pleased to display a limited number of photos of the event. A link has been established to access all the photos of the honorees during the Golden Jubilee.

Eng. Rashad Bukhsh

Eng. Salim Saeed

Eng. Mohammad Alkhuzaae

Eng. Emad Almoayyad

Eng. Mohammad Khalil Alsayed

Eng. Saleh Tarrada

Eng. Sameer Buhaimid

Eng. Thamir Salahuddin

Eng. Ayman Nassir

Eng. Jassim Alshirawi

Eng. Nayef Al Kilaly

Eng. Mahdi Aljallawi

Eng. Habib Aljoboori

Eng. Jaafar Mohammad

Eng. Deena Siyadi

Dr. Raida Alalawi

Eng. Reem Khalfan

Eng. Shahraban Sharif

Eng. Aamer Rajab

Eng. Ahmad Alkhan

كتاب اليوبيل الذهبي

Golden Jubilee Book.. Combined appearance with substance

"50 Years of Excellence and Achievements" Book"

In parallel with the BSE Golden Jubilee celebrations and in an effort to document the BSE's history over the last 50 years, a book was released entitled theme "50 Years of Excellence and Achievements". The book was distributed among the guests during the event held on 15th March 2022.

The Board of Directors of the BSE also visited senior state officials to present this book to them. This book was elegantly designed by using quality papers and fine printing. The book, that combined appearance and substance, has documented the history of the Society since its inception by using rare photos, memories of presidents who have leaded the BSE through half a century.

The Book Contents:

The book consists of 126 pages and 12 sections. The first section covered the incorporation, the second section contained the vision, mission and its future look, while the third section included statements of the ex-presidents over 50 years in respect of the Golden Jubilee celebrations and their presidency period. The fourth section covered details of the board of directors since the inception.

The book also covered an important issue which is participation of female engineers in the activities and achievements of the BSE since inception. The fifth section has been dedicated for Bahraini women involved in the engineering disciplines and the position the women occupied. The sixth section covered the membership of the BSE in the GCC and international engineering institutions and membership of the BSE in the official committees in the Kingdom

Click here or sacn QR code to read the book

of Bahrain. The seventh section covered the internal committees and engineering divisions. The eighth section contained membership statical data in terms of specialization, gender, nationality and membership category.

Due to the importance of training and the significance attributed to it by the BSE, and the pivotal role the BSE Training Center plays in the development of the engineering sector and progress of engineers in the country, the nineth section has covered the profile of the BSE Training Center, while the tenth section covered the various programs offered by the Society such the Employment & Training of Newly Graduated Engineers (Tamheed), the BSE Award, Scholarship Program and Employment Skills Program in addition to the social meetings of the members.

The eleventh section contained the BSE's conferences, presidents and board members forum while the twelfth section covered the publications of the BSE including the periodical magazines and various books. An appendix within the book has been allocated as introduction about the Golden Jubilee Ceremony's committee and names of their members.

It is an elegant book with high quality printing, documenting the history and achievements of the Society throughout the last 50 years. It contains 126 pages and 12 sections, a great addition to the Bahrain's engineering library.

Significance of the Book:

The book entitled "50 Years of Excellence and Achievements" was released on the occasion of the BSE Golden Jubilee celebrations. It is a useful addition to the Bahrain library in general and to the engineering library in the Kingdom of Bahrain in particular since it contains documentary statements of the BSE's founders, their memories and statements regarding the incorporation and beginnings of the BSE activities. It also contains messages from the ex-presidents totaling 11 presidents, regarding the achievements that took place during their term of office and also their visions and opinions for further progress and achievements.

It is an elegant book with high quality printing, documenting the history and achievements of the Society throughout the last 50 years. It contains 126 pages and 12 sections, a great addition to the Bahrain's engineering library.

The General Conference of Engineers

*Substantial participations in the Golden Jubilee's events

*Recommendations to enhance the role of engineering sector and develop engineers

Prepared by: Husain Ismail

As part of the BSE's Golden Jubilee celebration, the General Engineering Conference commenced its meeting on Wednesday 16th March 2022 under the theme "Towards a Sustainable Engineering Environment and Promising Engineering Prospects". A large number of officials, academics, engineers and interested parties from the engineering sector attended the conference.

A number of largely experienced engineers from Bahrain and overseas spoke during the event.

During the conference, two co-operation agreements were signed between the BSE and the Capital Municipality and another with the Civil Engineers Institute of Britain.

The General Conference of Engineers is one of the Golden Jubilee's events which was held under the auspicious of His Majesty King Hamad bin Isa Al Khalifa, King of the Kingdom of Bahrain. The conference discussed various topics including opportunities, challenges and strategies relating to preparing the coming generations of Bahraini engineers to keep pace with the modern challenges during the next stage, following 50 years of engineering activities in the Society.

The conference discussed many issues including engineering training and industry through three sittings. In the first sitting, which was chaired by Engineer Jassim Alshirawi, Professor Dr. Gong Ke, President of the World Federation of Engineering Organizations (WFEO) spoke the opportunities and challenges that face the engineers in the context of digital economy.

Dr. Dheya Tawfiqi, BSE President, made a presentation called "Towards an Advanced Model to Practice and Develop Engineering Profession".

The experience of some pioneering national companies were also highlighted. Engineer Mahmoud Mirza, General Manager - Engineering at the Bahrain Petroleum Company (BAPCO) spoke about the effect of training on industry for Bahraini engineers.

A number of largely experienced engineers from Bahrain and overseas spoke during the event, and more than 800 engineers participated.

Mr. Jalal Majeed, Senior Consultant at Jafcon for Productivity Improvement also spoke about the study of the BSE on the international economic requirements of engineering profession during the coming 20 years and the development horizons of Bahraini engineers. Also, Mr. Mohamed Ahmadi, Director of Skills at Tamkeen spoke about the role of the engineering sector in attaining the 2030 vision. Dr. Hameed Abdulla, BSE Executive Director, presented an innovative design for a national training program for the newly graduated engineers.
The second meeting of the conference was on engineering training which was presided by Engineer Husain Alali. The speakers were: Engineer Ali Ashoor A.Latif, Deputy CEO for Human Resources at the Electricity and Water Authority, Mr. Terence Harrison, Director of Bapco's Oil and Gas Academy and Engineer Ameen Sultan, Head of Energy at Aluminum Bahrain (ALBA) who spoke about the quality of engineering training, as a pioneering experience in the region.
The subject of professionalizing in the engineering sector and the legislations governing the profession is of significant importance in the engineering sphere, that is why it was one of the topics that were discussed during the conference. The meeting was chaired by the Senior Legal Advisor Dr. Jameel Al Alawi. The speakers were: Engineer Mariam Jumaan, Chairperson of the Council for Regulating the Practice of Engineering Professions (CRPEP) who spoke about the legislations and laws regulating the engineering profession while the vice chairperson of CRPEP Dr. A. Majeed A.Karim spoke about the laws that regulate the engineering profession in the Kingdom of Bahrain and the latest amendments that were made in 2021. Engineer Mazin Al Omran, chairman of the Association of engineering offices who discussed how the legislations that regulate engineering professions contribute in developing the engineering work environment. The conference chairman, Engineer A.Nabe Al Sabah concluded the first day of the General Conference of Engineers by a presenting a workpaper entitled "Graduate Traits and Professional Competencies".

The General Conference of Engineers

Topics, speakers, meetings, and recommendations

The Opportunities and Challenges that Engineers Encounter in the Context of Digital Economy

By: Guest of Honor Message
Prof. Dr. GONG Ke
World Federation of Engineering Organizations (WFEO)

Dr. Gong Ke started his speech by congratulating the Bahrain Society of Engineers and all the engineers in Bahrain on the occasion of the BSE Golden Jubilee. He also appreciated the contribution of BSE to Bahrain and the world and wished all success to the ceremony.

He gave a brief about the tasks and assignments of the World Federation of Engineering Organizations (WFEO) which are represented in benefiting from engineering expertise to solve the problems encountered by the humankind and the earth through adopting and implementing sustainable development goals.

He also explained some simple methods towards understanding the digital economy such as concentrating on techniques and stated that the Organization of Economic Cooperation and Development (OECD) has defined 40 techniques that actively participate in this digital revolution including internet of things, artificial intelligence, independent leadership, facial recognition system, digital healthcare sensors, 3D printing, Nano technology, biotechnology and many more that substantially enter into and affect our lives. The digital technology offers a valuable digital platform that contributes in accelerating the attainment of the sustainable development goals.

In his seminar, Dr. Gong Ke spoke about a number of important issues, including:

- The digital economy with the help of the digital technologies offer unprecedent opportunities for sustainable development.

- The digital economy is leaded by the digital technologies

-Interconnection distribution is the basis for the digital economy.

- Data are the “fuel” of the digital economy.

- Artificial intelligence is the brain of digital economy.

- Sustainable development is the spirit of digital economy.

- The digital technologies enables engineering to achieve the sustainable development goals.

- Building engineering capabilities is the key to face challenges.

Towards an Advanced Model to Practice and Develop Engineering Profession

Presented by:
Dr. Dheya Tawfiqi,
BSE President

Dr. Dheya Tawfiqi, BSE President, presented a paper in which he threw light on the Society's objects, vision and message with a historical summary on its achievements and its partners, locally and internationally.

He referred to some engineering institutions models in Britain, Saudi Arabia and Singapore and compared them with the model in the Kingdom of Bahrain, represented in the Council for Regulating the Practice of Engineering Professions (CRPEP) that operates under the umbrella of Ministry of Works, Municipalities and Urban Planning and is concerned with the registration of engineers and companies. The BSE has representation in CRPEP, as a professional voluntary association, established to support engineers.

He highlighted the major priorities of the BSE, including:

• Sustainability and encouraging investment in the future engineering and technical skills.

• Enhancing engineering innovation in various fields.

• Exploring the future trends and challenges encountered by the engineers in Bahrain being the trends that form the future and to seek the opportunities that create innovation.

Dr. Tawfiqi spoke about some future programs of the Society, they are:

1. Qualifying Engineers:

It aims at providing the Kingdom of Bahrain with qualified cadres and trained professionally and technically. The BSE is looking forward of being an independent institution to qualify the engineers and mange the examinations that are considered a pre-requirement to obtain a certified/professional engineer license.

2. Engineers Training Program:

It aims at the sustainability and encouraging investment in the future engineering and technical skills.

3. Activating the role of BSE to become an accreditation body of the local engineering universities through fostering partnerships with the local universities.

In conclusion, Dr. Tawfiqi proposed a model for Bahrain, represented in the Council for Regulating the Practice of Engineering Professions (issuing licenses to engineers and the engineering offices and companies), Bahrain Society of Engineers and Engineers Training Center (Engineers Qualification Program, Accreditation of Engineering Academic Programs for the Local Universities).

First Session
Engineering Training and Industry

Introduction of BSE's study on the international economical requirements of engineering professions during the next twenty years and the horizons for the development of Bahraini engineers.

Lecturer:
Mr. Jalal Majeed
Senior Consultant
Jafcon for Productivity Improvement Company

At the beginning of his presentation, Mr. Jalal Majeed discussed the targets of the study which aims at developing engineering profession in the Kingdom of Bahrain, qualify Bahraini engineers and equip them with the required skills in the world market for the next twenty years. He then discussed some figures and statistics that show the position of engineering profession among other professions on the local, regional and international levels.

Mr. Jalal Majeed concluded his research paper with a large number of recommendations regarding the tasks of some official bodies as follows:

• Economic Development Board: Attract direct foreign investments, support the idea that the jobs of Bahrain engineers are of high productivity and highly paid, develop the ranking of the Kingdom of Bahrain in the global innovation index of the Global Intellectual Property Organization through formulating strategies to increase the number of Bahraini engineers in the required specializations in future.

• Tamkeen: Link the outputs of education and training with the requirements of the local and future labour market, formulate training programs and professional qualifications as per the required skills within the next twenty years and co-operate with the Bahrain Society of Engineers to explore the engineering jobs required by the employers.

• Higher Education Council: To benefit from the specializations and skills that would be required during the coming twenty years while revising the strategies, involve the Bahrain Society of Engineers in the Council and the working committees pertaining to it, work together in evaluating the engineering academic programs and encourage the offering of specialized engineering programs as required.

• Council for Regulating the Practice of Engineering Professions: To intensify efforts to grant licenses to all engineers particularly young and women engineers, concentrate on the new engineering disciplines for the next twenty years while issuing licenses, work towards co-ordination with the Bahrain Society of Engineers in training engineers and to differentiate between licensing fees to encourage the highly experienced and qualified.

• Ministry of Labour & Social Development: Ensure that the human resources managers are Bahraini citizens for the sake of enhancing the Bahrainization policy.

• Public & Private Sectors: Provide the engineering graduates with wider scope of apprenticeship and occupational training, enhance career advancement program, lay down policies and procedures for the licensed engineers only and to enroll engineers and engineering students in continuous training programs and obtaining occupational qualifications, skills and the specializations required in the future in order to keep pace with the requirements of the labour market and to obtain the license to practice the profession.

First Session
Engineering Training and Industry

Role of Engineering Sector in Achieving 2030 Vision

Lecturer:
Mohamed Ahmadi
Director of Skills – Tamkeen

Mr. Mohamed Ahmadi threw light on the "Skills Bahrain " initiative that has been launched by Tamkeen in order to supervise the skills system on the national level. This program aims to link education and training outputs with the present and future market needs through supporting the applied learning education for the sake of minimizing the skills gap in the labour market, identify the changes in the sector and lack of skills and determine the occupations in order to continue supporting the growth and sustainability of the private sector.

He discussed the stage that Skills Bahrain has reached and the experiences and evaluations of the program. During this stage, work has commenced with banking and communication services, both being the core sectors of the labour market.

He also spoke about the major achievements including laying down the skills strategy, workforce development plan and the occupational paths and criterion.

Mr. Ahmadi mentioned the services provided by Skills Bahrain such as labour market analysis, evaluation and development of curriculum, providing consultations regarding the policies related to life education, technical and occupational training, skills issues, partnerships between employers and various establishments in addition to a number of training and induction programs to develop skills. He concluded with a career chart of Bahraini engineer, starting from his graduation from the university, movements between positions until reaching to senior positions in companies.

First Session
Engineering Training and Industry

Design of the Creative National Training Programme for recently-graduated engineers

Speaker:
Dr. Hameed Abdulla
Executive Manager
Bahrain Society of Engineers

Dr. Hameed Abdulla discussed the experience of the Bahrain Society of Engineers (BSE) in designing a Creative Training Programme for recently-graduated engineers to ensure their employment and career progression. Such a programme is based on extensive on-the-job training to fill the gap between skills and knowledge on the one hand and the needs of the labour market's competencies on the other hand. Dr. Hameed said that the programme's recognition process went through several phases before its implementation, starting from identifying and defining the problem clearly, gathering information and data, recommending possible solutions, selecting from alternative solutions and making the final decision.

The Tamheed Programme aims to provide basic engineer formation, as part of the process leading to chartered engineer or incorporated engineer. It looks at producing graduates equipped for roles in the industry, in development and in the profession.

The programme equips graduates with modern transferable skills, including information literacy and the skill of planning and managing their own life-long learning and impart relevant professional experience on programmes while incorporating professional training.

It will make graduates aware of industrial and employment-related practices and issues likely to affect engineering activities.

The Tamheed programme was assessed by a group of entities using various standards. The Education and Training Quality Authority

reviewed the experience of creating a training programme that received a grade of "Excellent" in four themes. Dr. Hameed also said there are several factors that contributed to the success of such a programme, most importantly, the support provided by the Government to the engineering sector, the Ministry of Labour and Social Development and Tamkeen as well as the status of the Bahrain Society of Engineers and its cadres with local and global experiences in the engineering field.

Concluding his presentation, Dr. Hameed recommended conducting a benchmarking study with a similar programme in a developed country so as to keep pace with the accelerating developments in the engineering sector.

He also recommended a study on the impact of programme implementation after completing all requirements and employment to identify strengths and areas of improvement.

He mooted the idea of including the programme in the National Qualifications Framework to enable the trainee receive a recognized certificate.

Second Session: Engineering Training and Industry

Role of the Electricity and Water Authority in the professional training and development of engineering skills

Speaker:
Eng. Ali Ashoor Abdul Lateef
Deputy CEO for Resources and Services
Electricity and Water Authority

Eng. Ali Ashoor presented an overview and statistics about the Electricity and Water Authority (EWA) as one of the largest professional institutions in Bahrain as it employs, trains and develops hundreds of Bahraini engineers and technicians. The EWA has 2,514 employees, including 418 engineers and 600 technicians.

For the quality of employment, the EWA uses a screening process to employ graduates, designs programmes to develop their careers and develops the work plan of engineers and technicians. To achieve this, the EWA worked established a training centre in 1985 to fulfill its needs. This has a lecture hall with a capacity of over 180 persons, four laboratories for computers, precision instruments, chemistry and electronics, seven classrooms and 12 workshops.

The responsibility of the training centre focusses on leadership responsibility and knowledge management through people, technology process and management, development and sharing of the best practices within the EWA. The training centre also works on career development, management development, professional practice and obtaining the required license.

Two types of training are provided to the newly-hired employees at the EWA – to holders of a bachelor's degree in Engineering, Chemistry, Accounting or Computing and to the employees who hold an associate diploma in Engineering or Finance.

The EWA currently employs 134 employees and 85 technicians along with 98 professional trainees. It is also offering some professional courses in the English language, exams for technical and professional operators, exam correction skills, medium voltage cable connection exam, low voltage cable connection exam, pump maintenance, laser alignment, electrical wiring and testing systems, 11000V voltage for contractors, single phase motor control, advanced water transfer management authorization, fuses and 11 kV conversion to the Electricity and Water Authority.

The speaker discussed the licenses of electrical and water tests available for the private sector. This includes the Engineers' License, Electrical Wiring License for technicians, Cable Connection License, Plumbing License and Wiring License for electricians.

He also spoke about statistics related to licenses during the last five years, between 2017 and 2021

Second Session
Engineering Training and Industry

International Recognition and Training Qualifications Criteria

Speaker:
Eng. Terence Harrison
Manager
Oil & Gas Academy
Bahrain Petroleum Company

Eng. Harrison discussed statistics on the number of students in various countries compared to the number of students enrolling in higher education institutions outside their countries and said there are over five million such students.

Mr. Harrison also reviewed the number of Bahraini students outside the country and said the United Kingdom has the lion's share with 1,537 male and female students, Jordan with 584 students, the United States with 468 students, India with 450 students, Saudi Arabia with 193 students, Russia with 146 students, Malaysia with 139 students and Canada with 81 students.

Mr. Harrison said education and training play a complementary role in creating an experienced engineer. He also mentioned the attributes of such experienced engineer; i.e. meeting the standards of both engineering education and professional competence, complying with the code of conduct and maintaining competence.

Qualities of graduates should include achieving the objectives of the programme developed for them and gaining international recognition. As for international recognition, the national education systems change as necessary to keep pace with the times. The global comparative systems require a basic standard in addition to taking the international classification into account as a standard as well as the standards set by UNESCO at a conference held in November 2011 and the implementation of the National Qualifications Framework in the Kingdom of Bahrain. This was followed by discussing the outputs of scientific research.

The model development phases of engineers were also discussed as was the improvement of global quality, productivity and transfer of engineers at their work. To improve competence and keep pace with the current developments, 15 locations and over 7,000 programmes are currently available globally. The Washington Accord has become the international golden standard for mutual recognition of engineering education.

The Washington Accord Graduates' Profile contains 12 elements supported by a knowledge profile and an explanation of the problem-solving levels.

Second Session: Engineering Training and Industry

Quality Assurance of engineering training

Speaker:
Eng. Ameen Sultan,
Head of Electrical Power Department, Aluminium Bahrain (Alba)

Eng. Ameen Sultan tackled the statistics of Aluminum Bahrain as its financial output for 2021 was about $4.215 million in terms of earnings, $1.202 million in terms of profit while earnings before interest, taxes, depreciation and amortization (EBITDA) were $1,636 million compared to 2020, when the earnings were $2.823 million, the profit was $26 million ande EBITDA was $455 million. The Bahraini staff at the company was about 84 per cent (3,135).

Through such statistics, we can know the HR and training statistics in 2021 as the total training hours for employees was over 581,000. The number of employees on scholarships to obtain the bachelor's degree in the engineering programmes within and outside Bahrain was 44 while employees on scholarships to obtain the diploma degree were 70. As for those holding the Master's degree in Business Administration, their number was 74 employees by the end of 2021. Such scholarship started in 2013.

As for the Line 6 Expansion Project and in terms of development and employment, its construction costs are estimated to be about $3 billion while the electrical power produced for the plant would be 1,800 megawatts in addition to containing of castings and carbon plants. For this, the company engaged over 500 employees.

The company also designed programmes for the new employees that include reduction processes, carbon, foundry and power. For maintenance, it included mechanics, electricity, precision instruments, vehicles, air pressure and hydraulics. the Jisr programme for non-supervisory staff was developed and designed in February 2021. This aims to provide opportunities for potential non-supervisory staff along with obtaining the bachelor's degree provided that their jobs are qualified to hold supervisory positions.

Third Session

Apprenticeship in the engineering sector and the legislations regulating the profession

The legislations and laws regulating the engineering profession

Speaker:
Eng. Mariam Ahmed Jumaan
Chairperson
Council for Regulating the Practice of Engineering Professions (CRPEP)

Eng. Mariam provided a definition of professional licenses and their role in protecting the public, the importance of such licenses and licensing for engineers individually or with regard to institutions and engineering offices.

She also presented an overview on the establishment of the Council for Regulating the Practice of Engineering Professions (CRPEP) in the Kingdom of Bahrain, its importance and roles, beneficiary entities and some laws and legislative decrees that serve regulating the practice of engineering professions in detail.

She said such regulations identify and cover all aspects related to the practice of engineering professions such as classification of engineers, engineering offices and engineering disciplines in addition to the requirements for the accreditation of engineering offices, insurance policy and the forms of agreement between the owner and engineering office.

Eng. Mariam also mentioned basic points to raise obstacle removal criteria as this requires obtaining CRPEP approval on the bachelor's degree and verifying it so as to handle the license and professional certificates, when necessary, as well.

She said the CRPEP is conducting workshops and presentations to engineering students as well as the engineers from the public and private sectors to get them familiar with the CRPEP rules and regulations alongside the awareness campaigns.

She pointed out that the Professional Indemnity Insurance (PII) is a tool to protect engineering offices and clients against professional errors and negligence and how it was updated to cover all standard requirements to enable obtaining maximum benefit from the insurance policy.

Third Session

Apprenticeship in the engineering sector and the legislations regulating the profession

Laws regulating the practice of the engineering profession in the Kingdom of Bahrain and the recent amendments in 2021

Speaker:
Dr. Abdul Majeed Abdul Kareem
Vice Chairperson
Council for Regulating the Practice of Engineering Professions (CRPEP)

Dr. Abdul Majeed Abdul Kareem tackled the laws regulating the practice of the engineering profession in the Kingdom of Bahrain and the recent amendments in 2021.

He spoke of the CRPEP vision and strategic plan that revolves around being a leading centre that provides high quality services, reviewing a number of projects according to its strategic plan for the current session (2019-2022).

These include the ability of CRPEP to issue the required amendments to Law No. (51) of 2014 concerning the regulation of the engineering professions as His Majesty the King, May Allah protect him, enacted the Decree-Law No. (18) of 2021 on August 02, 2021, total transfer to digital transactions with regard to the CRPEP systems and processes, conversion of documents and archive into a digital format, creation of required frameworks to make engineers obtain the approved professional certificates and the approval of exams as a licensing requirement.

He also reviewed a number of articles of the law on regulating the practice of the engineering professions and legal regulations related thereto that denote the importance of compliance by engineers and engineering offices, indicating that the CRPEP focussed, in its current session, on identifying the cases of non-compliance with the law, including the offices practicing the engineering profession, without obtaining the necessary licenses from the CRPEP as well as engineers who work at the engineering offices or other sectors without holding the necessary licenses.

He stressed the importance of overseeing all entities and institutions operating in the engineering field in addition to performing the field inspection and judicial control on all institutions operating outside legal frameworks and working in an integrated and coordinated manner with government entities such as Municipalities Affairs.

In addition, he said the CRPEP took strict measures according to the law to protect engineering offices operating properly and legally. He praised the contents of the Decree-Law No. (18) of 2021 concerning the amendment of some provisions of the law regulating the practice of engineering professions as significant for the current and future, reviewing a number of amendments that are for the interest of the engineering profession and engineers as well as indicating the most important requirements to license the foreign engineering office as an individual enterprise or a commercial company.

He also mentioned the commercial activities that conflict with the practice of the engineering profession, the categories of engineers and the minimum practical experience required according to the classification of such categories, the categories of engineering offices classified based on the maximum value of the project implemented by them, the minimum number of engineers in each discipline (engineering division) and the value of the professional insurance policy cover.

Third Session

Apprenticeship in the engineering sector and the legislations regulating the profession

Contribution of the legislations regulating the practice of engineering professions in developing the engineering work environment

Speaker:
Eng. Mazen Ahmed Al Umran
Head of the Association of Engineering Offices

Eng. Mazen Al Umran touched on the history of the Bahraini Association of Engineering Offices since its establishment as a society in 2007 until it was turned into an office in 2013.

He spoke about legislations regulating the engineering professions that were initially developed after an Amiri decree concerning the regulation of the practice of engineering professions was issued in 1982, followed by a decision in 1983 on internal regulations of the committee on the practice of engineering professions that contained:

• 13 articles on the conditions of the practice of engineering professions;

• 7 articles on the rights and duties of engineers;

• 4 articles on discipline;

• 5 articles on general provisions.

Thirty years after the creation of the Committee on the practice of engineering professions, the Decree-Law was issued in 2014 to turn this committee into a council responsible for regulating the practice of engineering professions. This is concerned with laying down basic principles and issuing licenses to individuals and engineering offices before practicing any engineering profession.

Eng. Al Umran also discussed the role of the Association of Engineering Offices (AEO) in regulating the engineering sector as it sought to highlight some risks to which Bahraini engineering may face as a result of applying the CRPEP Executive Regulations and its unsuitability with the actual engineering work environment while recommendations were submitted to the Council of Ministers.

In 2021, a decision was made on reforming the CRPEP and amending the provisions of the law issued in 2014. The CRPEP is currently working on preparing the draft executive regulations in collaboration with a team from the Association of Engineering Offices.

Eng. Al Umran clarified the role of the legislations regulating the engineering work in developing and improving the efficiency of Bahraini engineers through:

• Independent practice of engineers and engineering offices;

• The minimum number of engineers at engineering offices;

• Fostering the relationship with the local, regional and international organizations;

• Developing a work strategy to employ and train newly graduated engineers;

• Professional indemnity insurance;

• Extending the validity of licenses for engineering offices and engineers;

• Establishment of commercial engineering companies.

Third Session

Apprenticeship in the engineering sector and the legislations regulating the profession

Graduate attributes and professional competencies

Speaker:
Eng. Abdul Nabi Al Sabah
Bahrain Society of Engineers

Eng. Abdul Nabi Al Sabah tackled the topic of Graduate Attributes and Professional Competencies (GAPC). His presentation can be summarized in several focus points as follows:

• Bahrain has a solid engineering practice (Legislation and BSE) but it requires a new strategy to make more progress in this practice.

• Irrespective of years of experience, there is a lack in measurement of engineers' competencies in Bahrain. To ensure that our engineers are measured accurately and thus developed according to international standards, we can adopt or create a GAPC system that allows for such development.

• To enhance the engineering practice, three key components need to be considered: Review and issue revised legislation, adopt international graduate attributes and professional competencies (GAPC), provide qualification and training.

• To achieve international standards for engineers in Bahrain, adapt Graduate Attributes and Professional Competencies (GAPC),

Bahrain should become a member and signatory to the International Engineering Alliance (IEA) and Washington Accord to adopt and enforce internationally bench-marked standards for engineering education and professional competencies.

• Eng. Abdul Nabi Al Sabah also stressed the importance of education and training in the formation of a practicing engineer (meet standards of engineering education, meet standards of professional competency, observe code of conduct and maintain competence)

• In addition, he proposed the 3Es system which provides a way to develop engineers as recommended by the IEA (Engineering, Experience, Exams). To implement the 3Es successfully, collaboration and synchronization among all stakeholders is required, i.e.: the CRPEP to adopt and enforce the system, the Government (Professional Accreditation and Incentives), Ministry of Education (Accredited Programmes), Universities (Accredited Engineering Programmes), BSE Training Center (Preparation for exams), Tamkeen (Incentive to reimburse FE and PE Exam successful takers) and employers (Incentive for professional accreditation holders).

• Current engineering categorization should be revisited and aligned with GAPC.

• To support trainee engineers, five suggestions can be adopted.

He provided a number of recommendations to raise the bar for the engineering profession in Bahrain, i.e.:

• Establish and implement GAPC.

• Set a strategy to implement this major change in the profession.

• Give priority for trainee engineers' needs and implement suggested trainee improvements.

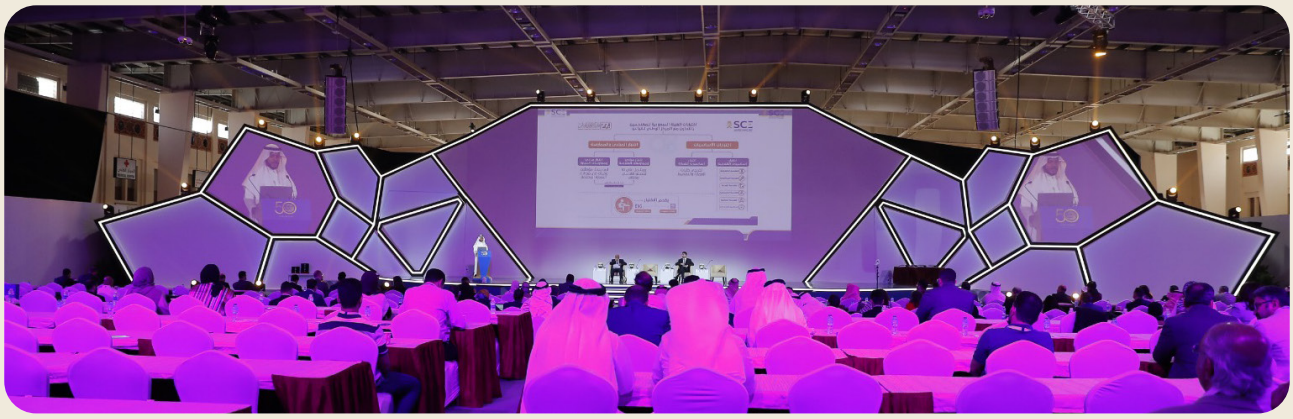
• Revisit current engineering categorizations and adopt ones linked to GAPC.

• Study and discuss with key stakeholders (CRPEP, EOA, Universities, ETQA) setting up international benchmarked system.

Fourth Session:
Apprenticeship in the engineering sector and the legislations regulating the engineering profession

Best exercises for the engineering profession

Speaker:
Eng. Saleh Abdul Aziz Al Omar
Saudi Council of Engineers



Eng. Saleh Abdul Aziz Al Omar introduced the Saudi Council of Engineers (SCE), its vision and goals that revolve around developing engineers and engineering firms in Saudi Arabia. He also reviewed the Engineering Professions Practice Law of 2017 and touched on the registration mechanism and membership types at the Saudi Council of Engineering, whose registered members have reached over 365,000.

He mentioned engineering professional degrees that will be applied starting from this year which include engineer, associate engineer, professional engineer and consultant engineer, each of them according to their experience and professional qualifications.

Prepared by an entity competent in measurement and evaluation, which is in turn supervised by the SCE, the professional exams aim to examine the efficiency as well as basic and professional abilities of engineers and assist them in assessing their performance to identify weaknesses. Such exams also measure various abilities, most importantly mental abilities, remembering, analysis, synthesis, evaluation and application.

He concluded his presentation by speaking about the SCE services and its strategic plans, most notably services provided to train and develop engineers through a set of general and specialized courses as well as organizing workshops, visits, professional lectures and other events.

The strategic goals from which many initiatives will be launched include raising the quality of technical expertise reports with the Ministry of Justice, complying with the Engineering Professions Practice Law, raising the satisfaction level about services and strengthening the role of Saudi engineers in the engineering sector while increasing their efficiency.

Professional Qualification and Accreditation System for Arab engineers

Speaker:
Dr. Musa Habib Mohammed
The Hashemite Kingdom of Jordan

Dr. Musa Habib reviewed the goals of the Arab Authority for Engineers Qualification and Accreditation established in 2003 by the Federation of Arab Engineers. The first goal is based on setting the profession practice standards according to the engineering efficiency and distinction while the second is based on approving a unified Arab classification for the engineering levels scale. He spoke of the stages for preparing the system of engineers' professional qualification and accreditation and elaborated on the means used to achieve the goals of qualification system in addition to the profession practice areas and professional engineering levels.

These include Engineer, Associate Engineer, Professional Engineer and Consultant Engineer, each as per his requirements and varying responsibilities. He also discussed the transitional phase to apply the instructions of the current situation for professional qualification and accreditation. Such transitional phase aims to accommodate the large number of experienced engineers in applying for the title through interviews, disseminating and introducing the concept of professional qualification and accreditation, identifying and closing the gaps. This is in addition to other measures along with the creation of committees for development and qualification as well as reaching mutual recognition among Arab countries.

He concluded his presentation by providing a set of recommendations to move forward with the professional qualification and accreditation as follows:

• To proceed with the procedures of approving the professional qualification and accreditation instructions as a law issued by the relevant official entities.

• To obtain mutual recognition among the countries of the Federation of Arab Engineers.

• To prepare exams that meet global requirements for all disciplines.

• To approve incentives for those with professional levels.

• To market the professional qualification and accreditation at home and abroad.

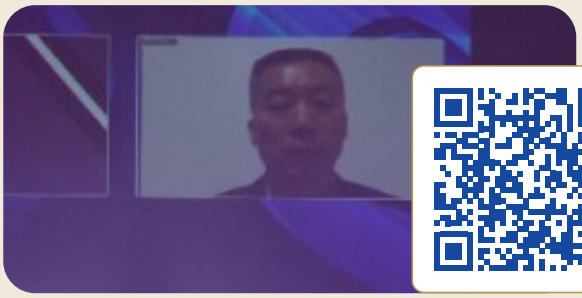
• To diversify disciplines in which professional levels are attained.

• To harmonize professional qualification and accreditation, career path and profession's practice in the jobs of the public and private sectors.

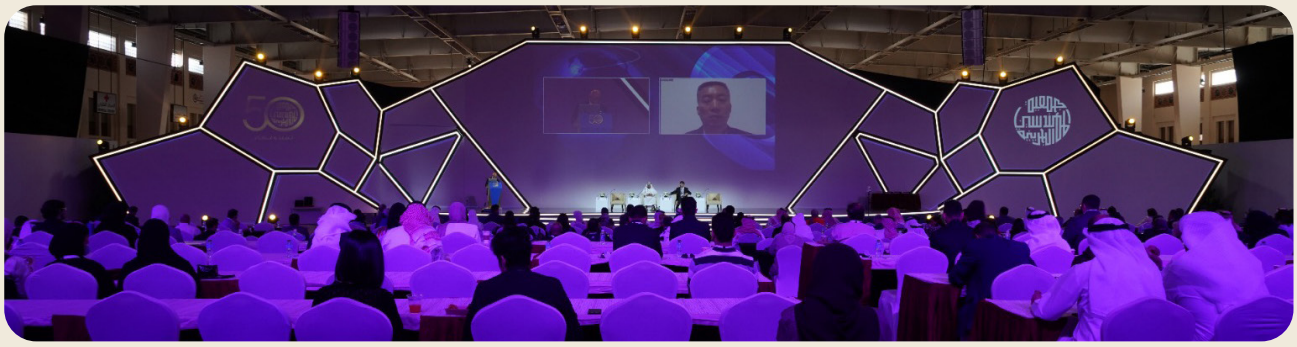
• To exchange common experiences in the area of specialized courses among the professional and engineering societies and syndicates at the Arab level.

Fourth Session:
Apprenticeship in the engineering sector and the legislations regulating the engineering profession

Professional Engineers Board Singapore



Speaker:
Eng. Raymond Tay
Professional Engineers Board
Singapore



Er. Raymond Tay from Professional Engineers Board (PEB) started his presentation by giving brief about the board which consists of 15 members and formed in 1971. The PEB Mission is to safeguard life, property, and welfare of the public by setting and maintaining high standards for registering professional engineers, and by regulating and advancing the practice of professional engineering. The main functions of the board are:

- Keep registers of professional engineers, practitioners and licensees
- Conduct examinations to qualify persons for registration
- Approve or reject applications for registration
- License corporations, partnerships and limited liability partnerships
- Establish and maintain standards of professional conduct and ethics
- Hear and determine disputes relating to professional conduct or ethics of professional engineers
- Promote learning and education and development of profession engineering

Tay then talked about Professional Engineers Act which set out privileges, regulate conduct and regulate corporations. PE Act prohibited anyone to engage in any professional engineering work unless they are registered professional engineer who has in force a practicing certificate or licensed professional engineering practice licensed to supply professional engineering services. Tay mentioned that PEB only registers 4 prescribed branches of engineering in Civil, Mechanical, Electrical and Chemical Engineering which require to make calculations and plan submission to the technical authorities, and other than these branches are not required to be registered with the Board.

Eng. Raymond expatiated on the requirement for PE registration and practicing certificate. He stated that There are about 2600 active PEs who will renew their practicing certificate yearly, and there are currently about 225 licensed firms registered with the board.

Eng. Raymond Tay ended his presentation by demonstrating the disciplinary proceedings in case of fraud, dishonesty or moral turpitude, or implying a defect in character, or any improper act or conduct in professional capacity. In which case the involvement of Investigation Committee and Disciplinary Committee is required.

Fifth Session:
Engineering Education

The utilization of the prototype model in student projects within the BEngTech curriculum

Speaker:
Dr. Christakis Papageorgiou
Bahrain Polytechnic

Dr. Christakis presented a case study in Bahrain Polytechnic to highlight the role of industry to improve higher education curriculum. The project was the development of an automatic greenhouse prototype model, were 6 students from Electronics and Mechanical from September 2014 to June 2016 worked on.

At the initial development stages, the development team had consulted with a Bahraini company involved in the operation of hydroponic greenhouses to produce vegetables and greens, and with an international company involved in the production of hardware and software for embedded systems development. Then, the prototype was presented in two BIGS events (Bahrain International Garden Shows). The project resulted in publication of one journal paper and two conference papers.

Basically, the prototype model provides the means for automatic control of the temperature of the growing area by controlling:

1. The temperatures of the heating and cooling actuators

2. The speed of the fans of the heating and cooling actuators.

3. The louvers and fan of the growing area

Dr. Papageorgiou stated the benefits from this project to student, which can be summarizes in these points:

Theoretical knowledge and practical skills:

- Design and build of prototype electronics circuits and prototype mechanical systems
- Design and programming of embedded systems
- Design and analysis of simulation models using specialist engineering software to characterize the dynamic behavior of the prototype system
- Experimental testing, data logging and signal processing, verification of simulation models, control system design and analysis of control system stability and performance.

Employability Skills.

- Teamwork and Communication
- Self-Management, Planning and Organization
- Learning from a different discipline
- Students became aware of the significance of being able to apply their learning in technical fields which are related to but outside their curriculum.

Fifth Session:
Engineering Education

Modern technologies in the engineering education

Speaker:
Dr. Sanaa Al Mansouri

Dr. Sanaa Al Mansouri listed the most important historical and pivotal turning points during last century. She said education has developed from the practice-based education as well as technical and manual skills until the introduction of scientific theories, in addition to mathematics and physics laws starting from 1900 until the Industrial Revolution and its newly found applied sciences.

These are characterized by an understanding of work quality during the period that followed in 1960 and lasted until 2000. With the advent of the new millennium, the new education developed to be more focussed on research-based learning and the designs of engineering complex systems with the emergence of interactive laboratories and active learning.

She touched on the introduction of modern technology to engineering education, especially during the Coronavirus pandemic indicating the importance of such tools in the sustainability and development of the engineering education. A lot of such tools appeared to meet the urgent needs of higher education and other institutions. Students are now able to attend online lectures for their professors at the best local and global universities. In addition, the academic content on the web has greatly increased that in turn has been reflected in the achievement results of students at educational institutions.

On the other hand, there were challenges related to increased dependence on such tools, most importantly lack of applied works with engineering tools, difficulty in evaluation of students, amount of digital burnout that affected a number of students and teachers.

She concluded her presentation by stressing the importance of evaluating the use of technology in the learning process as well as identifying its pros and cons in search of opportunities for improvement and development in a manner that fulfills educational objectives and facilitates the learning process to increase student achievement and provide them with acquired knowledge that assists them in overcoming future challenges in the post-academic education phase.

Fifth Session:
Engineering Education

Engineering programmes; from classical to emerging specifications – Meeting market needs.

Speaker:
Dr. Nu'man Nu'man
University for Technology Bahrain (UTB)

In his presentation, Dr. Nu'man discussed the most important branches of engineering, including Electronic, Mechanical, Civil and Chemical Engineering. He also touched their implications on meeting market needs and delved into those jobs that can be held for each engineering discipline until they reache the most important trends in engineering branches, including renewable energy, robotics, artificial intelligence, data science and internet of things, etc.

On the roles of universities in supporting the labour market in Bahrain. He said some of them focus on the soft skills at the university, raising the quality level of the academic environment and making the university curricula based on actual needs required by the industry and other sectors.

He also tackled the (ABET) criteria that are based on the type of students, objectives of educational programmes, continued development of curricula and suitability of educational institutions and their support to the learning process.

Dr. Nu'man said due to the recent technological development, many jobs will become easier at the local and international levels. He also recommended paying more attention to the on-the-job training, creating a consulting group that links the labour market to educational institutions so as to obtain international accreditation for the programmes of educational institutions in Bahrain, and raise the awareness level, whether at the skill level of professors and students to make the educational process evolve to reach the level of developed countries.

Sixth Session:
Engineering Education

Role of the National Qualifications Framework in mainstreaming the outputs of engineering qualifications

Speaker:
Dr. Tariq Al Sindi
CEO
Education & Training Quality Authority

Dr. Tariq Al Sindi started with an introduction on how the Kingdom of Bahrain established the Education and Training Quality Authority as an independent government authority supervised by the Council of Ministers according to a Royal Decree of 2008. This aimed to meet a leading initiative of Bahrain's 2030 Economic Vision that looks to achieve a qualitative leap in the professional education and training sector.

Dr. Al Sindi also spoke about the important operational processes that the Authority seeks to implement, i.e. review of quality of educational institutions, administration of national exams, management of the National Qualifications Framework and building of national capacities. He also turned to the characteristics of the National Qualifications Framework. He said such a framework was not restricted to the basic education received by the student during his academic life but went far to the more comprehensive and general perspective by recognizing all types of learning in a manner that covers all sectors and is in line with the criteria of the National Qualifications Framework.

Dr. Al Sindi said the linking academic and professional qualifications to the requirements of the labour market is essential by setting up databases related to the design of qualifications and knowing the value of such qualifications for employers to obtain international recognition and achieve harmony between and their duration. He also recommended building a bridge of knowledge and communication between learners, education and training institutions and employers to enhance job opportunities and provide the labour market with a qualified and skilled workforce in line with market requirements and placed on the NGF.

In addition, Dr. Al Sindi reviewed statistics related to the record of the National Qualifications Framework. According to the statistics of March 2022, the total number of institutions listed was 30. The total number of national qualifications was 180 while the total number of foreign qualifications was 34.

Dr. Al Sindi touched on the steps required to ensure mainstreaming the outputs of engineering qualifications starting from the qualification design stage, followed by qualification licensing, qualification placement and finally with the continued and regular development and review of qualifications in line with future developments, needs of the labour market and development of modern learning methodologies.

Sixth Session:
Engineering Education

Critical and innovative thinking skills in engineering students

Speaker:
Dr. Christina G. Georgantopoulou
Dean of Engineering
Bahrain Polytechnic

Dr. Christina presented an interesting subject regarding the critical thinking for engineering students. The topic is focusing on the possibility of changing the education system in Bahrain universities to engage the students more into critical thinking mentality.

The importance of the critical thinking to engineers push us to start taking practical steps and implementing new strategies in education process that help the students to think outside the box. Some strategies have been implemented in Bahrain Polytechnic like work integrated leaning, problem based learning and employability skills.

Dr. Christina shared some tips for teaching critical thinking and innovation. These ways focus on utilizing the student skills by working in teams, being innovative in the class, asking questions, doing open ended assignments and case studies.

Engineers are problems solvers, hence being critical thinkers is of utmost importance. By changing some of the educations procedures and involving more problem based learning and innovative ways to merge the knowledge with real life problems will assure a bright future for our engineers.

Sixth Session:
Engineering Education

Role of extra-curricular activities in developing graduate attributes

Speaker:
Eng. Wafaa Al Ghatam
Urban and Housing Lab
University of Bahrain

Eng. Wafaa Al Ghatam covered an important topic and introduced the idea of extra-curricular activities where students look forward to benefiting from their personal skills away from the normal academic pattern. Such activities assist in shaping students' personality and qualify them for the labour market.

She also referred to the possibility of developing education in modern schools so as to include this type of curricula and activities that assist students in employing what they learnt in a practical, effective and creative manner and to be capable of solving problems fully by integrating their academic knowledge with life experiences.

In addition, Eng. Wafaa shared statistics and studies confirming that extra-curricular activities (ECA) contribute to increasing students' opportunities and enable them to develop faster so as to be qualified for managerial and leading positions compared to students who focussed only on education. Such activities can be viewed as a practical experience that can be mentioned in personal CVs and expedites the involvement of recently-graduated students in the labour market as also enabling them to get job opportunities faster.

She concluded her presentation by using a phrase about changing the perspective of education from learning for life to learning through life.

Moderators of the General Engineering Conference

Moderator of First Session:

Engineering Training and Industry

Eng. Jassim Isa Alshirwi

Bahrain Society of Engineers

Moderator of Second Session:

Engineering Training and Industry

Eng. Husain Alali

Managing Partner, Ibtikar Synergy

Moderator of Third Session:

Engineering Professions, Regulations & Legislations

Dr. Jameel Alalawi

Senior Legal Advisor, Economic Development Board, Bahrain

Moderator of Fourth Session:

Best Practices in Engineering Professions

Eng. Saeed Alasbool

Bahrain Society of Engineers

Moderator of Fifth Session:

Apprenticeship in the engineering sector and the legislations regulating the profession

Prof. A. Rahim Abbas

Moderator of Sixth Session:

Setting subject specifications and graduate attributes for engineering qualifications

Dr. Hassan Ali Almulla

President, University of Technology Bahrain

Recommendations on the development of the engineering profession and strengthening of the engineer's role in development

Dr. Haitham Al Qahtani, Chairperson of the Conference Technical Committee, chaired the closing session and thanked those attending on behalf of the Bahrain Society of Engineers. He thanked all sponsors participating in the BSE Golden Jubilee Ceremony and the BSE General Engineering Conference, "Towards a sustainable engineering environment and a promising future."

Topics and themes of the General Engineering Conference:

The Conference's topics were divided into three main themes

Theme One:

To determine the trends and future of engineering professions and role of training in industrial institutions.

Theme Two:

Apprenticeship in the engineering sector, legislations and laws regulating the engineering profession and getting familiar with the best practices in engineering professions.

Theme Three:

Engineering education, trends and criteria in the engineering education and determining the specifications of engineering disciplines as well as graduate attributes

The role of engineering professions in developing the economy was highlighted and this can be observed through the goals of sustainable development as well as growth of economic sectors such as construction, manufacturing, energy, transportation, oil and gas and others. In general, the growth of these sectors leads to the growth of engineering professions.

Recommendations:

Those participating in the BSE General Engineering Conference made a number of recommendations as follows:

1) The necessity to enhance cooperation among the entities responsible for economic development in adopting strategies required by the labour market, developing required skills and focussing on the required engineering disciplines during the next 20 years.

2) To adopt the engineering profession in the projects of Labour Fund "Tamkeen", especially the Bahrain Skills Project provided by Tamkeen and getting relevant entities involved in the development of engineering profession, especially the Bahrain Society of Engineers, to formulate the strategies, skills and steps of preparation.

3) To carry out a benchmarking study for the criteria of engineering programmes related to the professional training and their impact on increasing job opportunities and improving skills.

4) To support relevant entities responsible for studies and analysis in developing the engineering professions, conducting regular studies and surveys on engineering disciplines and instructing the educational entities and employers to know the latest required skills.

5) To develop new and basic engineering skills through training programmes and educational curricula, especially in the fields of creative analysis, strategic thinking, critical thinking, leadership, use of digital technology in evaluation and analysis, flexibility and ability to bear the requirements and nature of work and the ability to assess problems and challenges and develop suitable solutions.

6) To instruct relevant entities (such as the Ministry of Labour and Social Development) to set the criteria and job descriptions for hiring managers with regard to the development of engineering professions for Bahrainis in particular and train them in the manner required by the labour market.

7) To register engineers according to a professional assessment system for engineers that is based on international criteria.

8) To strengthen the BSE role in approving the engineering academic programmes.

9) To enable the Bahrain Society of Engineers to become an independent entity that qualifies engineers and administers exams, which are part of the requirements to obtain a certified and respectable engineering license.

10) To link the training of recently-graduated engineers to supporting Tamkeen and organizers with integrated programmes.

11) Cooperation of both the Bahrain Society of Engineers and the Council for Regulating the Practice of Engineering Professions with relevant entities in developing a mechanism to improve the qualification and classification of engineers working in Bahrain by creating integrated and continued programmes.

12) To adopt operators in both the public and private sectors in evaluating engineering apprenticeship programmes and providing professional and applied training.

On the sidelines of the conference two cooperation agreements were signed with the Capital Municipal Council and the UK-based Institution of Civil Engineers (ICE)

On March 16, 2022, the Bahrain Society of Engineers signed two cooperation agreements with the Capital Municipal Council and the UK-based Institution of Civil Engineers (ICE).

Both agreements were signed on the sidelines of the General Engineering Conference under the slogan of “Towards a sustainable engineering environment and promising engineering future”.

Both agreements reflect the trust placed in the Bahrain Society of Engineers by official and professional institutions locally and internationally, particularly with the BSE endeavor to proceed with reaching out to all academic and engineering entities with the aim of enhancing the engineering sector and providing the labor market with promising competent engineers.

BSE President Dr. Dheya Tawfiqi signed the first agreement concluded between the Bahrain Society of Engineers and the Capital Municipal Council on behalf of the BSE while Eng. Saleh Tarrada, President of the Council, signed on behalf of the Capital Municipal Council.

The second agreement concluded between the Bahrain Society of Engineers and the UK-based Institution of Civil Engineers (ICE) was signed by Dr. Dheya Tawfiqi on behalf of the BSE and Mr. John Barnes on behalf of the ICE.

Dr. Dheya Tawfiqi, the BSE President and Eng. Saleh Tarrada, President of the Capital Municipal Council, during the signing of the cooperation agreement between the BSE and the Council on the sidelines of the BSE Golden Jubilee Ceremony at the Bahrain International Exhibition & Convention Centre on March 15, 2022.

Dr. Dheya Tawfiqi, the BSE President and Eng. Saleh Tarrada, President of the Capital Municipal Council, during the signing of the cooperation agreement between the BSE and the Council on the sidelines of the BSE Golden Jubilee Ceremony at the Bahrain International Exhibition & Convention Centre on March 15, 2022

The second agreement concluded between the Bahrain Society of Engineers and the UK-based Institution of Civil Engineers (ICE) was signed by Dr. Dheya Tawfiqi on behalf of the BSE and Mr. John Barnes on behalf of the ICE.

Chemical Engineering

Statistical analysis of the process of laminating and drying tissues using the statistical program R

Project team:

- Batool Sayed Hussain Al Qassab
- Zahraa Ali Essa Al Basri
- Fatima Jalal Al Oraibi

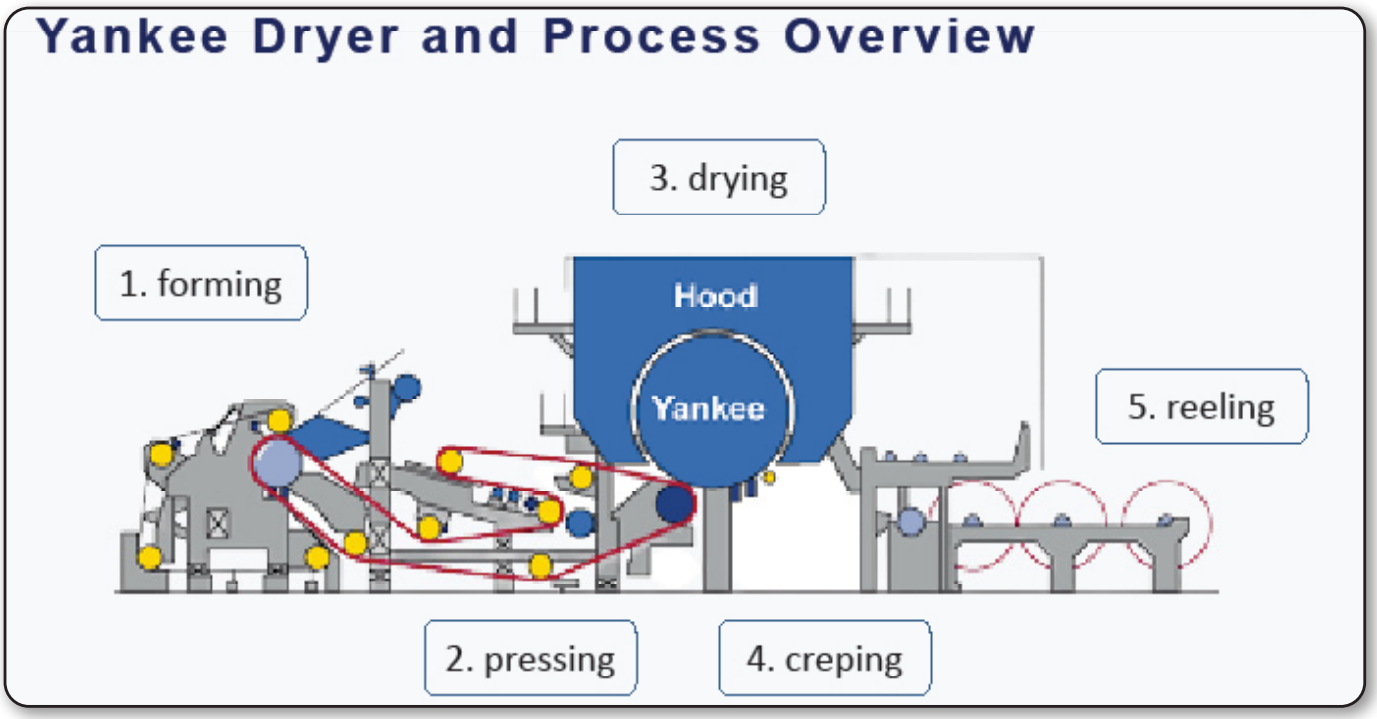
Project Summary and Idea:

The tissue paper industry tends to develop its products in line with increasing consumer demand and need for high quality tissue paper and soft fabric.

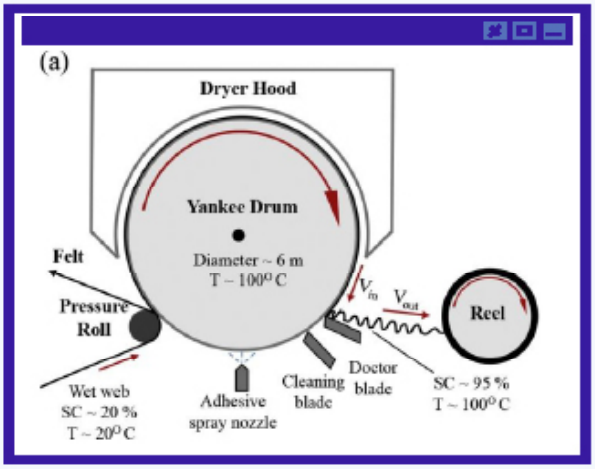
It showed great interest in studying the process of laminating napkins, which is the main process that makes paper tissue very soft.

This study aims to identify the factors affecting the laminating process in a tissue manufacturing company in Bahrain. It also aims to develop a statistical model describing the drying and laminating process using the statistical programme (R-Studio) to achieve optimal tissue softness criteria.

This was achieved by the use of



Major Factors Affecting The Creping Process



Variable Abbreviation	Variable
BW	Basis weight
MDS	Machine direction strength
CDS	Cross machine direction strength
TS	Tensile strength
S	Stretch
thickness	The thickness of the sheet
GMT	The square root of the product of MDS and CDS
HF	The hand feel
TS7	The real softness
TS750	The roughness
D	The stiffness
YP	Yankee pressure
YS	Yankee speed
CCR	Calculated creping ratio
ST	Service time of the creping blade
DT	Dryer hood temperature

manufacturing data from the respective company in the industrial sector, which was used to model the tissue softening process and validate the model.

The data received was classified into three data sets; Chemical 0 chemical 1 and the merged data set.

The two chemicals gave almost the same level of smoothness. Data with Chemical 1 showed less variance.

Starting from the modeling process, the variables were determined, according to the scientific references and the company's experienced discussions, and it was found from the study that "hand feel/touch" (HF) is the most important factor in determining the softness of a tissue. This is after the data were studied to detect patterns and examine the relationships between the variables.

The last step before starting modelling is to measure the data set to be studied to ensure that key numeric values do not dominate the model due to its large size relative to other values.

The models of Multiple Linear Regression and Partial Least Square were examined.

After carefully analyzing the data and evaluating the validity of the two tested models, none of the models showed acceptable and approved results. So, a third model was examined, the Neural Network, which was able to produce reliable predictions when a new set of data with a wider range of variance was fed. This model serves the tissue and napkin manufacturing sector, as well as the manufacture of textiles and soft fabrics.

Winners of the Bahrain Society of Engineers Awards (third edition)

Design of a sustainable system for rainwater harvesting

Civil Engineering

Project team:

- Masoomeh Abdel Saheb Marhoon
- Fatima Hussein Al Faraj
- Rawia Muhammad Fakhroo
- Amina Mohammed Al Bastaki

Project Summary and Idea:

Bahrain is an arid country with scarce fresh water. Condensation of water from air is a new technology that can be used as a resource to meet human water requirements. It is also beneficial to collect and use rainwater within the built environment, providing an additional source of water.

From this point the idea of this project originated, which was called "Design of a sustainable system for rainwater harvesting". This project aims to develop an existing rainwater drainage system in a small area of Bahrain, specifically Arad area, Block 245, Street 45, by integrating components of sustainable distribution systems into the fabric of the development using the available natural spaces near the existing pipe network.

These systems are green/gray components designed to manage rainfall by simulating natural drainage processes. Bio-greenhouse cells, rain gardens, permeable sidewalks, rain barrels, and vegetation swamps have been used.

The PCSWMM programme was used to design the current and proposed networks, in addition to an Excel spreadsheet of rainwater for comparison. The results revealed that the proposed design serves the entire catchment area, in contrast to the current network, which serves only a part of the catchment area.

The proposed network also collects water from two sources - rainwater and air conditioning water for domestic and institutional properties, while the existing network wastes the benefits of water.

The existing network pipelines are designed with inflated volumes compared to peak flow, while the proposed network is designed with smaller pipeline sizes that can withstand peak flow and withstand higher storm surges without flooding.

The proposed network resulted in a significant reduction in the amount of runoff and an increase in infiltration and storage, while improving amenities, biodiversity and water quality; On the other hand, the current network is only designed to manage the amount of water.

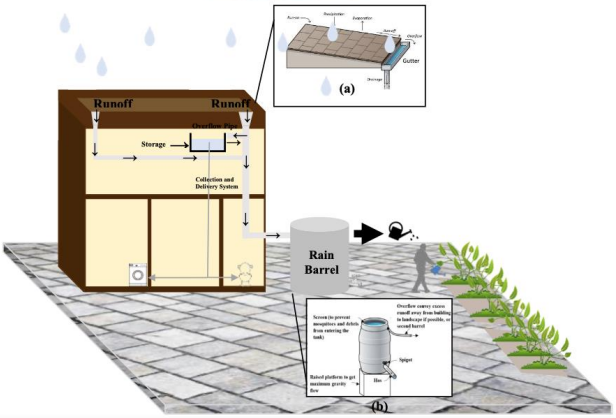
Relevant ministries should investigate this possible way of managing surface water runoff, which is beneficial in a variety of areas, including sanitation, environment, agriculture, economics and tourism, and also promotes sustainability, green infrastructure, resource rationalization and groundwater recharge.

About the content of the project:

The project starts with an overview of the concept of sustainable distribution systems, including what they are and why we need them, their role, and objectives, as well as the different types of components of sustainable distribution systems and the differences between them and traditional pipe drainage systems.

The project examines an existing piping network in a small area in Bahrain that has been selected based on several criteria, starting with designing the network using a rainwater Excel sheet and then modeling it

Rain Barrels Proposed Design



The Conceptual gravity-fed RWH system

The Conceptual Condensation Water Harvesting Systems

using PCSWMM programme based on design data provided by the Ministry of Works.

It presents the proposed network design which combines the existing network designed by using an Excel spreadsheet and components of sustainable distribution systems designed by using PCSWMM software depending on site opportunities and constraints, bio-greenhouse cells, rain gardens, permeable sidewalks and vegetation swamps have been incorporated into the available landscape near the existing pipe network.

Additionally, rain barrels have been used on each property within the catchment area, with the aim of creating a system used to collect rainwater and conditioning water for non-potable water purposes that the property owner can use. This in turn reduces the demand for drinking water and the energy required by desalination plants.

Finally, the project compares the proposed system to the existing system in terms of overall design, economic feasibility and maintenance in order to demonstrate the feasibility of using sustainable distribution systems technologies as well as make some suggestions for future work.

Expected results:

Simulation results revealed many flaws in the existing network design and showed that pipe drainage systems are essentially single-objective designs that can no longer keep pace with ongoing urbanization and climate change while the proposed network addresses the problems associated with the current network design while achieving a wide range of goals.

The proposed design serves the entire catchment area as opposed to the existing network that serves only a portion of the catchment area.

The proposed network also collects water from two sources: rainwater and air conditioning water for residential and institutional properties, while the existing network wastes the benefits of water.

The existing network pipelines are designed with inflated sizes compared to peak flow, while the proposed network is designed with smaller pipeline sizes that can withstand peak flow and higher rainfall without creating swamps.

The proposed network resulted in a significant reduction in the amount of surface runoff and increased infiltration and storage, while improving amenities, biodiversity and water quality; On the other hand, the existing network is only designed to manage the amount of water.

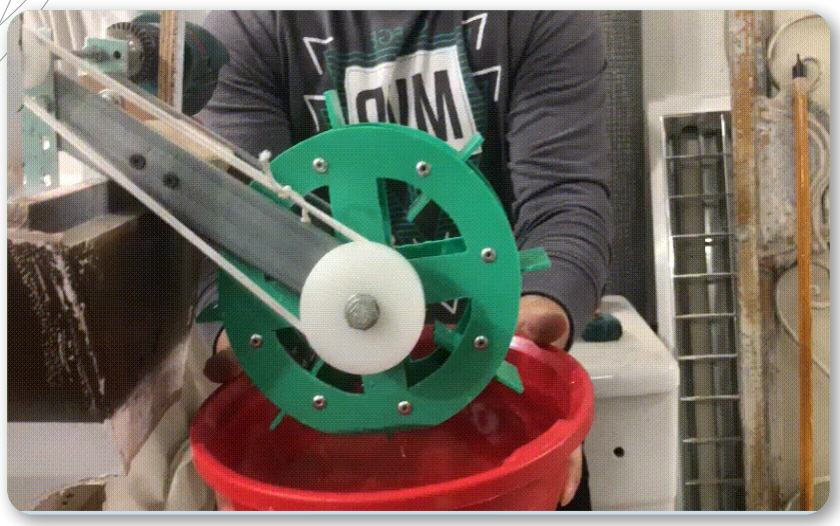
Winners of the Bahrain Society of Engineers Awards (third edition)

Mechanical Engineering

Project team:

- Mahmood Taher Ali
- Mahmood Mahdi
- Ahmed Ibrahim Ahmed

Design and analysis of an emergency boat-moving system



Reason behind selection of the project:

This project was selected due to the marine environment of Bahrain that forged a long-standing relationship between its people and the sea and its related equipment, boats and ships. The industrial and technological development affected the use of boats and sailing equipment in a manner that made boats use motors rather than oars, for example. Then, Bahrain paid more attention to this matter as it represents a historical and geographical continuity on one hand and an economic resource on the other hand as this attention supports the Economic Vision 2030.

By exploring the problems facing the sailors, it was found that their most difficult is the breakdown of the boat motor at sea. Whereas the maintenance of such boat motor is such conditions is a tough challenge, this paper was of the view of launching a project that seeks to solve this problem.

Project Objective:

This project is designed for boats in general by creating their special emergency device when the motor breaks down as such device assists sailors in moving their boat to the land so they can fix the malfunction easily and avoid fetching a mechanic to fix the malfunction at sea.

Project Work Mechanism:

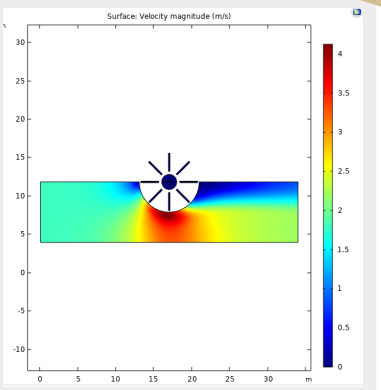
This device consists of a water wheel, two pulleys, a belt, rods and bearings, in addition to a motor connected to the pulley and fed by a battery. Once the motor runs, the first pulley connected to the belt revolves causing the belt to move and therefore the other pulley moves causing the running of the water wheel that has blades and this propels the boat by the power generated from the blades.

Desired Results:

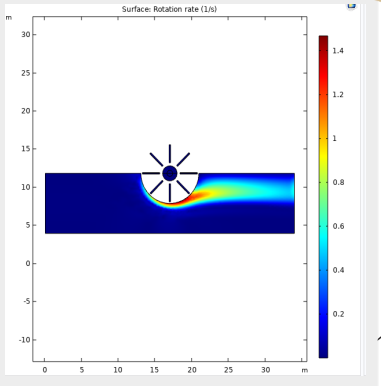
By examining and simulating the project, its results were satisfactory as it fulfills the design conditions of security and safety. Moreover, it was suitable for using as an emergency system for boats.

Finally, this paper urges researchers or those who will prepare graduation research papers to innovate useful projects that keep pace with development and are suitable for the conditions and needs of Bahrain.

Computational fluid dynamics Analysis



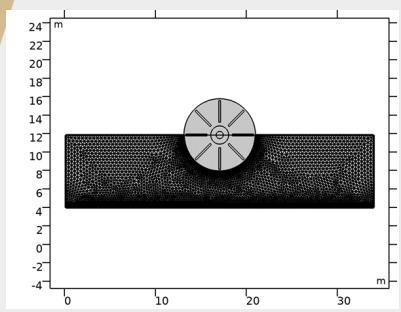
2D Surface Velocity magnitude



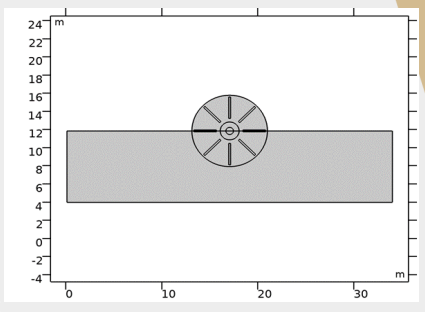
2D Surface plot rotation rate

Computational fluid dynamics Analysis

1. K-epsilon (k-ε) turbulence model.
2. Geometry model.
3. Slip boundary condition



The Fine Mesh



The Geometry Modeling

Winners of the Bahrain Society of Engineers Awards (third edition)

Architectural Engineering

Project team:

Fajr Farid Al Maamari

The Micro District

Therefore, examining the condition of employees can lead to creating a better system that assists in raising employee satisfaction and general productivity of work.

The emergence of examples of positive results may contribute to encouraging other working environments to follow the same pattern. On the other hand, it will lead, in the short run, to boosting the economic growth of Bahrain and improve its global competitiveness.

The MicroDistrict is a proposal developed by one of the most successful companies in the world, i.e. “Microsoft” to be the first and main headquarters in the Middle East Region. It aims to create a new platform for a developed working environment that suits the culture of Bahrain and responds to the overall vision of the parent company. In addition, it will create an opportunity that will be play a key role in the development and urbanization of Bahrain. This, in turn, will lead to giving boost to the company’s trademark and providing an creative place of business that develops national capacities to a higher level and contributes to Bahrain’s economic development.

This proposal also targets graduates and university students as it hosts a range of training sections so as to meet their needs and prepare them for keeping pace with the developments in the labor market in various fields.

In addition, it has a special training section to focus on digital skills required to occupy new jobs, provide opportunities for creative minds as well as businessmen and businesswomen to develop their skills and abilities and finally adapt and develop their business to be part of Microsoft.

This new trend of advanced and creative spaces introduces new styles that improve quality of life by targeting the areas of growth in Bahrain with the aim of enhancing creative thinking and encouraging talents. This will be followed by contributing to the economic development of Bahrain by supporting the Bahrain Economic Vision 2030 through attracting business from inside and outside Bahrain and creating a bright future.