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CELEBRATING OUR ANNIVERSARY

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Rethinking TRAINING & DEVELOPMENT During the Pandemic

GSMR
الجمعية الخليجية للصيانة والأعتمادية
Gulf Society For Maintenance & Reliability

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Dear Valued GSMR Members,

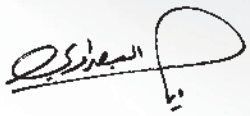
It gives me immense pleasure to share this anniversary issue of Osool with you all.

In early 2020, the Board of Directors envisioned a technical publication, a vessel of knowledge, a beacon of excellence to further GSMR's mission "to provide an interactive platform for achieving excellence in maintenance, reliability and asset management". This vision was passionately supported and nurtured and through sheer commitment and hard work, we have today, achieved yet another milestone.

On behalf of the Board of Directors, I'd like to congratulate all those who have made this accomplishment possible: GSMR's Marketing & PR Committee for their relentless commitment and drive, the dynamic team of editors working behind the scenes, our growing circle of contributors who elevate the magazine with their articles, and last but not the least, you, our dear readers who have wholeheartedly embraced each issue.

Since publishing its first edition in October 2020, Osool has evolved into a leading magazine for practitioners in our industry, offering a rich reading experience. With each issue, we have diversified content and reached out to a wider audience; Osool has benefited the veteran and the young professional alike, featuring inspiring success stories across industrial sectors from oil and gas and electrical to aerotech and aluminium smelters, all highlighting that there is something to learn from everybody

Starting with this first anniversary edition, we bring you an improved version of Osool with further expanded content, as well as more pages to turn. I sincerely hope you enjoy reading this issue and, as always, I look forward to your feedback.



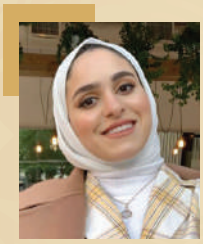
Eyad Al Basrawi
Chairman

CELEBRATING OUR FIRST ANNIVERSARY

THE EDITORIAL TEAM

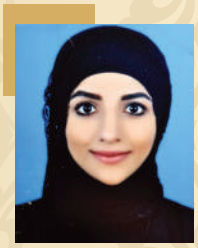
Essa Al Qattan,
GSMR Marketing &
PR Committee Chair, Kuwait

It's a proud moment for us, at GSMR particularly for the Marketing & PR Committee as we have been closely associated with every issue of the magazine. On behalf of the Committee, I would like to sincerely thank a series of people who have been instrumental to this success: our Board of Directors for their ongoing encouragement and guidance, Osool's editors for their efforts towards ensuring that we publish quality content in every edition, and our contributors who have so generously shared their knowledge and expertise with our readers. Last but not the least, I extend my gratitude towards our dear readers who have embraced every issue of Osool and shared positive and constructive feedback thereby motivating us to continue this publication – a beacon of learning and excellence for maintenance, reliability and asset management practitioners in the region and globally.



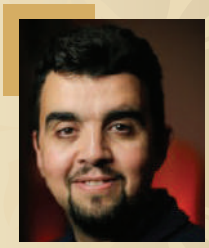
Latifa Al Qallaf, Editor, Kuwait

Being an editor has helped me further expand my knowledge of maintenance and reliability. It has shown me how the world is hurrying towards Industry 4.0, which highlights the importance of having Osool as an electronic platform to showcase the latest trends and news related to our industry. I would like to thank Osool's contributors and readers - your participation has led to our success. We promise to continue to deliver diverse, improved and interesting content every quarter.



Shaymaa Ashkanani, Editor, Kuwait

As you read these words, life will have come full circle with the launch of this very special first anniversary issue. It's been one incredible year of time, effort and challenges but receiving the overwhelming feedback of our readers has made it worth it. I hope the success stories that we feature inspire and teach you. I thank the entire team of Osool – it's been an honour working with you. I'm passionate about being a part of this project and excited for the forthcoming issues – the best is yet to come.



Dr. Wesam Beitelmal,
Contributing Editor, Oman

It has been a fantastic experience staying connected with the engineering industry through this quarterly electronic magazine. Osool is a reliable source of information and news in the region, touching different aspects related to the engineering and technical field. It provided me with an opportunity to contribute towards spreading knowledge particularly in the field of asset management to professionals and organizations. I'd also like to thank the team for their fabulous job and efforts in smoothly creating interesting issues each quarter. Last but not least, I'd like to invite our readers to participate by sharing your stories, experience, achievements and valuable feedback – this is your magazine.

Melissa Nazareth, Managing Editor, Bahrain

It has been an absolute delight working on Osool. Managing an industrial magazine specific to maintenance, reliability and asset management has further expanded my horizons as an editorial and comms executive. We were entrusted with an idea and to transform it into a reality wasn't easy. But thanks to the continued encouragement of those at the helm and your support, we have completed our one-year milestone with this edition. I want to congratulate each of the editorial team members or as we like to say "the dream team" on this accomplishment. Onward and upward!

OUR PATRONS' MESSAGES

Naser Al Hajri, GSMR Board Member, UAE

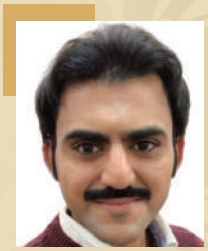
On the occasion of the first anniversary of Osool, I fondly recall the shared decision by the Board to launch this special initiative. While the vision behind introducing an E-magazine was a noble one, it set before us a challenge – how were we going to make this idea a reality. I would like to commend the team that has been silently working behind the scenes, and congratulate them on this first anniversary milestone. I wish them the best and urge our members and network of professionals to reach out and benefit from this exceptional tool for learning and excellence in our industry.

Fahd Al Otaibi, KSA

Osool is a great tool to keep us abreast of developments in the maintenance and reliability field. It also helps us learn from others' experiences. What I like most about the magazine is the fact that it covers relevant topics from the GCC; topics that we can relate to. I am a big fan of GSMR since its inception back in 2010 and I have been involved in some of its activities since then; that's how I found out about Osool.

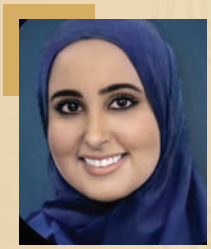
Meshal Al Azmi, KSA

I fondly recall memories of collaborating with Osool for the first edition when the magazine was just starting out. It was an extraordinary opportunity to reach out to other practitioners in our field with an article contribution despite the pandemic having suspended all physical events and gatherings across the world. It has been a genuine pleasure to watch the magazine evolve since. My best wishes to GSMR and the energetic editorial team behind the magazine. Hopefully, Osool will continue to grow to be a globally well-known technical publication.



Mohamed Al Ibrahim, KSA

I had the honor to have a cover page article published in Osool magazine's April issue. Osool magazine is one of GSMR's best initiatives, featuring articles by industry experts in the fields of maintenance, reliability and asset management. It provides us professionals a platform to share knowledge and exchange best practices. I look forward to contributing and sharing my knowledge and experience in the upcoming issues.



Nourah Al Saad, Kuwait

As a member of the GSMR PR & Marketing Committee, it gives me great pride to witness the first anniversary of Osool magazine, an educational and interactive platform for maintenance, reliability and asset management professionals in the Gulf Region. Osool has enriched me with diverse technical topics across business fields. I also shared, along with my team, an article about a newly developed maintenance concept "Unit Handling Elements", which was featured in the April issue. The highlight of Osool E-magazine is the opportunity it gave me to connect with other professionals in my field.

COURSE LISTINGS

Compiled By

Mohammed K. Almatani, PhD
Assistant Professor
Reliability & Maintenance Engineering
Industrial Engineering Dept. College of Engineering
King Saud University

GENERAL MASSIVE OPEN ONLINE COURSES (MOOC) PLATFORMS

Coursera
https://www.coursera.org/

edX
https://www.edx.org/

Khan Academy
https://www.khanacademy.org/

Udacity
https://www.udacity.com/

Udemy
https://www.udemy.com/

OpenLearn
https://www.open.edu/openlearn/

ASSET MANAGEMENT/ MAINTENANCE/ RELIABILITY ONLINE TRAINING PLATFORMS.

Asset Wisdom
E https://asset-wisdom.com/online-learning/

The Woodhouse Partnership
https://www.assetmanagementacademy.com/

Life Cycle Institute
https://www.lce.com/Courses-69.html

Wilde Risk
https://www.wilderisk.co.uk/training/

Lifetime Reliability Solutions
https://www.lifetime-reliability.com/cms/training/online-training-courses/

ARMS Reliability Training courses
https://www.armsreliability.com/page/training/home

Mobius institute professional training
https://www.mobiusinstitute.com/

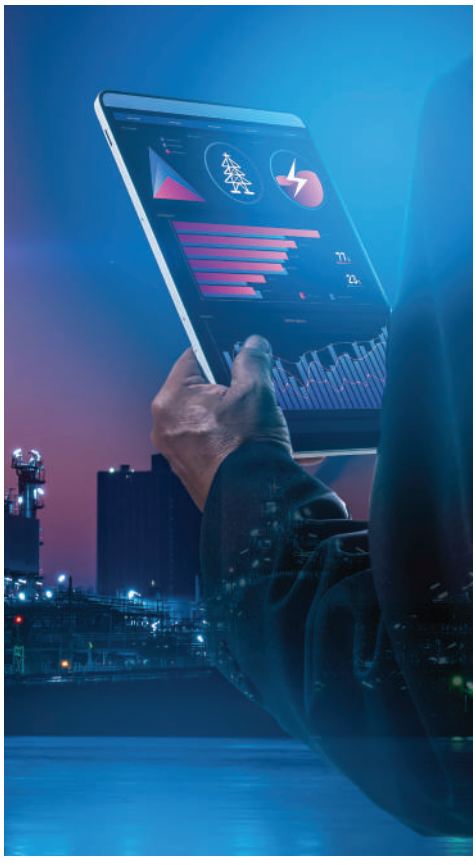
Self-learning Continuous Improvement Reliability and Asset Management
https://www.reliabilityconnect.com/

Predictive Analytics for IoT Solutions
https://www.edx.org/course/predictive-analytics-for-iot-solutions

Introduction to Running Pipe in Oil and Gas Wells
https://www.edx.org/course/introduction-to-running-pipe-in-oil-and-gas-wells

Rethinking Training & Development During the Pandemic

Academicians, organizations and professionals in our industry share their views and opinions on the impact COVID-19 has had on the way we share knowledge and exchange best practices – emerging trends, challenges and the future of learning.



> **"VIRTUAL KNOWLEDGE TRANSFER AND TRAINING HAS BEEN THE NORM OVER THE PAST YEAR OR SO, AND GSMR HAS BEEN ONE OF THE FIRST PIONEERS IN THE REGION TO ADOPT IT."**

By **Husain Al Ali, CMRP, CAMA**
GSMR Education & Certification Committee Chair
alali@ibtikarsynergy.com

This article is written from the perspective of a trainer who has been engaged for many years with the young brains, and current leaders of the industry, in the field of maintenance, reliability, and asset management, and contains scripts from the newly developed GSMR Body of Knowledge Document, shown as quotes in this article.

The field of maintenance, reliability, and asset management "MR&AM" forms the backbone of industries, and the way this field is managed determines the success, failure, survival, and the sustainability of the industrial organization.

Therefore, issues and decisions related to the way this field is managed are strategic and must be given utmost priority at corporate level, to ensure the efficient utilization of an organization's expensive physical assets.

The considerations for taking the right decisions for managing this field need to be taken way before the assets are procured. It starts with the setting up of the right organizational structure that sets the integrated relationships between the various departments assigned to manage the assets across the whole span of the assets life cycle phases, including the design, tender, procurement, installation, operation & maintenance, and eventually the end-of-life disposal of the assets.

Throughout these asset life cycle phases, the abilities, competences, and input of an organization's human resources play major parts in achieving best values from these assets to the organization.

"The effectiveness of MR&AM strategies depends on the personnel who plan, implement, execute, and manage those strategies".

Training & developments, and competence building for the people responsible for production, maintenance, reliability, and asset management, is therefore crucial to an organization and forms an integrated part of the rest of the decisions taken at the corporate level for managing the field of "MR&AM".

Some of the key objectives of the training & development plans are to:

- Improve competence of staff involved in MR&AM
- Promote Reliability Based Culture
- Develop Staff Leadership competency to facilitate effective implementation of Reliability and Maintenance Programs.
- Keep the talents and their competency relevant and supportive of the business goals of the company.
- Ensure the changes are understood and accepted at all levels of the operation, maintenance, and reliability workforce.

Training assignments and expenditures must be viewed as any other expenditure from a business perspective, with a return-on-investment consideration. Some of the returns may be short term in the form of low hanging fruits from the exchange of ideas and sharing of case studies during an assignment, and other returns are of long-term nature.

All managers in an organization, especially the managers of the various departments associated with the integrated approach for managing the whole phases of the asset life cycle, need to be equipped with leadership skills, to be able to inspire their teams, create harmony and integration, improve communication and teamwork, lead the change, and achieve excellent results in a proactive approach across the organization.

Change is a necessary part of life, and is either intended, or forced on organizations by external influences. In either case, successful organizations must be agile in dealing and managing the change.

As a recent example of forced changes is the current COVID-19 pandemic, which had a major impact on countries and societies across all aspects of life. Many economies and businesses suffered greatly as a result. Businesses that have an agile culture with a good change management process suffered the least and may have even benefited positively from this change.

Training has been one of the first victims of the pandemic, as most organizations stopped all formal training for a long period at the start of the pandemic, until other solutions came into being and training activities resumed.

Virtual knowledge transfer and training has been the norm over the past year or so, and GSMR has been one of the first pioneers in the region to adopt it and is now considered an accepted approach and a new way of life with good benefits, in spite of the few challenges it has for the trainers and the training recipients when compared to the live delivery of the training.

Some of the key benefits of virtual training:

- More economical and convenient.
- Wider and more diverse audience.
- Better opportunity for mixing from different organizations.
- Wider choices of training providers.

GSMR's continued virtual training sessions throughout the pandemic have been the choice of leading organizations in the industry, and will continue to be available for the wider audience across the GCC.

TRAINING BEYOND THE PANDEMIC

AN INTERVIEW WITH

A/RAHMAN A/AZIZ AL-OLAYAN

Manager, Training & Career Development Group at Kuwait Integrated Petroleum Industries Company

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Did you use any new training techniques?

The pandemic imposed unprecedented challenges across departments. With regards to training, two major areas of focus were training cost and training delivery. We streamlined a process to efficiently implement the preexisting e-learning platform. Also, we introduced interactive virtual training alongside the online training with internationally recognized organizations. This ensured the completion of the program by an increased number of participants in a shorter time frame, while increasing engagement and lowering the cost and equipping our staff with the required competencies and skills.

What was the impact of working from home on your organization's reporting system?

Industry data and analytics are the key drivers today. At Kuwait Integrated Petroleum Industries Company (KIPIC), we are always ahead of the curve and so we were prepared for the work from home policy. Our reporting system is comprehensively designed and fully equipped to serve employees across the organization. We were properly equipped with all necessary resources. Our employees were given laptops loaded with software, virtual access to their desktops. This allowed for access to all information and data, communication, and ensured flexibility and ease of workflow with no interruption of their duties and assignments.

How can organizations and universities synergize efforts to overcome the effects of the pandemic on T&D?

KIPIC is well-known for its commitment to youth development and empowerment. We have several programs that focus on students and freshly graduated employees. We allowed the internship programs to continue online where representatives from different groups trained the employees online providing them with the knowledge needed. On the other hand, we organized programs for our youth to ensure engagement through the pandemic. All programs took place online with interaction.

What are the important factors to consider while planning T&D costs?

We had to reconsider our training plans, maintaining a fine balance between cost and our objective to sustain a culture of learning and excellence for our employees. At KIPIC, we take employee development very seriously as it directly influences productivity and work quality, which in turn affects the bottom line. The major factors that we focused on was training for the pre commissioning and commissioning activities. With the use of virtual training and online training, we reconsidered our budget forecasts as the training costs were reduced by prioritizing training that are of work-related needs.

Are your employees allowed to choose training programs?

Employee well-being and how effectively their feedback is incorporated is a major indicator of an organization's culture. As an extension of our objective to develop and empower our employees, we try to take into consideration their requirements and perspectives. At KIPIC every employee has Personal Development Plan (PDP). The PDP is a unified automated process to support the career of employees through a customized learning and development journey. It is a formal document that is prepared by the employee and the direct supervisor, it is prepared after assessing the competencies required to achieve the learning and development's objective.

The PDP for every employee is targeted through a blended learning approach of E-learning, classroom, on-the-job, self-learning and other activities. The training & career development team always strive to work towards a high performing learning culture that shall ensure that the employee has developed his/her competencies and his/her career aspirations through effective learning solutions.

What knowledge and skills are required by employers in the oil and gas industry?

The Oil and Gas is the most volatile industry. Some key characteristic traits that managers and employees in this sector must have the ability to think on their feet and have a long-term vision. The pandemic has surely taught us to make quick but calculated decisions and sustain anything long term despite delayed results. Some of the knowledge and skills required in the oil and gas industry are adaptability, ability to work under pressure and managing change.

Ashvin Gabani,
SE- Statistics and Reliability at Dubai Electricity & Water Authority shares highlights and learnings from his upskilling journey during the pandemic.

amgabani@gmail.com

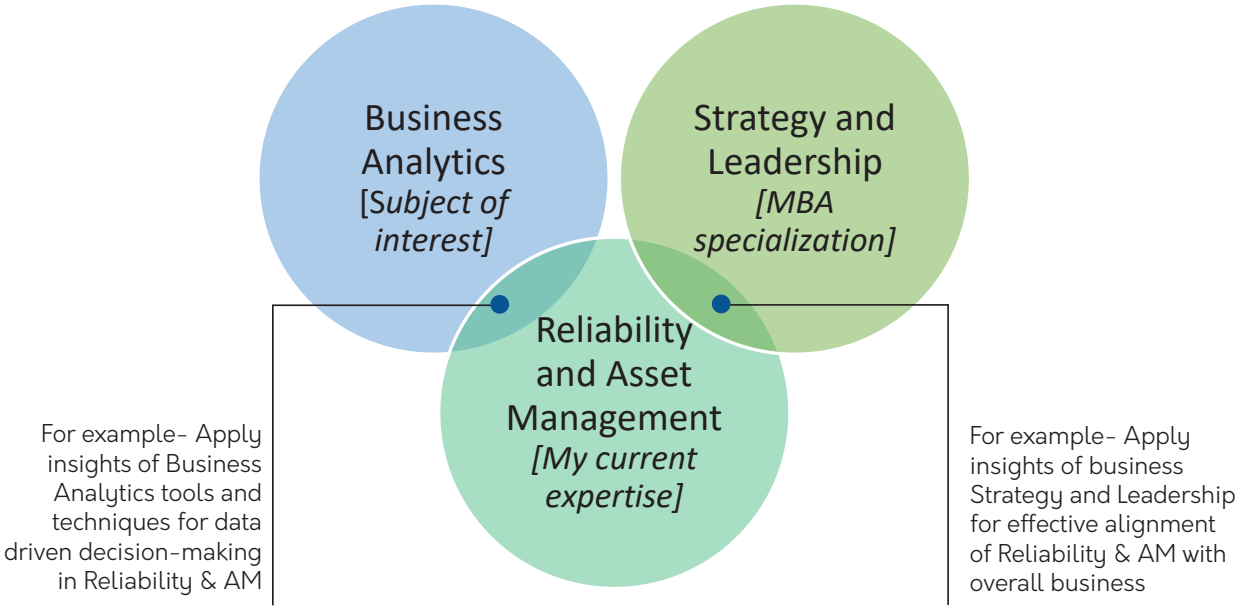
"In the middle of difficulty lies opportunity." – Albert Einstein

COVID-19 presented many difficulties and challenges, but it also provided opportunities, which I wanted to take advantage of. So, the next question is: what should you learn and how should you learn it? I knew what I wanted to learn, an MBA, but I couldn't decide whether to learn it online or in a classroom, despite my preference for classroom learning. I had been seeking for an MBA two years prior to COVID but had not been able to find a good globally recognized university with reasonable fees.

Then came COVID-19, when classroom education practically came to a halt all over the world and universities began to adopt online education; many EdTech businesses flourished as a result. This provided students with the opportunity to learn and grow at their own pace. On the other side, I have advantages in terms of reading habits. So, in order to achieve my master's degree aim, I needed to seize the opportunity to find a suitable platform on which to apply my strengths. After doing some research, I discovered upGrad, a platform that offers MBA (Global) from reputable universities. I enrolled in Deakin University, Australia that is ranked among the top 1% of business schools in the world. Without further ado, I enrolled in Deakin University's two-year MBA, and as I write this piece, I have already completed my first year of MBA, which is a PGPM from IMT-G (one of the best private B-schools in India).

Synergizing Skills, Specialization & Studies

Since I come from a technical background, the question of what to do after an MBA is understandable. Should I change fields after my MBA, and if not, how will this MBA benefit me? I didn't have an answer for this topic at first, and after enrolling in MBA, my dilemma grew much worse because there are subjects from completely diverse areas of business. Then a business mentor came to my aid. We'll hear more about the industry mentor later. He advised me not to squander my 14+ years of maintenance, reliability, and asset management experience. Then I asked how I could apply my MBA knowledge in my current domain, and after a few interactive sessions, he recommended that I should combine MBA knowledge of Business Analytics (my elective) and Strategy & Leadership (specialization) to create a unique combination that could be valuable to current industry requirements. To illustrate it, I created the diagram below. I literally found my answer and was able to clarify my dilemma. I'm not sure what the present market demand for such a rare combo is, but I feel this expertise will be in demand in the near future.



Learnings & Take-aways

In the first part of my journey, I received good business knowledge across a broad spectrum of management, including marketing, sales, operations & supply chain, OB, HR & legal, business communication, finance, business economics, decision science, business analytics, business strategy, leadership, digital transformation, digital business innovation, and enterprise risk management. This knowledge has provided me a good practical insight of businesses and I've tried to apply some of it in my present role.

The next part of my journey focuses on how I applied a small part of this knowledge. For example, I used my business analytics knowledge to launch a study using energy readings data and discovered a potential savings of AED 67 million yearly.

What I found unique about this course in comparison to other online courses I've taken? Here are a few key items to consider in response to this.

- **Harvard Simulations**-Harvard Business Publishing education offers simulations that enable hands-on learning through realistic business scenarios. Of course, this was my favorite part.
- **Live sessions** -Every weekend, there are live sessions with university academics or industry specialists. As a result, it provides access to people with strong academic understanding on the one hand, and professionals with practical experience on the other.
- **Industry mentor**- Each student is allocated an industry mentor who is well-experienced and in a good position in the industry. They assist students in making career choices.
- **Method of Assessment**- MCQs are used in the majority of course assignments. However, there are in-content MCQs, projects, and a proctored term test with MCQs and subjective questions in this course. This encouraged me to continue learning and practising.
- **AI-powered Profile Builder**- An easy-to-use tool for creating resumes, LinkedIn profiles, and cover letters that includes a Resume Score and real-time recommendations for improvement.

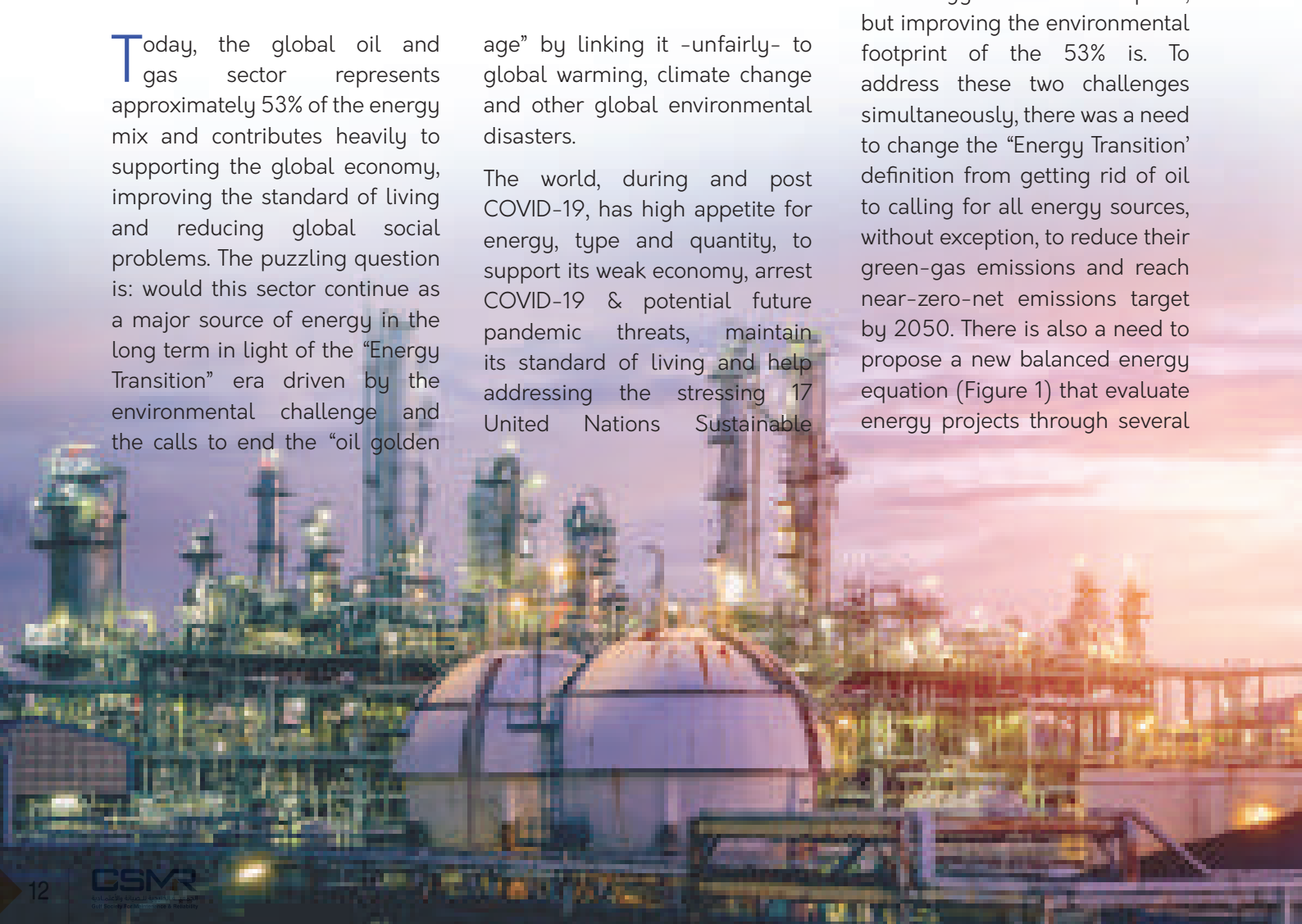
In conclusion, the challenging time of COVID was rewarding for me in terms of learning and development, and I enjoy learning new things every day.

THE FUTURE OF OIL & GAS INDUSTRY IN THE ERA OF ENERGY TRANSITION

By Dr. Sami Al-Nuaim
2019 President of the Society of Petroleum Engineers Int (SPE)

Today, the global oil and gas sector represents approximately 53% of the energy mix and contributes heavily to supporting the global economy, improving the standard of living and reducing global social problems. The puzzling question is: would this sector continue as a major source of energy in the long term in light of the "Energy Transition" era driven by the environmental challenge and the calls to end the "oil golden age" by linking it -unfairly- to global warming, climate change and other global environmental disasters.

The world, during and post COVID-19, has high appetite for energy, type and quantity, to support its weak economy, arrest COVID-19 & potential future pandemic threats, maintain its standard of living and help addressing the stressing 17 United Nations Sustainable Development Goals (UN 17 SDGs) including achieving a global zero energy poverty index by 2030. UN has adopted this stretched goal despite the fact that today there are one billion people below the energy poverty line, who lack the simplest forms of energy such as electricity and cooking fuel, and despite the fact that the world's population will increase by one billion by 2040. Hence, removing 53% of the energy mix is not an option, but improving the environmental footprint of the 53% is. To address these two challenges simultaneously, there was a need to change the "Energy Transition' definition from getting rid of oil to calling for all energy sources, without exception, to reduce their green-gas emissions and reach near-zero-net emissions target by 2050. There is also a need to propose a new balanced energy equation (Figure 1) that evaluate energy projects through several



sustainable social development factors such as employment, improvement of standard of living and reduction in the energy poverty index, in addition to the common economic and environmental factors.

The Oil & Gas industry can quickly transform into a highly efficient and low-emissions' industry through:

01 Reducing its Methane emissions by the elimination of the associated gas flaring.

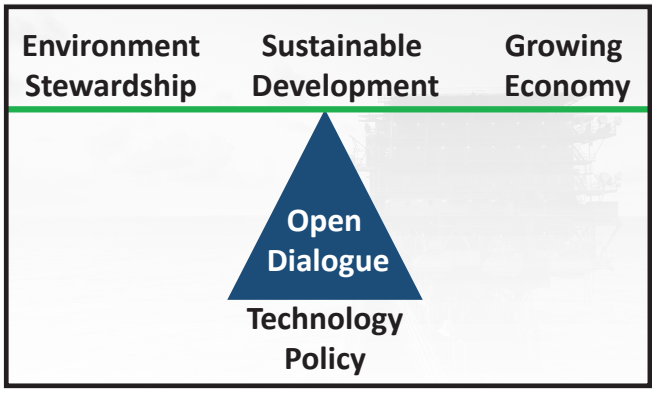
02 Developing radical technical solutions to address Methane & Carbon Dioxide emissions. A good example is the Oil and Gas Climate Initiative (OGCI) where 13 oil companies invest $1 billion dollars to develop new advanced technologies that could accelerate the transformation process.

03 Improving energy efficiency, and carbon intensity of its operations, including supply chain (contractors and suppliers).

04 Using a combination of gas and renewables to generate electricity instead of coal and liquid-fuel which can result into a remarkable CO2 emission reduction.

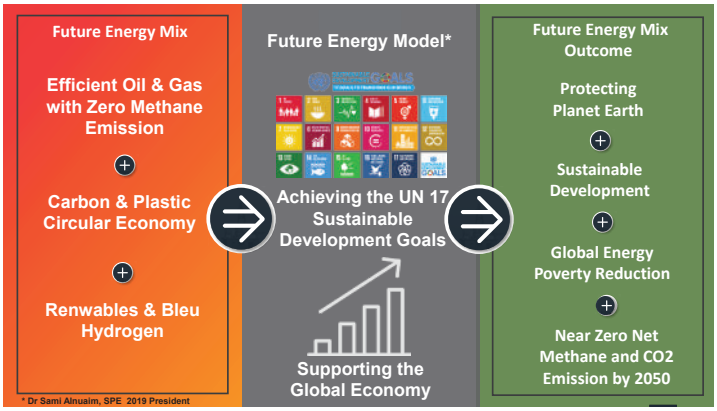
05 Launching several mega Carbon Capture & Sequestration projects.

Figure 1: The Balanced Energy Equation*



* Dr Sami Alnuaim, SPE 2019 President

Figure 2: Future Energy Mix



* Dr Sami Alnuaim, SPE 2019 President

06 Launching afforestation initiatives such as the Kingdom Green Initiative (in KSA) and calling to stop the ongoing global deforestation.

07 Adopting circular economy practices such as the Saudi Circular Carbon Initiative (in KSA).

08 Finally, focusing on the Crude-To-Chemicals future sector with higher R&D investments. This is expected to convert 40-50% (currently 20-25%) of the oil barrel into non-combustible special chemicals in the next 20 years, which will greatly reduce the emissions and will create new unprecedented uses of oil, helping in maintaining global oil demand and absorbing what may become excess due to the growth of the electric vehicles.

In light of this great momentum in the oil and gas industry, leading this exciting, long and challenging energy transformation journey, the energy future outlook is optimistic.

Hence, the Long-term energy mix (Figure 2) will be led by cleaner and more efficient oil and gas supported by emissions' reduction technologies / initiatives and complemented by several energy sources including clean coal, efficient renewables and hydrogen sources. In conclusion, the global need for energy is increasing, but also the need to protect the planet is a moral responsibility that every gas emitter's industry must bear, not only Oil & Gas industry.

ASSET MANAGEMENT:

A Need or Trend? - PART 2

Suriya Narayanan, CAMA, PMP, CMRP, CRP, B.Eng., Consultant - Business Development Manager at Yokogawa Services, Saudi Arabia, and member of GSMR's Asset Management Committee continues this two-part series on the rationale behind implementing asset management in organizations.

LEADERSHIP:

The main role of leadership in asset management is to link business objectives with the organization's capability and physical assets together with competent resources to meeting those objectives. This is how the leadership shall ensure that the business objectives and the asset management plans are aligned. Further appropriate asset provision, asset support, and resources shall be provided for the sustainment of an effective asset management system. Leadership shall also delegate authority to competent managers in the organization with set limits and provisions to make appropriate decision in accordance with the defined decision-making criteria.

ASSET MANAGEMENT – A RISK BASED DECISION MAKING TOOL

Asset investment decisions is an iterative process but has to be evaluated with organization's decision-making criteria considering cost, risk, opportunities and performance resolving conflicts between what is planned and financial constraints.

Operators must focus on standard procedures, operating envelop and safety limits of the plant. Apart from operating to the needs of their customer, they must also understand the asset health and condition of assets. Sometimes it may be good to operate the plant at below the rated capacity to compensate for the weaker asset health or conditions. This may enable the operators to extend operating duration of the plant by a few months until the next planned shutdown to fix the weaker section of the assets.

A major benefit of considering the asset management holistic perspective in an organization is managing risks. Their sources and how they should be monitored and managed is presented as follows:

Risk can be anything that prevents the realization of objectives and risk can be categorized as:

- Operational risk
- Business risk
- Risk due to human errors
- Risk due to asset condition & disposal

OPERATIONAL RISK:

Operational risk must be managed by understand the operating contexts & technology limitations. Industrial processing facilities are obligated to adhere to regulations towards safety performance, air quality, emissions, waste disposal and support the ongoing assessments of their safety scheme. Violations in the safety performance can lead to penal actions from the regulatory authorities and liability with major business impact. Critical Industrial processes must include Safety Instrumented Systems, to efficiently control the operations from any hazards to the people, environment, and assets in an effective way in compliance to local regulations. Safety Function monitor systems are required for safety performance reporting and assessments to collects, process and present safety data to enable monitoring of KPIs such as SIF (Safety Instrumented Functions) activations, LOPA (Layers of Protection), initiating causes and overrides.

BUSINESS RISK:

Business risk is an external factor dictated by the external stakeholders such as customer, competitors, regulators, supply-demand, technology obsolescence and people. Company shall make appropriate plans to monitor these stakeholders to make necessary

changes to the business objectives of the organization to avoid financial risk and loss to the business.

RISK DUE TO HUMAN ERRORS:

Most of the incidents and accidents happen in industrial plants are related to human errors which can be prevented by proper training and implementation of an effective control of work system. Risk management is no more a responsibility of the safety department only or the personnel who does the work, but it is the top most responsibility of the top management of the organization as defined by standards such ISO31000, ISO45001, ISO14001, ISO9001, etc.

Every employer shall educate, train and make their work force aware of the different types of hazards exist in their industrial plant, while performing any work on an asset and also from lessons learnt from previous incidents.

Adequate control work system shall enable:

- Capturing of ALL hazards and suggest actions to mitigate it
- Perform Risk assessment and job safety analysis
- Avoid delays in filling of forms and for getting approvals
- Linking multiple permits, isolations and other certificates
- Ensure workforce have the right skills, competency and authority
- Capture lessons learnt and it becomes part of hazard knowledge base
- Manage Conflicts between works
- Connecting other data sources and tracking location of worker
- Work performance auditing & reporting

RISK DUE TO ASSET CONDITION & DISPOSAL:

Asset condition risk shall be managed by analysing the condition and mechanical integrity of assets. By performing a risk-based inspection, reliability centered maintenance, root cause analysis, safety instrumented systems studies operators will be able to identify the risks and based on which they will be able to develop a maintenance strategy aligned with the organizational objective. This maintenance strategy will provide plans such as online condition monitoring, inspection, periodic monitoring, oil analysis, thermography, thickness measurement of pipes, visual inspection, no maintenance task, etc for each and every failure mode of an asset and these plans shall be stored in a maintenance management software for timely notification of the plans, schedule it with the right resources and to execute it within reasonable time.

Condition of asset shall be regularly monitored and remaining life (to fail) of the asset shall be established. Based this information the leaders and managers shall evaluate whether to refurbish the equipment, replace or dispose it safely.

CAPITAL PROJECTS:

Asset management starts even before assets physically exist. So assets must be designed, planned, procured, and installed for meeting the organizations objectives throughout its whole life cycle. Unfortunately, most of the capital projects are considered successful when it is completed on budget and on time. Moreover, project teams are competing with the large number of safe man-hours without losing time according to injuries with consideration to the whole life asset management context. Safety performance is important; however, Capital project (EPC) contractors and equipment suppliers must be rewarded/recognized only on the basis of compliance with operational readiness,

whole asset life cycle operation and maintenance requirements of the plant.

During the planning phase of a capital project there shall be more emphasis for reliability & operational readiness in design, whole asset life cycle requirement for reliability and maintainability shall be clearly specified in the EPC scope to be delivered. Examples of reliability requirements:

1. MTBF, failure rate of equipment
2. Reliability modelling, quality assurance and reliability testing at manufacture's facility
3. Providing 100% of equipment master data, 100% spare part information, O&M manuals, drawings & documents. Templates shall be provided to EPC companies to capture 100% vital data with required quality and completeness.
4. Ensure truly AS-BUILT drawings & documents are delivered by EPC & properly tagging all the equipment as per standard guidelines.

Apart from providing these rigid requirements, the owner of the plant shall also allocate skilled SMEs during capital project to review & approve the quality of the assets being installed, data and documents submitted by EPC against their scope and engineering standards.

Additionally, the owner company shall enlist asset management specialists to work in parallel with the EPC company's team starting immediately after FEED stage till commissioning and operational handover. This will ensure proper coordination, communication, collection of vital information, data quality and to meet asset management requirements in any capital projects.

ISO5500x certified plant operators should procure and contract with companies whose manufacturing system complies with whole asset lifecycle requirements to ensure reliability of their equipment. Setting up of stringent criteria, to review & approve equipment/vendors for capital projects every two years and ensure main EPC contractors to procure only from these approved equipment suppliers/ manufacturers.

ASSET LIFE CYCLE:

Assets create value to an organization throughout its life cycle. In order to get the expected value from assets requires proper planning and execution of asset management activities throughout the asset life cycle. Different stages of asset life cycle are detailed below:

- Identification of business objectives, stakeholder expectations, costs, risks and performance expectations.
- Selection of right business model, technology, assets, location, resources based on the business objectives.
- Financing and asset acquisition, include capital projects.
- Operation readiness planning and preparation considering the whole asset life cycle.
- Arrangement of support services such as logistics, consumables, workforce and spare parts.
- Analysis of maintainability, reliability, availability, integrity requirements of the operation, given the operating context, strategic planning and implementation of the plans to meet the asset management objectives of the organization.
- Planning & implementing for asset refurbishment, replacement and disposal

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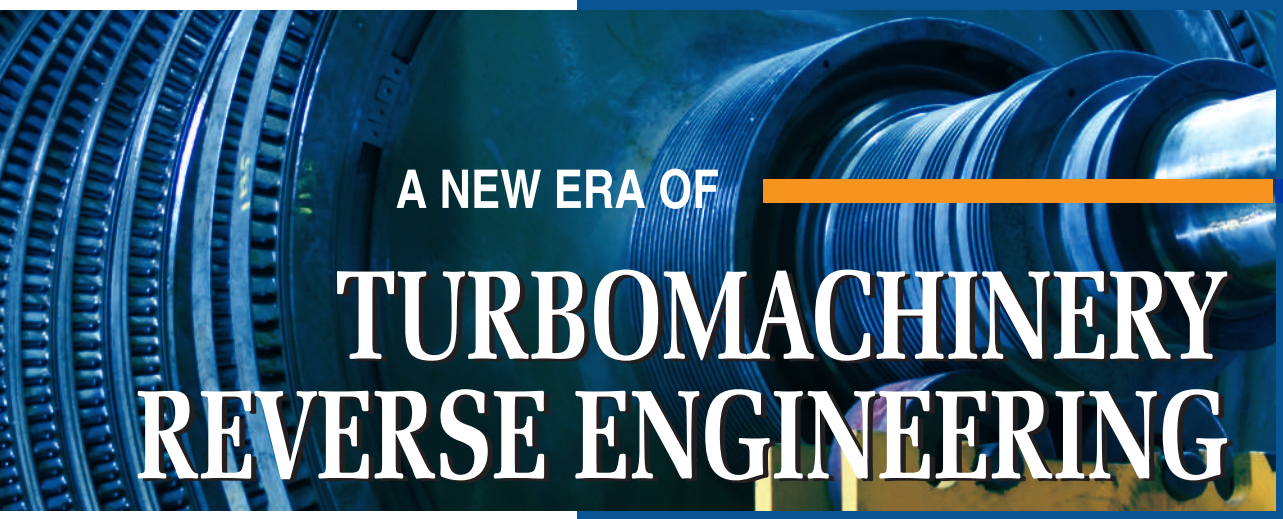

A NEW ERA OF TURBOMACHINERY REVERSE ENGINEERING

Abdulaziz Alzahrani
Rotating Equipment Engineer,
Abqaiq Plants
abdulaziz.alzahrani.31@aramco.com

Engineering is all about solving problems with efficient solutions. A long time ago engineers have solved a lot of problems in the world by designing and building various technologies and techniques.

Nowadays, one of the main challenges in the field of oil and gas is how to maintain aging facilities with old equipment that have no existing OEM and spare parts. To overcome this challenge, Saudi Aramco approved reverse engineering as a new methodology to repair obsolete equipment and ensure the availability of their spare parts.

Reverse engineering is the process by which a mechanical component can be modeled by evaluating its mechanical and performance characteristics, and its physical dimensions measured to produce a duplicate or an enhanced version of the component. In addition, utilization of reverse engineering methodology is mainly considered in the following cases:

- The OEM no longer exists.
- The product performance and features need improvement.
- The OEM is quoting an inflated price.
- The OEM is offering an unacceptable delivery time.

PROBLEM IDENTIFICATION

The story of reverse engineering at Abqaiq plants started when a single-stage steam turbine that drives a critical crude oil transfer pump was reported for a sudden increase in vibration values while the turbine was running on full load speed, as shown in Figure1.

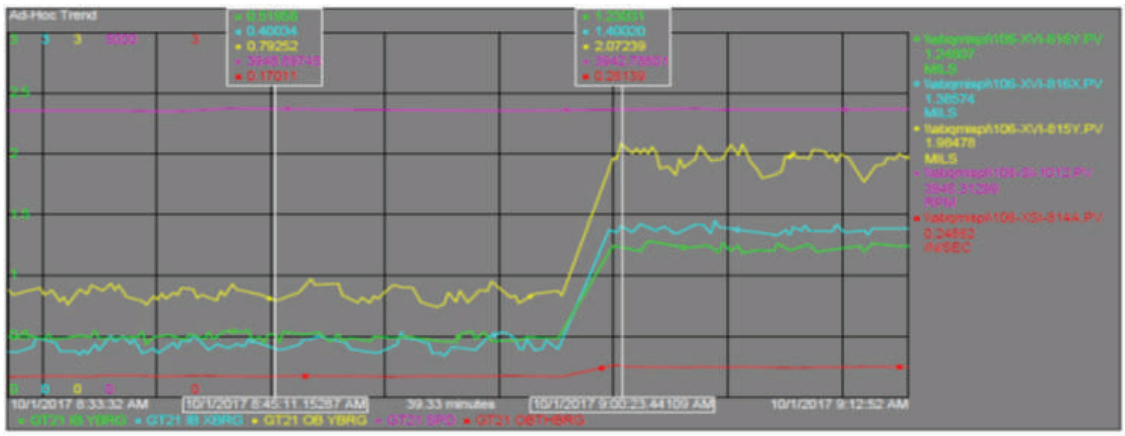

Figure 1. Vibration Parameter

On studying the equipment parameter trends, the vibration analysis showed signs of rotor imbalance, which was later confirmed by performing an internal inspection of the turbine's rotor wheel by a state-of-the-art industrial borescope camera. Figure 2 shows that we have a total of two broken blades located at the second row of the rotor wheel.

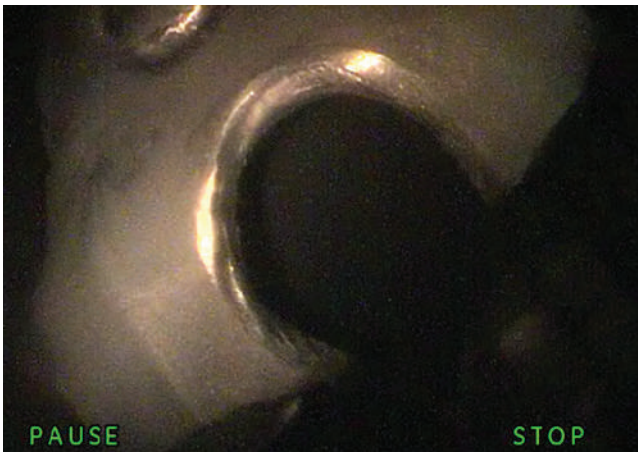

Figure 2. A screenshot of the internal inspection by the borescope camera

Based on the findings, the equipment was sent to the Saudi Aramco Mechanical Services Shop in Dhahran for a complete overhaul. After dismantling the equipment, the need to perform a complete re-blading activity was confirmed to repair the rotor wheel. Due the fact that the steam turbine was no longer produced and the manufacturer was no longer in the market, the spares availability limitation was one of the main challenges faced by Abqaiq plants in bringing back the equipment to service.

During the spare parts material sourcing activities, a new rotor was offered from one of the main active steam turbine manufacturers with a cost of $350,000, which is equivalent to 70 percent of the cost of a new steam turbine. Furthermore, the delivery lead time of the new rotor was approximately one year, which would result in an increase in the equipment down time, affecting the overall plant availability.

SUCCESS STORY

In line with Saudi Aramco's efforts towards investing in new state-of-the-art technologies to enhance the maintenance and reliability performance, Abqaiq plants piloted the reverse engineering technology, capitalizing on local resources and capabilities in collaboration with Saudi Aramco Central Engineering and the mechanical services shop. This action was taken to overcome critical equipment outage and minimize repair cost and time.

Abqaiq plants worked jointly with Saudi Aramco Central Engineering and the mechanical services shop, and agreed with approved and trusted vendors to do a complete fabrication of the broken blades, which involved critical dimensions and accurate fabrication capabilities.

The reverse engineering process started with the 3D scanning that was completed in-house using 7-axis scanning machines, in Figure3, which were used to capture the geometry of all parts in-house at the reverse engineering center.

Figure 3. 3D scanning at the reverse engineering center

In the second stage, CAD modelling was performed using the collected data at the 3D scanning stage. By this, the ultimate 3D CAD models for all required mechanical parts were developed and prepared by a highly advanced modelling software as shown in Figure 4.

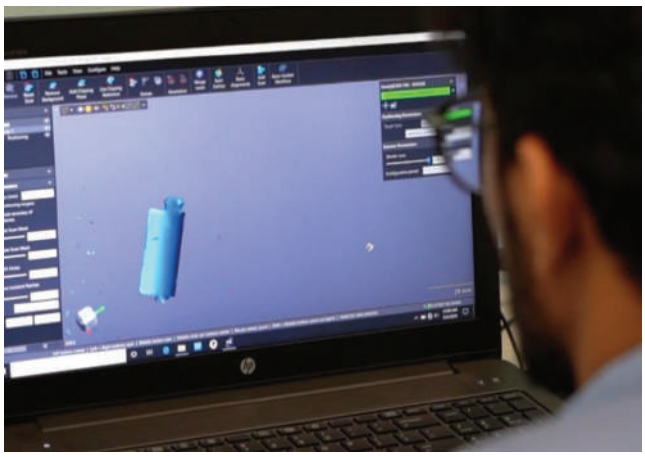

Figure 4. The CAD modelling stage

After that, the engineering work stage was started and involved significant research and design efforts. This project included over 20 trials and experiments with different materials, geometries and heat treatment conditions to assure the quality and mechanical integrity of the new engineered parts. As a result of this massive work, the strength of the blades was doubled by upgrading their material composition.

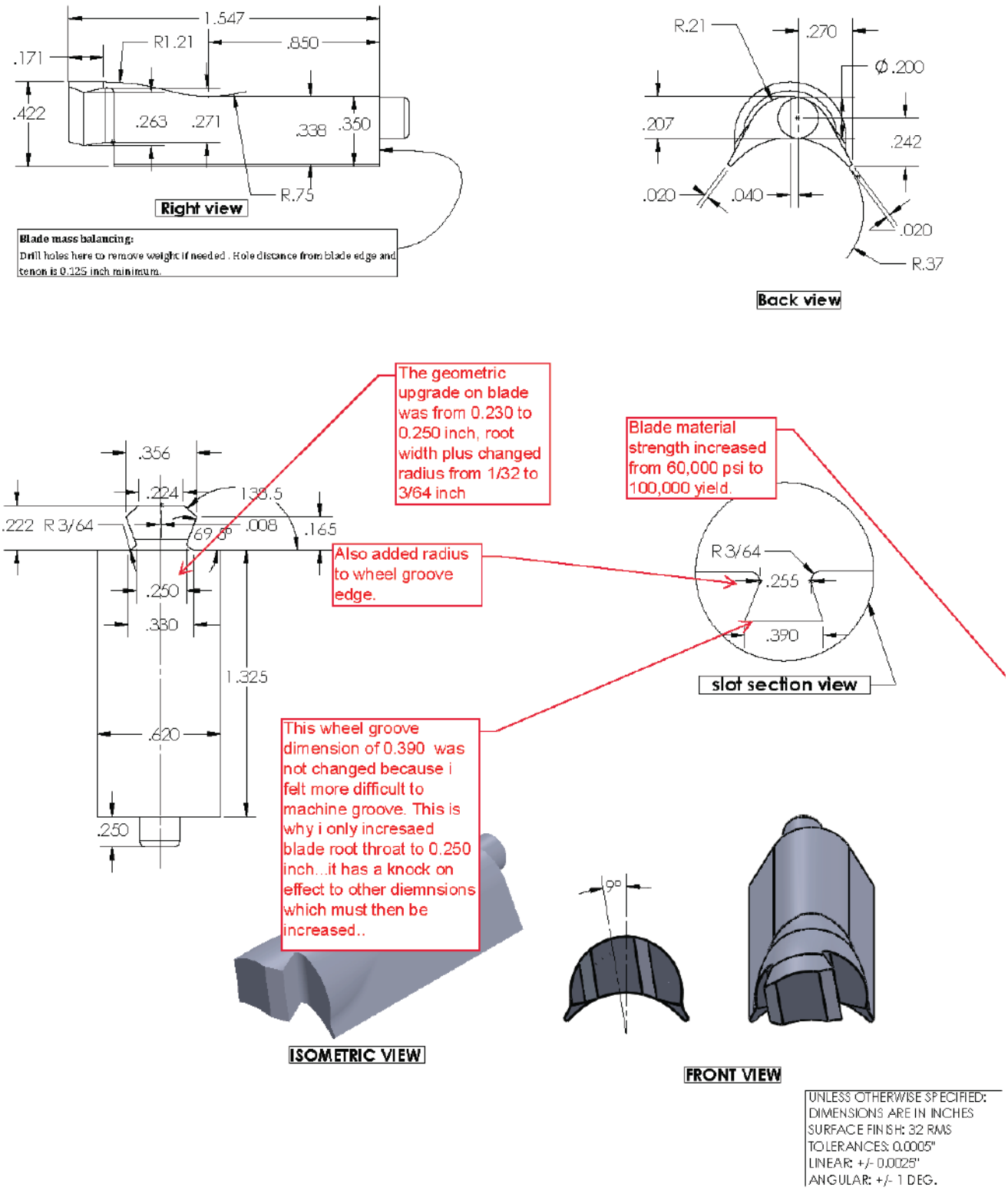

Figure 5. Parts geometrics were one of critical design requirements

The journey of this project reached the end with the manufacturing stage in which local capabilities were utilized. The blades fabrication was done in collaboration with one of the leading companies in the reverse engineering works in Saudi Arabia.

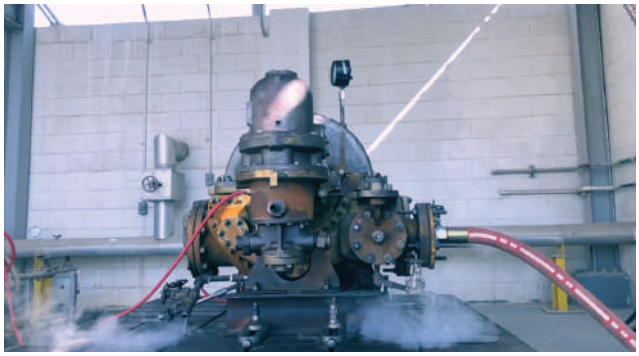

Figure 6. The repaired steam turbine during the test at the mechanical shop

After all this massive work with different entities and Saudi Aramco departments, the steam turbine was returned to Abqaiq plants, installed on site, and successfully tested with normal and stable vibration readings as shown in Figure 7. Fabrication of the first steam turbine blades in Saudi Arabia and GCC was successfully completed with a total repair cost of only 15percent of a new equipment that was offered.

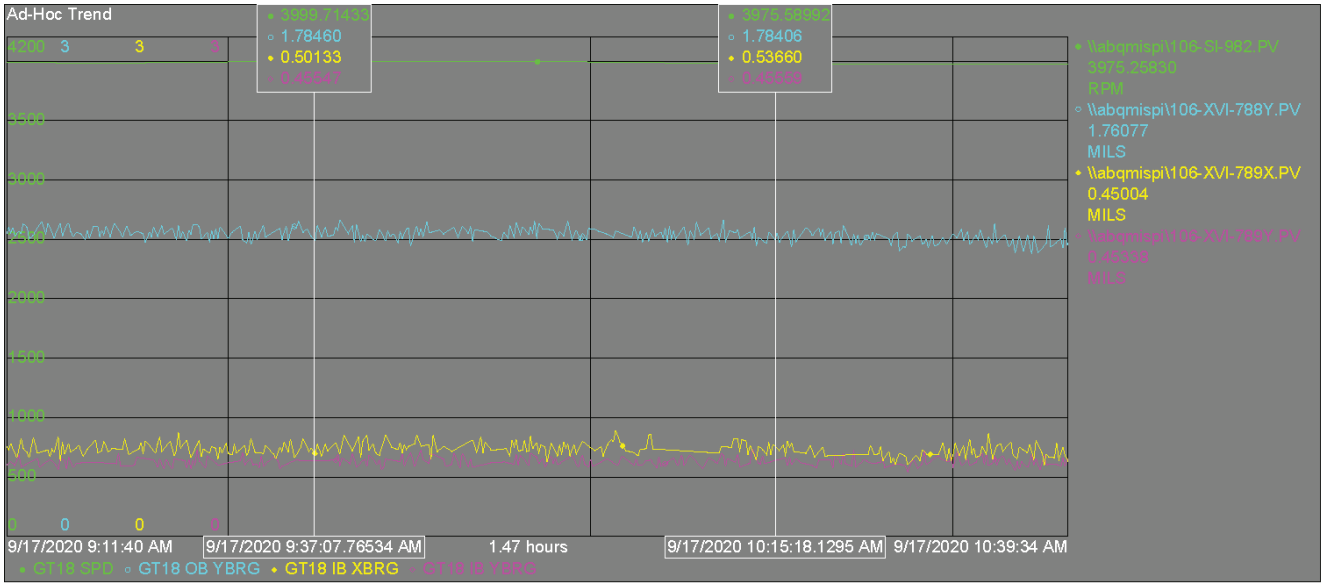

Figure 7. Vibration readings are stable after installation of new blades using the reverse engineering

CONCLUSION

Nowadays, Abqaiq plants is expanding reverse engineering options as an effective solution to overcome the challenge of legacy equipment breakdowns, along with an upgrades and replacements program based on Abqaiq plants road map. Those new repair capabilities will also be expanded across Saudi Aramco on similar equipment, improving the uptime and efficient business sustainability.

By utilizing reverse engineering, a new opportunity window is now open for old and obsolete steam turbine repairs at the region. Aging facilities can bring less expensive and more efficient spare parts of obsolete equipment with higher quality and durability.

Improve Your Maintenance & Reliability Culture through

Effective Performance Management System

Introduction

Conventional measures such as financial measures were adequate during the industrial age as they provide information of the past and some of today's concepts, such as customer relationship for example, were not considered as success factors at that era.

However, several fundamental competent assumptions were drastically changed as a result of shifting from the industrial age, from 1850 to about 1975, to the existing information age, in the last decades of the twentieth century. This shift has led to new operating environments as highlighted by Kaplan & Norton such as cross-functions, different links to customers and suppliers, customer segmentation, global scales, innovation, and knowledge workers.

Financial measures have been found to be ineffective due to their inability to predict the future of firms in comparison to the new emerging multi-dimensional performance frameworks.

By **Ali Hussain Alawadhi**
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In the process industry, for example, and with the increase of intangible assets, maintenance and reliability operational measures have complemented the financial measures and formed the drivers of the future. Different concepts, models, frameworks and methodologies were introduced in the field of performance measurement and were adopted by different firms in the world as result of intensive research and developments for the last fifteen years. It became obvious that performance management systems of today's organizations affect the behavior of both managers and employees.

The most popular approach of performance measurement system was developed in early 1990's

by Kaplan and Norton, the Balanced Scorecard, and has succeeded, since it was introduced, to fundamentally change the concept of performance measurement systems.

The Balanced Scorecard

The article, "The Balanced scorecard - Translating Strategy into Action" was published by Kaplan and Norton in 1996 with two more later papers providing a guidance and a framework on how to develop and implement the Balanced Scorecard with both financial and non-financial measures. The term balanced reflects the basic concept of the scorecard, which balances the financial and non-financial measures, leading and lagging indicators, and external and internal perspectives.

A typical Balanced Scorecard, as originally developed by Kaplan and Norton, consists of four different multi-dimensional perspectives, these are the financial perspective, the customer perspective, the internal business process perspective, and the learning and growth perspective. The word perspective is originated from Latin perespectos, which means "to look through" or "to see clearly".

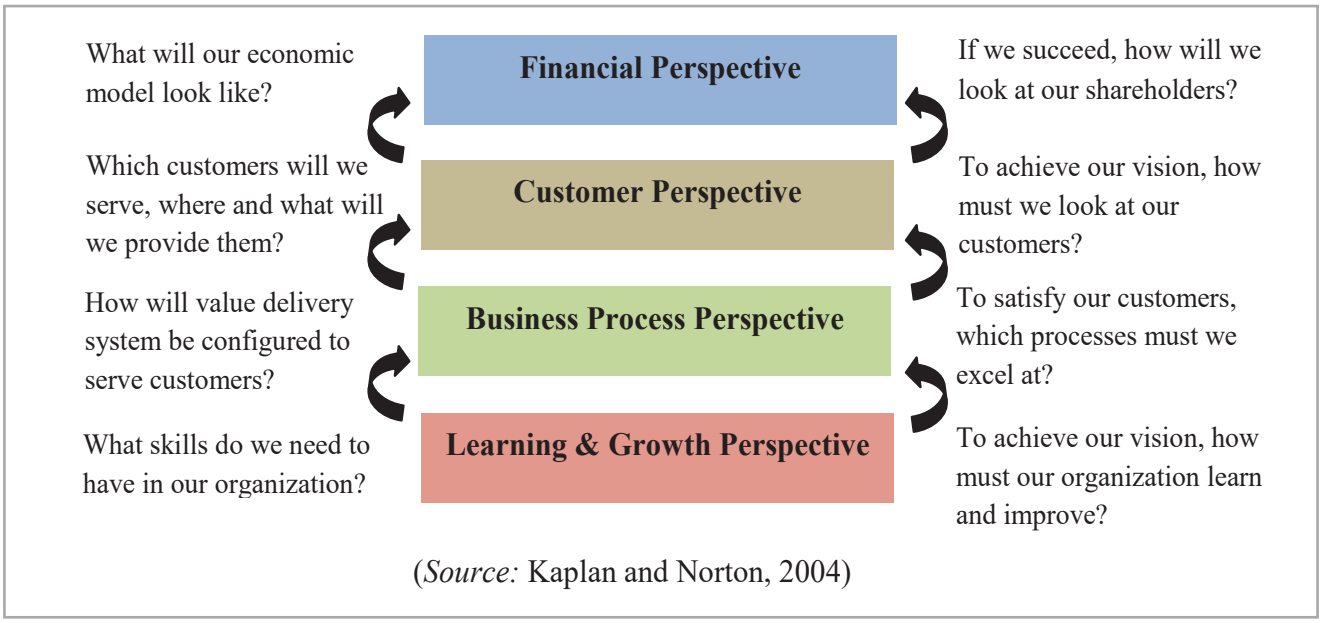


Figure 1: Balanced Scorecard (BSC) Perspectives

As Leonardo da Vinci once said, "everything is connected to everything else", Kaplan and Norton argue that the concept of multi-dimensional perspectives of the Balanced Scorecard helps organizations to translate strategy into operational measures. This means that in order to draw a full picture of strategy execution, more details from different perspectives should be considered.

The first two perspectives, financial and customer, describe what we get as result of what we do in the third and fourth perspectives, business process and learning and growth, respectively.

The Balanced Scorecard includes measures and targets derived from the strategic objectives in a combination of lag and lead measures. Lag measures are outcomes or snapshots of the past, where lead measures are drivers that allow an organization to adjust initiatives and behavior for a better performance.

In order to link long-term, strategic objectives with short-term actions, Kaplan and Norton, in their article, "Using the Balanced Scorecard as a Strategic Management System" published in Harvard Business Review, have introduced four critical management processes. They argue that the four processes are critical for organizations, these are:

1) Clarify and translate the vision and strategy with consensus and agreement on the metrics.
2) Communicate and link the Balanced Scorecard as a tool to everyone.
3) Plan, set targets, and align strategic initiative.
4) Enhance strategic feedback and learning for review and adjustment.

The Evolution

Regardless of the several definitions of the Balanced Scorecard, many argue that it has proven to be a communication tool, a performance measurement system, and a strategic management system as shown in Figure 1. Kaplan & Norton identified three different generations of the Balanced Scorecard evolution: the first highlights the importance of the concept of the four balanced perspectives that combine both financial and non-financial measures, the second is the strategy map where the cause and effect logical relationships were included along the strategic objectives and measures, the third generation is similar to the second generation but with the addition and link to action plans, targets, and incentives.

Effectiveness of the BSC

Major considerations of research budgets by professional management accounting bodies in countries like the USA, Canada, and the UK, were dedicated to studies with respect to the Balanced Scorecard such as design, approach, and the benefits of the Balanced Scorecard.

Different results of successful implementation of effective Balanced Scorecards in some organizations and failures in others call for identifying and assessing the potential critical success factors of effective Balanced Scorecard.

Therefore, several experts' views, frameworks, research studies, survey results, and case studies were studied to identify the critical success factors that are assumed to influence the effectiveness of the Balanced Scorecard.

The Model

Accordingly, a model was developed by the author of this article, in a comprehensive and empirical approach, as result of identifying, analyzing, and classifying the critical success factors of effective Balanced Scorecard as shown in Figure 2.

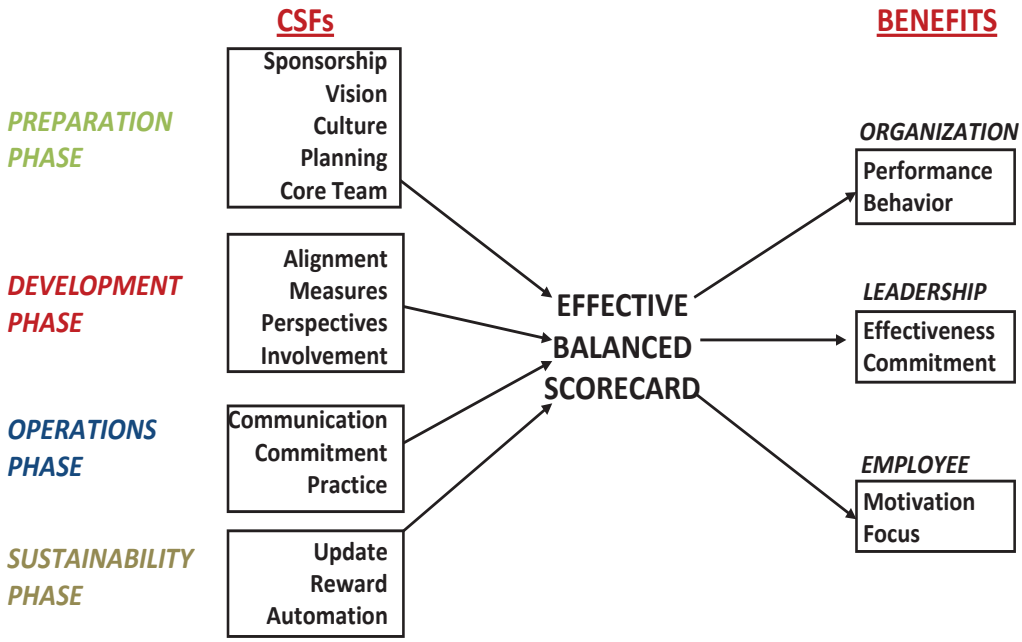


Figure 2: Effectiveness of BSC Model
(Developed by Ali Alawadhi)

As explained earlier, the Balanced Scorecard is a long-term initiative and considered as a continuous process. Accordingly, the identified critical success factors were distributed into four different phases, which are assumed to represent the Balanced Scorecard main phases.

These phases are:

1. Preparation Phase (with five independent variables: sponsorship, vision, culture, planning, and core team).
2. Development Phase (with four independent variables: alignment, measures, perspectives, and involvement).
3. Operations Phase (with three independent variables: communication, commitment, and practice).
4. Sustainability Phase (with three independent variables: update, reward, and automation).

The assumed critical success factors with respect to each of the four phases are the independent variables of the conceptual model as shown in Figure 2.

The effectiveness of Balanced Scorecard can be assessed and realized through three benefit dimensions with two dependent variables assigned for each dimension. These benefit dimensions are:

1. Organization Dimension (with two dependent variables: performance and culture).
2. Leadership Dimension (with two dependent variables: effectiveness and commitment).
3. Employee Dimension (with two dependent variables: motivation and focus).

The model was tested to study the adaptation and usage of the Balanced Scorecard in the major oil companies in the state of Kuwait. The research targeted four different segments in each organization, namely executives, managers, team leaders, and individual employees who are expected to have an adequate level of knowledge and experience with the Balanced Scorecard. This selective approach had limited the number of participants and requires more efforts and time to complete the study.

Findings & Results

Findings of this study have revealed significant relationships between seven critical success factors (Practice, Update, Involvement, Measures, Culture, Planning, and Core Team) as shown in Figure 3.

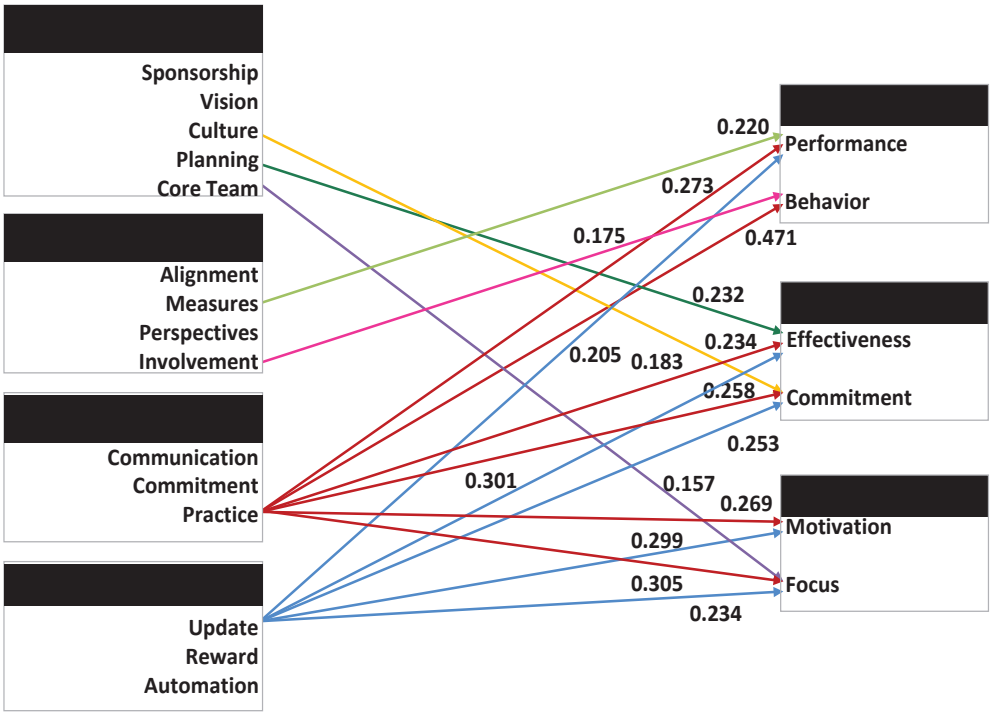


Figure 3: Effectiveness of BSC (Conceptual Model)
(Test conducted by Ali Alawadhi)

The seven critical success factors were found to have significant impacts on the benefits of effective Balanced Scorecard with respect to "Organization", "Leadership", and "Employee".

In addition, the results were further analyzed based on the number of relationships of each critical success factor with respect to the total six benefits. It was observed that "Practice" is considered as the most influential critical success factor due to its significant relationships with all the six benefits as shown in Figure 3.

This supports the literature that emphasizes on the importance of practicing the Balanced Scorecard throughout the organization and considers it as a long-term initiative that should be presented regularly in meeting and events.

The Second most important critical success factor revealed from the study is "Update". It was observed that there are significant relationships between "Update" and the five benefits of effective Balanced Scorecard (all except Behavior) as shown in Figure 3.

In addition, there was a significant relationship found between "Measures and Performance", "Involvement and Behavior", "Culture and Commitment", "Planning and Effectiveness", and "Core Team and Focus" as shown in Figure 3.

Furthermore, observing the effectiveness of Balance Scorecard model testing results revealed interesting rational relationships and differences between some critical success factors with respect to a particular benefit.

For example, both leadership effectiveness and leadership commitment are influenced significantly by the critical success factors "Practice" and "Update". However, the only difference found between the two benefits is that "Leadership Effectiveness" is influenced significantly by "Planning" where "Leadership Commitment" is influenced significantly by "Culture". This makes rational as "Effectiveness" requires good planning and "Commitment" is more related to the "Culture" of organization.

Another interesting observation revealed by the study is the significant relationship of "Involvement" with "Organizational Behavior" and the significant relationship between "Measures" and the "Performance" of an organization. Both results make rational as "Measures" are more related to "Performance" relatively and "Involvement" has more impact on the behavioral aspect.

Conclusion

The effectiveness of the Balanced Scorecard model was developed to examine the relationship between the potential critical success factors and the expected/achieved benefits with respect to organization, leadership, and individual employee.

The relationships which were revealed, as result of testing the model, indicate rational outcomes and findings that are conceptually supported by several literatures of the Balanced Scorecard.

MAINTCON

Encouraging EXCELLENCE THROUGH INNOVATION

INNOVATION CORNER

Dr. Amina Al Hawaj, Chair and **Dr. Fay Al Khalifa,** Vice Chair of the MAINTCON Innovation Committee share their experience participating in the Conference and highlight why creative thinkers and disruptors are the future leaders.

What is the highlight of your experience at MAINTCON?

Dr. Amina Al Hawaj (AH): That's a tough question because there are so many great memories. If I were to choose one, it would be meeting so many regional and international industry veterans and subject matter experts. I believe the Innovation Corner, which was introduced in the 2018 edition of the Conference, is an extension of this and offers a front row seat to unique ideas and creations and the opportunity to meet the brains behind them.

Dr. Fay Al Khalifa (FK): MAINTCON is a hub of innovation and excellence in our industry. It brings together industry experts from diverse backgrounds and cultures, which makes the experience that much more valuable. A vehicle for the exchange of knowledge and best practices in the fields of maintenance, reliability and asset management, the Conference has been a wonderful platform for learning and growth.

Why was Innovation Corner introduced?

AH: Thinking out-of-the-box is what sustains you whether you're an individual or organization. Undoubtedly, creative thinkers and disruptors are the future leaders. The rationale behind the decision to introduce Innovation Corner was to encourage lateral thinking among professionals and reward them for it by providing their inventions the right kind of exposure that will help them make their ideas a reality. There can't be a more urgent time than today to encourage new ideas, considering all the uncertainty that we're facing due to the global pandemic.

How can one exhibit at the Innovation Corner?

FK: Those who wish to showcase their researches or inventions in the fields of maintenance, reliability and asset management or related industries can submit their video/presentation/report via the submission form on maintcon.org by August 2022. The Innovation committee will then review the submissions and shortlist the final exhibits. Exhibiting at the Innovation corner offers a unique opportunity to showcase your research/invention among highly reputed companies in the region, government officials and high-profile industry practitioners. You already have the idea, now you only have to share it with the right audience; Innovation corner at MAINTCON provides the perfect venue where you can meet this audience.

Interview with
Sara Al-Haddad, PhD, DCEP

Engineering Project Manager at Municipality of Kuwait

Engineering Project Manager at Municipality of Kuwait

**Sarah Al-Haddad's dissertation title is "A Quantitative Analysis on the Use of Construction Engineering and Inspection Consultants and their Impact on Project Performance in State Transportation Agencies"*

What inspired you to pursue a doctoral program?

I always felt that teaching is an exceptionally rewarding career. I knew I would pursue a PhD because of my passion for teaching and my investigative curiosity. However, my interest in construction engineering and management became imminent in high school. I was amazed at how simple materials magically transformed into tangible objects, such as roads, bridges, or houses. A doctoral program was perfect because it provided me with valuable teaching experience and delved deeper into construction engineering and management.

Why did you choose this specific topic for your thesis?*

The decision to hire consultants has been a hot topic for decades across all industries worldwide. Specifically, the construction industry hasn't reached a consensus on the use of consultants on infrastructure projects. My research uncovered consultant hiring trends in government infrastructure projects. Most importantly, I studied consultants' effects on cost and schedule performance of projects. I liked this research because it has practical implications to all industries, not just construction. Most importantly, it has the potential to improve on laws and regulations to create a more productive and sustainable workforce.

How challenging was it and what helped you persist?

The doctoral program was challenging because you are responsible for your own progress unlike previous schooling where you would need to follow a syllabus. My advisor was amazing. We scheduled bi-monthly meetings to discuss updates, results, and concerns. These meetings were beneficial to keep me on schedule and on-topic.

Tell us about your experience pursuing your higher education in the USA? What teaching methods and approaches can universities in the GCC adapt?

Education in the US is not only about getting good

grades but it provides opportunities for students to excel by developing critical thinking skills, working both individually and in groups, which imitate real-life work scenarios. Additionally, universities in the US provide valuable resources to ensure students' success such as tutoring services, leadership opportunities and a plethora of student groups exploring innovative ideas.

Based on your doctoral program, what industry transformations do you aspire to bring about?

I would like to implement long-term legislation to protect institutional knowledge in the public sector. Additionally, the private sector in Kuwait considerably relies on the public sector for projects. I hope that legislators would ease laws and regulations to allow the private sector to create their own opportunities.

How can your role as Project Manager at Municipality of Kuwait facilitate your career aspirations?

I previously worked in commercial, residential, and academic settings. Working for the Municipality of Kuwait provided me with valuable experience in the public sector. I noticed an immense knowledge gap between entry-level engineers and supervisors. This knowledge gap needs to be addressed soon to eliminate detrimental effects on institutional knowledge.

Please highlight some industry best practices that maintenance, reliability and asset management practitioners specifically in the field of transportation/utilities/ civil can learn.

I suggest practitioners, legislators, and all relevant stakeholders place a higher emphasis on long-term environmental impacts and life-cycle costs to create a more sustainable future. Organizations can track performance measures with energy use intensity or carbon emissions intensity. If these targets aren't met, organizations either need to implement changes to meet the energy performance goals or a fine.

What is the most interesting piece of advice you've received?

Don't say no to yourself.

How do you ensure work life balance especially in the new normal where personal and professional life are almost seamless?

During the early days of my career, I thought I needed to answer emails as soon as I got them – even if it meant it was at 11:30pm. I later learned that as long as we openly communicate about our responsibilities, that email can probably wait till the next business day. When I log out of work, I also log out mentally, which helps me enjoy my personal life. This minor trick helped me tremendously cure my burnout.

What message would you like to share with GSMR members especially the young professionals?

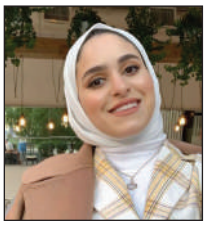
I think there is so much pressure from society to find your ideal career after graduation. Be kind to yourself. Welcome opportunities with open arms, work your hardest, build your network and enjoy the process. You'll be surprised where you end up!

RECOMMENDED

Reading

BURNOUT – SOLVE YOUR STRESS CYCLE

by Emily & Amelia Nagoski



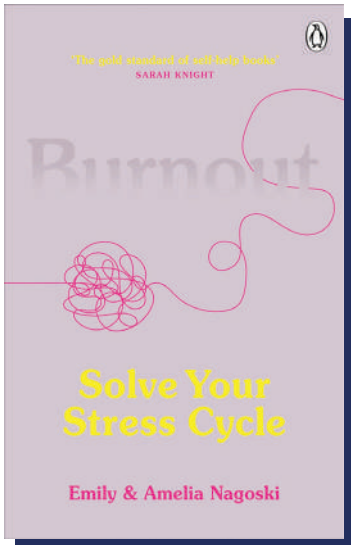
Available on Amazon.com

Crisis management is one of the most critical handbooks in any organization, as it prepares you for negative incidents to minimize their damage by telling you what to do, where to go and whom to contact. Burnout is a state when your body is in crisis mode. This book guides you through your personal predicament, its root causes, side effects, solutions and prevention plans. It is segmented into three sections:

A review by:
Latifa Al Qallaf
Maintenance Planning Engineer
KIPIC
l.alqallaf@kipic.com.kw

Part one: What To Take With You

In this section, you will find a guide on what to do when you are burned out. The root cause of burnout is Stress. Similar to any other emotion, you are not supposed to ignore stress and suppress it; you need to have a stress response and knowledge of how to Complete your Stress Cycle.



It is important to acknowledge that the feeling of having a moral obligation to give our humanity to human beings is a leading cause of Stress called "Human Giver Syndrome". Thus, it is vital to heal your Human Giver Syndrome so that it doesn't stop you from reaching your vision.

Part two: The Real Enemy

"The enemy is the game itself, which tries to convince us that it's not the enemy." Life is a rigged game, so why not adjust your goals to stabilize you to maintain a sense of efficacy and attend to the important needs of those closest to you? However, it is complicated, because this deceitful unfair world made you who you are, and a lot of who you are is amazing, right? Not perfect, no one is, but wow, WOW. The best takeaway from this section is how to unlearn helplessness, how to embrace the mess, and body acceptance because weight and health are not the same.

Part three: Wax on, Wax Off

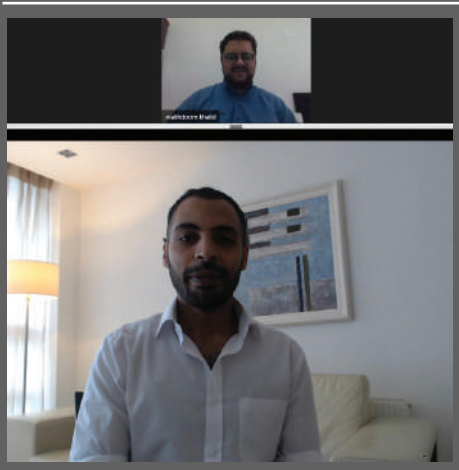
In this section, you will find daily choices and actions that will fight the causes of burnout. One way of fighting is creating connections, as a meta-analysis consisting of 70 different studies with over 3 million research participants showed that social isolation and loneliness increase a person's odds of death by 25-30%. Another critical chapter in this book, "What Makes You Stronger" details undertaking Daydreaming, An Invisible Workplace, and Active Rest. Ever wondered how much rest is adequate? Science says: 42%. How can you allocate 42% of your time to rest, with all the important responsibilities piling on you? In this book, you will find a 24/7 Worksheet to help you plan your day and adjust your priorities.

Burnout is a science-based book all women need, to take back control and end the cycle of being overwhelmed. Being productive is no longer the most important measure of your worth. The most important measure is that you need to be you, engage with your Something Larger, and move through the world with confidence and joy.

TRAINING WORKSHOPS / VIRTUAL EVENTS

JULY - SEPTEMBER 2021

WEBINAR WITH EPT CLEAN OIL



WEBINAR WITH BASF IRELAND LTD.

"Your work is going to fill a large part of your life, and the only way to be truly satisfied is to do what you believe is great work. And the only way to do great work is to love what you do. If you haven't found it yet, keep looking. Don't settle. As with all matters of the heart, you'll know when you find it."- **Steve Jobs**

WIN WIN WIN

How often is Osool published?

a) Fortnightly

b) Monthly

c) Quarterly

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Last date for entries: December 31, 2021

Winner of the competition published in the August 2021 edition

Mahmood Dashti
GSMR ID: 116

5 SECRETS TO ENDING 2021 ON A HIGH NOTE

01

Live in the present moment: Forget about what you didn't do and focus on the possibilities of today – remember, it's a gift and hence, called the present.

02

Choose a hobby... and turn it into a habit! Simply start without any expectations. Want to read a book? Read one page. Want to work out? Walk for 15 minutes thrice a week. Start now.

03

Love yourself: Practice self-care every day. It could be by taking an afternoon nap, enjoying a cup of coffee in solitude or meeting close friends – guess what? You deserve it.

04

Indulge: There's nothing wrong in pampering yourself once in a while. Eat that chocolate cake! Take that vacation! Buy that new gadget!

05

Honor your life's purpose: It could be you day job or a voluntary service you offer. Whatever you do, do it well. Remember, that's the legacy you will leave behind.