

Marafiq World

ISSUE 42 - MAY 2019



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Marafiq proudly sponsors the Holy Quran Charity

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Marafiq World

Saeed K. Al-Abdullah

Corporate Communications Manager
Overall In-charge and Supervision

Editor-in-Chief

Basheer Al-Tarouty

Editorial Board

Steven Carl Smith

Gerardo Dumo (Ardee) Flores

Ansary Domado, Design and Photography

Abdulrahman Al-Sehli, Photography

PO Box 11133, Jubail Industrial City 31961
Tel: 013 340 9707 Fax: 013 341 2052
taroutybh@marafiq.com.sa

مِرافِيق
MARAFIQ

مبارك عليكم الشهر

Ramadan
M U B A R A K

Message from the President and CEO

Abdullah Khalifa Al-Buainain
President and CEO

It gives me great pleasure to be writing to you and to share two significant developments in Marafiq. Firstly, Marafiq has won the Jeddah II Independent Sewage Treatment Project (capacity of 500,000 m³/day), which was announced by the Water and Electricity Company. Secondly, Marafiq and the Royal Commission for Jubail and Yanbu has signed a memorandum of understanding with SABIC, to

"If the solar PV based power plant is developed, the project would be the Kingdom's first large scale renewable energy project built for and by the private sector."

potentially build a solar Photo-Voltaic (PV) based power plant (capacity 200 to 400 Mega Watt peak) in Yanbu Industrial City. If the solar PV based power plant is developed, the project would be the Kingdom's first large scale renewable energy project built for and by the private sector.

Marafiq considers these two initiatives as a strategic opportunity to contribute to its portfolio of power and water utility services. Marafiq has embarked upon its New Growth Strategy, which aims to position Marafiq as a Kingdom-wide champion for utilities. It has for the first time participated in the projects beyond its operational and regulatory jurisdiction. For this, Marafiq is well placed in the domestic market and has a tremendous growth potential under the green field competitive projects and acquisition of assets offered for privatization.

As we look ahead let us not lose focus on our daily priorities, concerning safety, at the time of writing this message Marafiq achieved 33 million safe man-hours without Lost Time Injury (LTI). This safety achievement indicates that we are collectively and consistently working towards upholding our value of safety, as safety is our primary priority.

I encourage all employees to be vigilant in looking out for any potential risks, and to continue to raise notifications through the safety observation portal. An area that we need to place more attention on is to ensure that all work is in compliance with the Permit To Work (PTW) system, we need to ensure that a proper risk assessment has been carried out and that appropriate controls are in place to continue to safeguard our people.

TOWARDS EXCELLENCE - this is our way forward.



Marafiq, Royal Commission Yanbu and SABIC sign MOU to scope new solar PV-based power plant in Yanbu Industrial City



The memorandum of understanding was signed by Abdullah Al-Buainain (President and CEO of Marafiq), Ahmed Al-Shaikh (Executive Vice President of Manufacturing of SABIC); and Adnan Alwani (CEO of Royal Commission Yanbu).

Marafiq and the Royal Commission for Jubail and Yanbu (RC Yanbu) signed a memorandum of understanding with SABIC. It aims to assess the potential of a proposed solar photo-voltaic (PV) based power plant. The agreement will initiate a feasibility study in Yanbu Industrial City for a major plant that could deliver capacity between 200 to 400 Mega Watt peak (MWp). At the upper level, this would equate to enough daily energy to power all of SABIC's plants in Yanbu during the normal operational day.

The proposed project will be developed under an Independent Power Producer (IPP) model that positions Marafiq as the off-taker with a 100% buyback guarantee from SABIC or its affiliates through a long term Power Purchase Agreement (PPA). Pending the feasibility study, a project company would be established to develop the plant which would be located with a renewable energy park inside Yanbu Industrial Area. RC Yanbu has already allocated eight square-kilometers of land for the park and development is currently underway.



Marafiq Wins Jeddah II ISTP Project



Ahmed Mohammed Khalifah Al-Shangiti
 Manager, Business Development Department

The power and water sector's infrastructure investments and its sustainability are one of the keys for any economy to progress and prosper. In the same way, it is vital for the Kingdom of Saudi Arabia (KSA) to attain its vision 2030 goals. For this, KSA is heading towards attracting local and foreign investments for its Brown Field and Green Field projects. The existing assets under Government control are offered for privatization through competitive bidding and new water and power projects are also announced on competition basis. This could offer huge opportunities for both local and international investors over the coming years. As a result, major players of water and power market are reshaping themselves to maximize from this opportunity and prepare themselves for future challenges. They may need strong partnerships and wise investment decisions to develop innovative business models leveraging to drive value in the power and water market that is under increasing regulatory and competitive pressure.

During 2018, Water and Electricity Company (WEC) floated four (4) projects for bidding. The projects announced by WEC are mentioned below:

| Project Name | Project Type |
|------------------|------------------------------------|
| Rabigh-III | Independent Water Plant |
| Shuqaiq-III | Independent Water Plant |
| Dammam | Independent Sewage Treatment Plant |
| Jeddah Airport 2 | Independent Sewage Treatment Plant |

Marafiq participated in all these projects and improved its competitiveness by every new project. In pursuing its long-term strategic objectives, Marafiq has successfully participated in the bidding of Jeddah II ISTP Project announced by WEC. The project's scope of work comprised the development of sewage treatment plant adjacent to King Abdul Aziz International Airport, next to the existing Jeddah Airport-I. The project will treat wastewater brought from numerous parts of Jeddah city and will be implemented in stages. It will have a capacity to treat about 300,000 m³/day of sewage water. With the expected future expansion, the project will have an ultimate capacity of 500,000 m³/day. The treated water is expected to be provided to different customers for irrigation purposes and the rest will be dumped in the sea (which will meet environmental standards).

There were 66 international and local companies that submitted Expression of Interest to participate in the bidding. WEC led a competitive course to choose a developer or developer consortium. Seven companies were declared qualified to submit the bids and six companies effectively tendered their bids. Marafiq partook in the bidding as Lead Developer and partnered with Veolia Middle East and Amwal Al Khaleej. The participation interest for each partner is mentioned below:

| Name | Shareholdings |
|------------------|---------------|
| Marafiq | 45% |
| Veolia | 20% |
| Amwal Al Khaleej | 35% |

As announced by WEC, Marafiq led consortium stood first ranked bidder with the lowest tariff. The levelized tariff for all bidders is listed below:

| Consortium Lead | Levelized Treatment Cost (Tariff-Halalas/m ³) |
|---|---|
| 1. Marafiq | 89.75 |
| 2. Mitusi & Co. Ltd. | 91.40 |
| 3. FCC Aqualia | 101.95 |
| 4. Acciona Agua | 109.70 |
| 5. Suez Groupe | 125.30 |
| 6. Cobra Instalaciones y Servicios S.A. | 139.87 |

On 25 February 2019, Marafiq signed the Sewage Treatment Agreement (STA) with WEC for the development, financing, procurement, implementation, operation and maintenance of the Sewage Treatment Plant of 300,000 m³/day (extendable up to 500,000 m³/day), along with associated infrastructures and facilities. The financing contract of the agreement is for 25 years under Build, Own, Operate and Transfer (BOOT) basis.

"Transformed Marafiq from a typical utility to a successful developer"



Abdullah Al-Buainain (Marafiq President and CEO) during signing ceremony with WEC and Veolia.

WEC's responsibilities under the STA will be backed by a credit support agreement from the Ministry of Finance, Government of the Saudi Arabia. Under STA, a Project Company will be formed to develop the Project.

This achievement is the outcome of Marafiq Board's long-term strategic vision for the company. Also, it has transformed Marafiq from a typical utility to a successful developer. The new growth strategy focuses on optimizing Marafiq returns, increasing the customer base, optimizing the market share through globalization, participate in new business opportunities and optimize the project risks through partnerships and alliances. It also includes synergy, competence optimization with new business models and developing value networks, etc.

This victory has paved the way for Marafiq to participate in the upcoming competitive projects. It also demonstrates our position, will and ability to succeed in a highly competitive market. Marafiq will be able to build upon these projects and expand its presence in major cities of the Kingdom. It will further ensure the stabilization of Marafiq's revenues and cash flows from assumed take-or-pay or off-take contracts for the acquired existing assets or newly built projects. In addition, it will contribute to the national economy by adding more jobs for Saudi citizens and adds value to the Kingdom's prosperity.



Christophe Maquet (Chairman and CEO Veolia Africa/Middle East) receives a presentation on Marafiq's Historical Achievements from Saeed Al-Abdullah (Corporate Communication Manager).



Veolia delegation visiting Marafiq Head Quarters in Jubail.

Together we succeed



Saeed Zarib Al-Qahtani
Manager, Procurement & Contracts

"It was a rewarding occasion where both Marafiq and its vendors came together as one team to celebrate team work and success"

"Together, we succeed" was the slogan for Marafiq Vendors gathering this year. We have always believed that success is achieved if both Marafiq and its vendors come together as one team towards a common goal of excellence in providing the best service to our customers.

On 27 March 2019, Marafiq Procurement and Contracts (P&C) conducted Vendors gathering at Marafiq beach camp in Jubail. This event was attended by all Marafiq strategic vendors with the presence of Saeed Zarib Al-Qahtani (Manager, Procurement & Contracts) and his sourcing team. During the event, Marafiq P&C conveyed the company message along with growth strategy, supplier performance measurement for (material and services) and highlight on the importance of timely update through Marafiq System SRM-SUS.

Mr. Al-Qahtani presented Marafiq's operation facilities in Jubail and Yanbu with current capacities for power and water, and the package of services for industrial clients in Jubail and Yanbu was presented in details through seawater cooling, desalination and sanitary & industrial wastewater. Furthermore, Marafiq growth strategies were shared by Department Manager Mr. Al-Qahtani like Jubail SWRO Sadara, SWTP-9 stage#9 expansion project, Ras Al-Khair projects, Jazan economic city and Jeddah sewage treatment plant.

It was followed by a ceremony recognizing top performing vendors. Mr. Al-Qahtani called the other vendors to follow the same and urge the existing awardees keep up the remarkable performance. It was a rewarding occasion where both Marafiq and its vendors came together as one team to celebrate team work and success. Marafiq looks forward to more fruitful partnership in the future.

In conclusion, an open discussion was held with the vendors to answer all questions and clarifications. The gathering was successful and motivated the vendors.



Top performing vendors receiving recognition.



Marafiq growth strategy presented to vendors.



Open discussion with Marafiq sourcing team.

Delivering Project Management Innovation



Basem Ali Abdulrahman Al-Refai

Lead Engineer, Projects
Projects Support

Project Management (PM) innovation is still focused on enhancing the project's ability to achieve business outcomes, but it is concerned with the management, governance and environmental elements of the project—everything that isn't directly connected to the solution being developed. This will include everything from the way the plan is developed or risk management is tackled, to the working environment for the team and the relationships between team members. It can be thought of as innovation centered on the Work Breakdown Structure (WBS) or the product backlog.

We also have to consider the applicability of project management innovation to future projects. While it would be nice in an ideal world to develop an innovative solution on one project that can be applied to all future projects, that isn't always the case—but that doesn't make the innovation any less relevant.

Owning PM innovation

When a project manager is in the midst of a challenging project, the last thing they are thinking about is how to improve the project delivery methodology for future initiatives. Instead, their focus is exclusively on dealing with the challenges of their current work.

It is suggested that ownership of determining the long-term viability of a potential innovation shouldn't be with the PM. It should reside with the PMO or equivalent function that owns the project management processes, tools, etc.

In order to encourage innovation in project management, organizations must provide their project managers with an incentive to develop creative solutions. Instead of focusing on consistency of execution and the use of standard

processes, project managers must be viewed as owners of project outcomes.

The project manager should own the process of bridging that gap from approval to hand-off, not just ownership for completing the work, but ownership for ensuring that the solution handed to the customer group has the best possible chance of achieving business outcomes.

In order for that to happen, the project manager must be given the flexibility to adjust the way the project is managed, changing the standard approaches to the specific needs of the situation. In other words, they must be encouraged to innovate—to find creative ways of achieving the business outcome even when the challenges are significant.

Variation is not (always) innovation

Providing project managers with the freedom to act outside of the confines of an established project methodology does not, in itself, enable innovation. To be truly innovative, there has to be a combination of factors in place:

- **It has to be beneficial.** The innovation that is introduced has to help one or more of the project factors—improving the chances of succeeding, speeding up delivery, reducing cost, risk, effort, etc.
- **It has to come at an acceptable price.** It is not enough to improve the project outcomes, or to increase the likelihood of those outcomes occurring; that improvement must be justified. The specific cost that is acceptable will vary from one project to the next, but the risk, quality cost, financial impact and/or effort increase must be worth the gains.
- **It must be conscious.** To be considered an innovation, the project manager must have made a positive

decision to take an action in order to try and improve things.

- **It has to be new and different.** There is nothing wrong with applying approaches that have worked in the past if they work again now, but those are not innovations. To be considered innovative, a solution or approach has to be something that has not been tried before.

The traditional view of project management as a stable, sometimes uninspired approach that focuses on consistency and the elimination of risk cannot survive today's highly competitive environment. Instead, organizations must find ways to achieve expected business outcomes in an environment that is continuously evolving. That requires the ability to incorporate innovation not just into the solutions themselves, but also into the approaches to managing the work. That is where project management innovation must come in, and it should be viewed as an important part of all organizational approaches to project delivery.

While encouraging individual project managers to innovate can achieve results, an organization that can create a project management "innovation engine" will create a much more sustainable model. In this environment, experienced PMs are put in charge of projects that have the flexibility to allow for innovative approaches to be developed and refined. Those innovations can then be refined and added to the toolbox of techniques that all project managers can draw from. The best innovations are those that can be applied to multiple scenarios and situations, and for that to occur organizations must consciously invest in it—something that hasn't happened much in the past.

New Marafiq Head Quarter Building rising up in Jubail



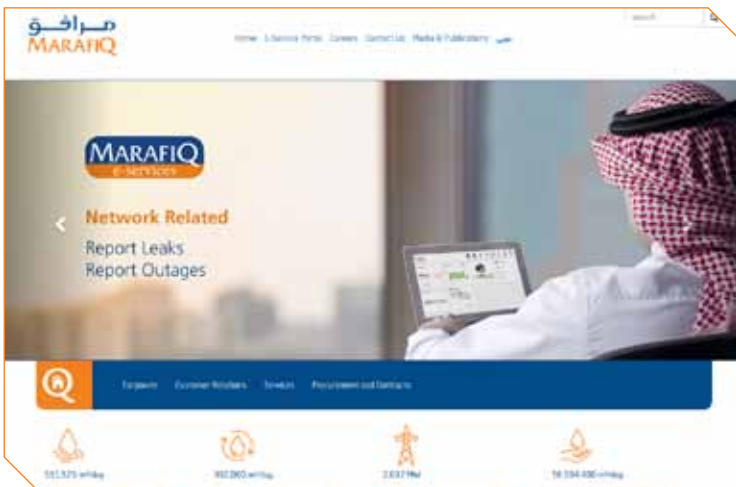
Marafiq launches its new website



Saeed K. Al-Abdullah
Corporate Communication Manager



On 13 March 2019, under the patronage of Abdullah Khalifa Al-Buainain (President and CEO), Mahmoud Saleh Al-Theeb (Vice President of Operations and Maintenance in Jubail), and Fahad Abdullah Al-Shammari (General Manager of Supply Chain) we launched the new Marafiq website at the Head Office in Jubail. I am proud of this achievement as the Corporate Communications department, IT Applications and IT Security work well together to produce an excellent communications tool. The new corporate website plays a major role in promoting Marafiq's corporate identity and image as reflected through its vision, mission, core values, strategies, objectives and community involvement initiatives. The website is one of Marafiq's most powerful external communication vehicles. Through the website, Marafiq can publish a variety of information for the benefit and reference of all stakeholders. In fact, one of the new features include a live Twitter feed, where the latest posts and online discussions can be viewed right from the website page. The website helps foster a sense of pride and ownership; it deepens the level of trust and confidence in Marafiq's products and services amongst customers, employees, and all other stakeholders.



To view our new website visit:
www.marafiq.com.sa



Marafiq Help Line 9200 200 84 and its critical role in Customer Service



Imtiyaz Nazir
Administrative Assistant
Customer Relations

"Customer service is critical to Marafiq, its agents are delivering a quality service to its valued customers."

Customer satisfaction index is what differentiates your company from the rest. Marafiq is operating in a regulated market and product tariffs always match with other utility service providers, but truly understanding and supporting your customers can't.

Here comes the magnificent role of a "Call Center". Call center agent interactions with your customers can drive loyalty in a way your sales and marketing departments rarely can, and these agents are more than just a warm body answering the phone. These agents represent Marafiq when dealing with our valued customers.

Call center agents are most likely the first point of contact when dealing with customers. They're the persons who will receive the queries, requests, and complaints about your service like water leaks, water and power service interruptions, as well as high consumption invoices etc. Also, they're the ones your customers will remember most and of course the tone of voice in which the agent responded to the customer. It is a like moments of truth and the customer remembers it forever how he was treated at the help line.



Customer service is critical to Marafiq, its agents are delivering a quality service to its valued customers. They are efficient, effective, and helpful: They know the Marafiq product and processes, the ins-and-outs of Marafiq and what vision and mission it's working towards.

Call Center Quality Assurance (QA)

A process by which the interaction between the call center agent and the customer is monitored in order to be aligned with business goals. QA monitoring aims to identify common customer issues, improve customer experience, and help standardize the communication processes with customers. As a global practice, call quality is typically monitored by the supervisor, team leader or quality assurance specialist. Marafiq has a voice logger call facility, where the interaction between the agent and customer is recorded.

There are commonly two categories of data that are assessed when monitoring QA:

1. Call and customer metrics:

These include average response time, handling time, customer satisfaction ratings, Net Promoter Score (NPS) ratings, productivity metrics, etc.

2. QA assessment:

Is performed by a supervisor, team leader or QA specialist on a sample of customer interactions assessing the resolution and professionalism against an agreed scorecard. QA is a critical tool to measure improvement over time and maintain a high level of customer satisfaction. It is important to regularly measure, assess, and improve. This requires analyzing data for insights, which become feedback in your improvement cycle.



"Someone calling themselves a customer says they want something called service."

New Age Leaders



Ahmed Khleawi Al-Khleawi
Manager, Human Capital Development

"With a younger workforce that is purpose driven, having a compelling vision for the future is also a key driver of engaging and retaining high performing team members"

The rate of change in the business world today is greater than our ability to respond. In a world that is often described as VUCA (Volatile, Uncertain, Complex and Ambiguous), there are major tectonic shifts that demand a new mindset of leadership. First, let us look at these shifts.

In recent years, we have seen disruption of market leaders like Kodak and Nokia amongst many others. With advances in technology, mobiles are becoming more of a convergence device that replaces so many utilities (calculators, alarm clocks, small digital cameras etc.) that we used otherwise. Generations at workplace are changing and new generations bring different values, expectations and mindsets at work. Rise in automation is resulting in heavy disruption. Right from purchasing goods to booking taxis and paying utilities bill, everything is increasingly being automated. The agents, middlemen and the whole supply chain related to these services is being disrupted. We are not even talking about automated cars yet – the next big frontier for the technology battle!

With a hyper connected workforce, organization cultures have become transparent. With opportunities abound, employees are “volunteers” who have global choices. In this world, having a compelling purpose is a mandatory pre-requisite for profits to follow. Traditional hierarchical structures are fading away to give way to lean and fluid structure to achieve a shared purpose. The cumulative impact of these forces demands a new mindset and competencies for leaders to be able to stay relevant and make a positive difference to people and hence, business. If you are a leader at any level in a modern organization or aspiring to be one, here are some of the critical

competencies and skills you need to thrive in a VUCA world.

Develop an Adaptive Mindset: To navigate successfully through the web of VUCA, leaders will need to be comfortable with unclear situations and travel into unexplored paths. This means leaders will encounter “first time” situations more often and they need to build their muscle to still deliver results. With “rapid prototyping” approach, leaders will need to constantly experiment to get early and frequent feedback that enables constant realignment.

Have a Vision: Vision is a perpetual force, a critical anchor that drives decisions, actions and judgments. With a younger workforce that is purpose driven, having a compelling vision for the future is also a key driver of engaging and retaining high performing team members. In fact, a compelling vision is an important pre-requisite for any community or network to succeed. Leaders who will thrive in future are the ones who have a clear vision of where they want their organizations and teams to be.

Embrace Abundance Mindset: Abundance mindset sees possibilities where a constraint mindset sees challenges. A leader’s ability to spot innovation opportunity, unique problems and interdisciplinary intersections is as critical in the new world as their ability to “do something about it.” In VUCA world, leaders have to listen to the future by virtue of constantly scanning the horizon, being future minded and having strategic foresight without losing the sight of the current reality. When they do this, leaders build a unique ability to see through contradictions towards a future others cannot see.

Weave Ecosystems for Human

Engagement: One of the biggest leadership challenges is to create an environment that taps into intrinsic motivation of people. Deloitte’s Human Capital Trends 2015 reports that softer areas such as culture, engagement, leadership and development have become urgent priorities on a CEO’s desk. An ecosystem of human engagement is created when leaders understand the basic drivers of human engagement – the need for trust, the need to have a hope, the need to feel a sense of worth and the need to feel competent. At a time when most “engagement initiatives” are aimed at providing external motivation, we need leaders who can build trust through integrity and results, who can mentor and coach others, who can clarify the meaning of the work people do and build a positive influence.

Anticipate and Create Change: When changes around us are constant and rapid, leaders have to use the wisdom from their future mindedness and strategic foresight to “create change” before an external change forces them to react. When leaders ride the wave of changes, they have to involve people in the change process, prioritize what’s important and execute changes in smaller repetitions. Leaders nurture change by maintaining balance between the needs of the context, needs of others and their own needs.

Self-Awareness: Leaders cannot succeed unless their personal vision and values overlap with organization’s vision and values. It is only when leaders are aware of their preferences, ways of working and possible blind spots that they can really bring their true authentic selves into the game and bring about a significant difference to the team, organization and hence the industry.



Change Management Workshop driven by Ahmed Al-Dowaihi, Human Capital Development Specialist

Be an Agile Learner: Leaders have to be constantly curious and carry a “beginners mind” which is also willing to give up on familiar approaches. Leaders need awareness of the bigger picture. When thrown into unfamiliar situations, leaders need to learn immensely from those experiences.

Network and Collaborate: To make the sense of changing trends, practices and expectations, leaders in today’s world need to collaborate relentlessly within and outside the organization. A social mindset enables leaders to create, engage with and nurture purposeful business and social networks through social media and in-person communication.

Relentlessly Focus on Customer: Customer centricity is and will remain at the heart of effective leadership. Helping customers navigate through the changes is as critical for leaders as it is to steer their own organizations effectively. Customer centric leaders truly “listen” to the voice of their customers, engage deeply and build long term relationships by adding substantial value to the customers.

Develop People: Leadership in the new world is beyond external tags and titles. It is about serving effectively to the needs of the stakeholders – the most important ones being the people who make things work. Leaders, in this world, have to model the behaviors they seek, help people in building their

skill set and attitude, create learning forums, design work to tap into potential and most importantly, lead through their influence and not through their authority. The primary task (and an obligation) of a leader is to build more leaders.

Design for the Future: Leaders are designers of the systems for the future. They do so by building an emotional infrastructure, organization structures, methods and processes. If organizations are purposeful networks of people, leaders need a compelling purpose that people in the organization share. Leaders will have to pay equal attention to leveraging diversity and draw on multiple points of views and experiences.

Constantly Clarify and Communicate: When working with global work force, leaders will need an ability to communicate effectively across cultures. Like a location pointer on a GPS map, leaders have to constantly clarify the current situation with respect to changing external demands. Equally important for leaders is to re-iterate and reinforce vision, values and strategies. Finally, leaders have to help others in clarifying the meaning of their work. Communication and clarity are the currencies of effective leadership.

Article contributed by
Mohammad Shadab Khan
 Specialist – Talent Management
 Human Capital Development Department



Marafiq takes part in Abu Dhabi Sustainability Week 2019



Marafiq took part in Abu Dhabi Sustainability Week (ADSW) 2019, which was held at Abu Dhabi International Exhibition Center under the patronage of HH Sheikh Mohammed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi, Deputy Supreme Commander of the UAE Armed Forces, and Chairman of the Executive Council of Abu Dhabi Emirate. Marafiq's participation was aimed to showcase its efforts in the field of sustainability. The event was attended by a number of the executive management members headed by the President and Chief Executive Officer, Abdullah K. Al-Buainain.

Part of the media coverage was our exposure on international and local news channels such as Sky News, Abu Dhabi and Saudi News where several interviews with our President and CEO, Abdullah K. Al-Buainain, and the VP, O&M Jubail, Mahmoud S. Al-Theeb was conducted.

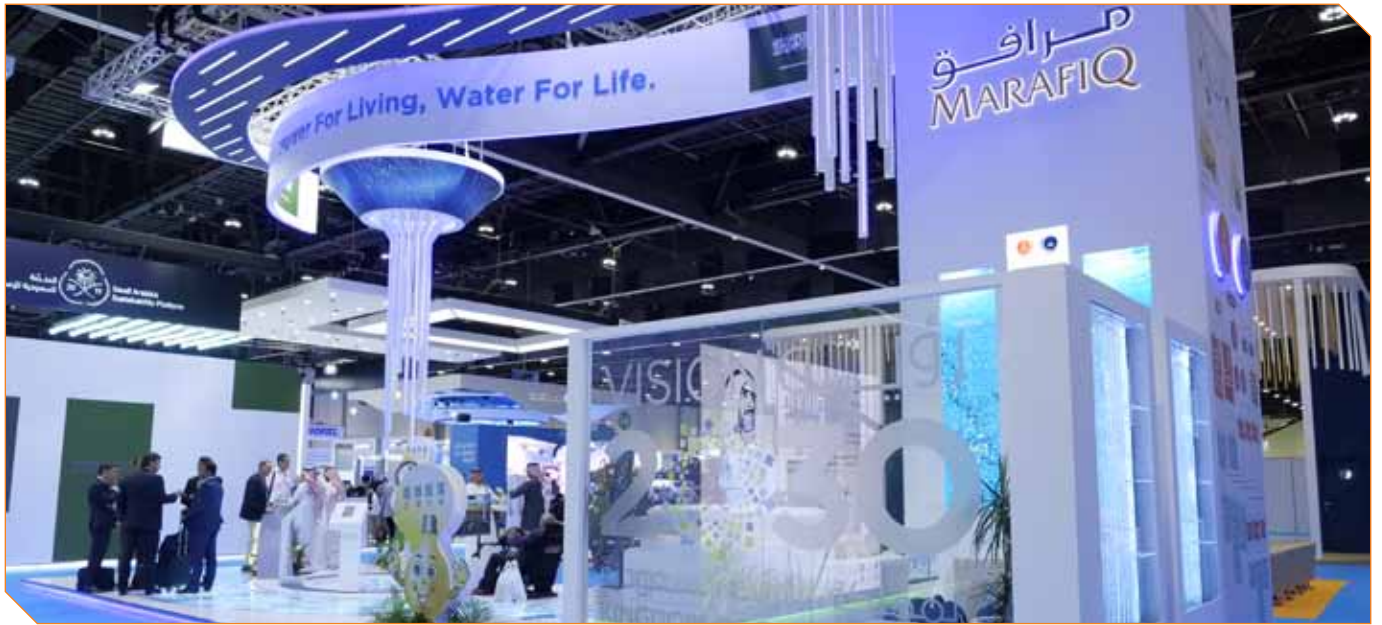
VIPs took rounds to view various exhibition booths of companies which included Marafiq's exhibition booth. The group of VIPs who toured the area were Sheikh Hamed Bin Zayed Al-Nahyan,

The Head of the Crown Princes' Office of Abu Dhabi. Also present were, Sohail Al-Mazroi, Minister of Energy, Emirates, and Dr. Sultan bin Ahmed Al Jaber, Minister and Masdar Chairman. HH Prince Khalid Bin Al-Waleed Bin Talal and ECRA Governor, Dr. Abdullah Al-Shehri, also visited our booth.

The ADSW 2019 featured several vital conferences and work sessions, where leaders, policy makers, key industrialists, and those interested in environmental affairs from all over the world took part to discuss topics related to renewable energy and sustainable development.

ADSW, and the associated conferences, forums and exhibits, is an event that brings together interested personnel and agencies from all over the world to discuss sustainability topics. It aims to promote awareness of the most significant social and economic trends that shapes the progress of global sustainable development and enable communities to understand and activate strategies to reduce climate changes.





Sustainability Utility Life-Cycle Approach



Dr. Abdurzzak Alturkmani
Sr. Specialist, Hydraulic, Asset Strategy,
Planning and Standards

For any product, the Life Cycle (LC) means consecutive and interlinked stages of a product system, from raw material acquisition or generation from natural resources to final disposal (Cradle to Grave). For a process, from production to be out of industry (Cradle to Gate).

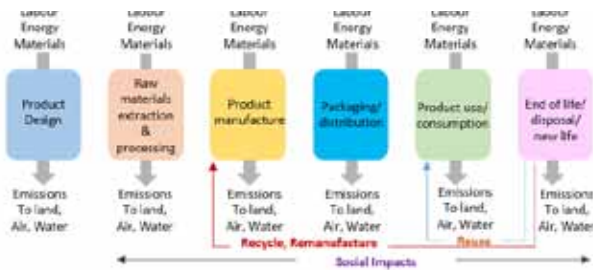


Figure 1: Life Cycle Stages Impacts

A life cycle approach can help utility companies to make choices. It implies that everyone in the whole chain of a product's life cycle has a responsibility and a role to play, taking into account all the relevant impacts on the economy, the environment and the society. So, any utility to be truly sustainable, it must consider how products are made, used, and where they go at the end. Business impacts through all LC stages need to be considered totally by utility leaders, when they make decisions on consumption, production, policies, business strategies, etc. Modern utilities consider life cycle tools and techniques are so essential for business success.

The Role of Life Cycle Management (LCM):

Life cycle management seeks to manage environmental aspects over the entire life cycle of a product or service to make the environmental impacts as small as possible so that sustainability goals can be achieved. In addition, it helps utilities to reduce capital and O&M costs, enhance data collecting & analyzing, improve demand forecast and provides an efficient mechanism to manage entire infrastructure, generation and production assets from Planning, design, acquisition, up to retirement. So simply, LCM aims to minimize different burdens of business associated with production or operation through entire life cycle. Life cycle thinking is made operational through LCM, where it puts the tools and methodologies in the life cycle thinking basket into practice. These tools and techniques include **life cycle assessment, life cycle costing, cost-benefits analysis, input-output analysis, cleaner production assessment, risk assessment**, etc. The main LCM interaction processes are shown in Figure 2:



Source: UNEF/SETAC, Life Cycle Management: A Business Guide to Sustainability Paris, 2007.

Figure 2: Main Interaction Processes of Life Cycle Management

The entire utility organization needs to be considered in life cycle management. This includes the strategy, the structure and responsibilities, management review and decision-making processes and internal capability building processes. There needs to be a clear vision for the environment and social responsibility. This vision needs to be turned into strategy, and the structures in place need to embody the responsibility and accountability to turn strategy into practice. There are technical and non-technical aspects of LCM that will be new to employees, and this will require the company to raise its competence level in order to practice LCM. Using some LCM tools, however, can be outsourced to consultants, and the information gained from these tools can be utilized in decision making in the company.



Figure 3: Life Cycle Management for Sustainable Organization

Life Cycle Assessment (LCA)

In the last 20 years, life cycle assessment has grown from the academic exercise to an accepted decision making tool for sustainability management in utilities. In fact, LCA establishes a link between the flow of materials and energy related with the life cycle of a product and the environmental impacts associated (From raw materials through production, use, end-of-life and recycling to disposal). It identifies the points on which this product/technology can be improved to reduce its negative impacts. It also helps to avoid problem shifting to other issues or areas when choosing a type of process, technology or material. Therefore, LCA is a valuable tool in various fields, e.g., Know-How concept consolidating, engineering, planning, product or process design, decision-making, policies and marketing.

LCA principles, requirements and guidelines are described by the ISO standards (ISO 14040 and its series). According to the ISO standard, the LCA study is sub-divided in 4 phases:

1. **Goal Definition & Scope (ISO 14041):** Identify a product, process, technology, establish context and system boundaries.
2. **Inventory Analysis (ISO 14041):** Identify and quantify energy, water, and materials as inputs as well as environmental releases as outputs.
3. **Lifecycle Impact Assessment (ISO 14042):** Assess the potential human and ecological effects and quantify metrics.
4. **Data interpretation (ISO 14043):** Compare data from Inventory Analysis and Impact Assessment stages to select or recommend a preferred product, process, or technology.

For optimum benefits of LCA, the utility must have **Management Information System (MIS)**, which is important to integrate data from all departments for consolidating the decision-making process and supporting business management, operations, maintenance and planning. Any utility that does not integrate all services (Networks) data with the commercial data we cannot say that it has a MIS system.

Life Cycle Cost (LCC):

The Life Cycle Cost analysis allows the Utility to examine projected life cycle costs for comparing competing capital and O&M project solutions and allows for appropriate comparison of alternatives of different capital values, and lengths of time. Also, LCC helps utility leaders to take a decision making based on performing a systematic assessment of the life cycle costs of selected assets. The LCC analysis involves the analysis of the costs of a system or a component over its entire life span. Typical costs for a system may include acquisition costs (or design and development costs), Operating costs (Cost of failures, repairs, spares, downtime costs and loss of production), Maintenance costs (Cost of corrective maintenance, preventive maintenance, predictive maintenance and Disposal costs). A complete life cycle costs

projection analysis may also include other costs, as well as other accounting / financial elements (Such as, interest rates, depreciation, present value of money/discount rates, etc.). Applying life cycle approach is optimally occurred at the planning process.

Applying Life-Cycle Costing approach during the planning process

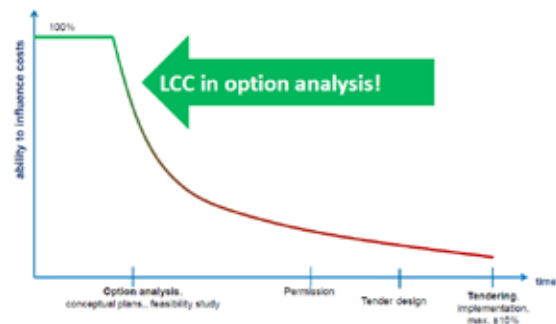


Figure 4: Applying life cycle costing approach during the project planning stages

The life of an asset will be influenced by its ability to continue to provide a required level of service. Many assets reach the end of their effective life before they become non-functional (Regulations change, asset becomes non-economic, the expected level of service increases, capacity requirements, etc.). Given the condition of the Utility's assets, the amount of capital available from the budget, and historical evidence, the project owner / manager must decide which project alternatives will incur the least life cycle costs over the life cycle of the assets involved while delivering performance at or above a defined level. As a result, this analysis will enable the Utility to:

- Make decisions for capital and O&M investments based on least life cycle costs
- Rank each of the projects based on total cost of ownership
- Combine costing data with project validation & risk reduction scores to prioritize projects
- Allow better reporting to key stakeholders

Recommendations:

- Apply Life Cycle Management system in Marafiq business is so essential for excellence
- Life cycle costing will help to select the most cost-efficient solution
- Knowledge sharing and development of life cycle studies
- Life cycle approach will improve the transparency of decision making
- Life cycle processing in Marafiq will involve many departments and systems (PE, TSD, ASP, O&M, P&C, PES, Financial, IT, PES, etc.) so full cooperation is required.

Sustainability in the water sector



Mohammed Faruque Hossain
Procurement Engineer

"Marafiq's commitment to communication and collaboration with groups beyond the water community will be the role model of sustainability"

Sustainability is a cross-cutting objective covers all facets of the water cycle, and in all areas concerns itself with the long-term protection of people, economic activities, and the environment. The role of the Sustainable organization is to develop tools, products, and activities that will help all those whose actions involve water (e.g., utilities, regulators, educators, government agencies, the public, and industry) do so from a perspective that takes into account economic, social, and environmental factors, both today and for the future.

Sustainability issues, which relate to every aspect of water supply, water quality, transmission, use and reuse, resource recovery, and energy use, are pivotal to our water future, and more basically, our future as a thriving species on a healthy planet. Failing this long-term perspective and implementation of programs consistent with it, both human beings and the environment will increasingly suffer water shortages, water quality degradation, climate change-induced challenges such as rising sea levels and changed precipitation patterns, and associated economic, human health, social, and ecosystem impacts. It will not suffice for a broader, more sophisticated understanding of these inter-relationships to inform water-related activities in small, high-income pockets of the globe; rather, this is a global challenge in which water and energy-related activities in one part of the globe will affect the lives of people in another. Further, our vulnerability and the priority of addressing these issues needs to be understood not only by academicians, water providers, and regulators, but also by an expanding proportion of the public, and by the industries and governmental and financial organizations that can (or should have) an impact on global water use.

Marafiq has a vital role to play in providing information on useful tools

and opportunities as industrial water consumers see threats to water as a basic unit of production, and as regulators and financial institutions become sensitive to water-related threats posed to human health and the environment. In order for scientific findings to move beyond research into policy, from policy into regulations and guidelines, and from directives into the day-to-day practice of the individuals and organizations that use water. Marafiq's commitment to communication and collaboration with groups beyond the water community will be the role model of sustainability. The activities of the Sustainability Group are vital to both encourage and support movement from theory to implementation.

The change that will, over time, be transformational in this field will be a growing understanding among key stakeholders (including the public, regulators, and industry) of the complex set of inter-relationships between energy, food, economies, communities, and the environment, and that all components of the complex web depend on an endangered resource, water. This will be

an incremental change, one that has already started, which the Sustainability Group would help move forward through the following activities.

The Sustainability group is developing an advanced toolbox of products which will include succinct sustainability guidelines, proven analytical tools, templates for assessments, best management practices, and training materials for staff. The Sustainability Group is performing research on best management practices in organization development, staff preparedness (e.g., documentation, staff training, and knowledge management), optimized use of staffing, and collaboration among utilities and stakeholders), and disseminating this information.

The Sustainability Group is developing an economic framework that takes into account the value derived from ecosystem services, as well as profits from resource recovery and investment in the costs of water/wastewater services. The database on clean technologies in order to generate data-driven insights about trends, gaps, innovations, and strategic synergies and antagonisms.



Best Department Award 2018



Ahmed Mohammed Al-Manzalawi
Manager, QA/QC Department

Marafiq's first priority is safety, since its inception in 2003, it has continued to enhance and build a safety culture. The Marafiq Best Department Award is an annual award that celebrates, honors and recognizes the best safety performers.

Under the patronage of Engineer Mohammad Mandili (Executive General Manager), Ahmed Al Khars (General Manager, Information Technology) and Engineer Ahmed Al-Manzalawi (Safety Awareness Committee Chairman), the following departments received the Best Safety Department Trophies:



Jubail

- Marafiq Tawreed (Technical)
- IT Department (Non-Technical)



Yanbu

- Power Generation Yanbu-2 (Technical)
- Materials and Logistics (Non-Technical)

On 27-March-2019, Marafiq Safety Awareness Committee honored Tawreed O&M and its team for winning the Best Safety Department Award 2018 for the technical departments category in Jubail.

In the presence of the Chairman and members of the Marafiq Safety Awareness Committee, the award-winning departments were honored by distributing trophies to the department managers and prizes to the key persons who contributed to the success.



Marafiq - water for life



Tahir Arshed
Specialist I, Environment
Technical Services, Jubail

Water is necessary to life and supply of clean-safe drinking water is required for the sustenance of life. The supply of water reaches your tap passes through a series of processes and control steps to meet highest water safety and quality compliance. Figure-1 shows overview of steps used by Marafiq to supply drinking water to Royal Commission residential areas.



Figure 1: Drinking water production steps

SEA WATER DESALINATION

The desalination is the first process to produce drinking water. Presently, combination of thermal and membrane desalination process produce required quantity of desalinated water. Desalination is performed under the licenses from Governmental Authorities and quality conditions are maintained to produce superior quality of water. Throughout the process, online and manual monitoring and control steps are applied to maintain the quality of produce water.



RE-MINERALIZATION AND DISINFECTIONS

In order to fulfill the Royal Commission Drinking Water Requirements and making water more aesthetic for drinking purposes, Marafiq increases the minerals contents through dedicated community re-mineralization plants. The quality controlled re-mineralization process of drinking water increases Calcium, Magnesium and Total Dissolved Solids (TDS) of water making it more acceptable for human consumption. Keeping the water supply safe and free of any bacterial contamination, Marafiq utilizes efficient disinfection technology.



POTABLE WATER STORAGE AND DISTRIBUTION

A comprehensive potable water system distributes water to the community storage tanks and distribution network and the whole system is pressurized loop. The quality from the tanks and network remains under close monitoring and representative sampling locations are monitored to assure that water quality is well preserved.



Figure 2: Potable water storage

"The latest technologies for drinking water production, re-mineralization and disinfection along with close monitoring and control program ensures that the water supplied Royal Commission residential areas is safe and healthy to be used as drinking water."

QUALITY MONITORING AND CONTROL

Quality control is our utmost priority to confirm that water meets specifications. An extensive sampling schedule is followed on daily basis to ensure that the water from the source, production, transmission, distribution and end use is complied with the applicable quality regulation and standards. Approximately 400 tests including physical, chemical and biological are performed to maintain the quality throughout the network every day. Internal and external laboratories are engaged to confirm that the testing are aligned with standard and guidelines.



Figure 3: Water Quality Monitoring

COMPARISON WITH BOTTLED WATER

Various samples of bottled water were collected from the local market in Jubail to compare with the Marafiq supplied drinking water quality. More than 20 water bottled brands sampled and compared with the Marafiq potable water typical specifications. Marafiq supplied water is most favorable in terms of quality characteristics. The comparison revealed that the Marafiq tap water is recommended to be safer than the bottled water. The water supplied in Jubail industrial city residential area meets and exceeds the drinking water characteristics required by Royal Commission Standards as well as World Health organization drinking water guidelines. Table-1 shows the comparison of Marafiq water with local available brands of packaged water bottles and it reveals that Marafiq water is superior for human consumptions.

| Parameter | Market Bottled Water Range | Marafiq Jubail Typical | RC Drinking Water Standards |
|---|----------------------------|------------------------|-----------------------------|
| pH | 6.8 – 8 | ~ 8 | 6.5 - 8.5 |
| TDS (mg/l) | 46 – 155 | Above 100 | 100 – 500 |
| Calcium (mg/l) | 5.5 – 27 | Above 30 | Above 30 |
| Magnesium (mg/l) | 1.5 – 21.1 | Above 5 | Above 5 |
| Total Hardness (mg/l as CaCO ₃) | 25 – 83 | Above 75 | Above 75 |
| Sodium (mg/l) | 0.3 – 29 | < 6 | < 30 |
| Sulfates (mg/l) | 1.5 – 85 | 1 | < 250 |
| Bromate (ppb) | < 10 | < 10 | < 10 |
| Fluorides (mg/l) | 0.0 – 1.1 | < 0.1 | < 1.5 |
| Nitrates (mg/l) | 0.1 – 12 | 0.3 | < 50 |

Table 1: Comparison of Marafiq Water with local bottled water samples in Jubail.



Message from MaSa Executive General Manager



Hamad Al Suhaim
MaSa Executive General Manager

"We started TransforMaSa program to fast track this transformation process and to maximize the overall satisfaction of our clients and employees"

MaSa is continuing its journey to transform into a modern and viable company that is able to provide its industrial and domestic customers with quality services and products they deserve.

In 2018, we started TransforMaSa program to fast track this transformation process and to maximize the overall satisfaction of our clients and employees. The program's key objectives cover different aspects of the O&M activities. It works on promoting and enhancing the QHSE culture in MaSa, and improving the Permit to Work system field implementation. It also works on people development by establishing comprehensive systems to develop employees' skills, manpower review, and defining an effective operational set-up.

Additionally, the program aims to achieve operational excellence through focusing on updating the plants maintenance master database, enhancing the GPM and equipment strategy, optimizing the non-revenue water, optimizing chemical consumption, and improving asset availability, in particular movable asset utilization and working conditions.



The transformation program will continue throughout 2019 in order to achieve its full objectives, with more focus on achieving zero incident rate, establishing a competency management system and leadership development program, achieving 100% GPM & CM compliance, and 100% environmental compliance.

At the end of 2018, our colleagues from Marafiq who were seconded to work in MaSa had returned to Marafiq. These colleagues contributed immensely in making MaSa a successful and vibrant company, and I would personally like to thank them for their contribution, hard work and dedication in developing MaSa, and I wish them all the best in their future endeavors.

We will continue making solid progress towards modernizing the company, in addition to investing in our people and assets in order to increase our competitiveness to achieve our vision of becoming the preferred O&M Joint-Venture in KSA. This vision requires our combined efforts and commitment, and I would like to thank you all for your hard work and dedication towards achieving it and making MaSa a successful company. However, I would like to remind you that we still have more work to do to complete the transformation of this company into a modern and viable business, and we need to continue combining our efforts, teamwork and commitment in order to achieve the operational excellence through safe, reliable and efficient manners.

MaSa GIS Portal is now live on Marafiq network



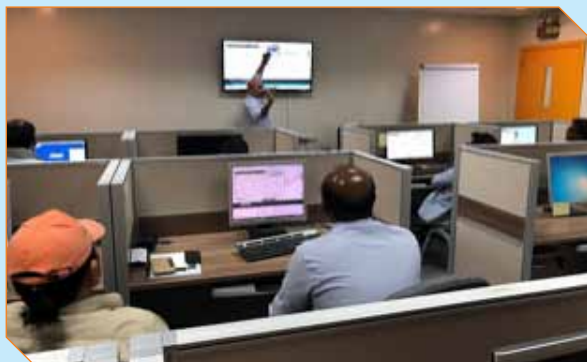
Ali M. Al Ali
GIS Supervisor

The Cockpit Performance Operations and Maintenance (CPO) department launched new MaSa GIS portal on Marafiq internal network. The GIS web-portal was developed in-house by the GIS team in CPO department in coordination with Marafiq IT. The portal provides access to the digital drawings and assets information for Marafiq PW, RW, and SWC networks in Jubail, and PW in Yanbu. Access to such information and maps is a key element in planning and support informed decision-making during operation and maintenance.

The new interactive GIS portal is more efficient and faster than the previous system and includes additional feature and capabilities. It is integrated with SAP, provides capabilities to extract and download assets information, and able to carry out various types of measurements for operation and maintenance purposes. The training sessions for all users in Jubail and Yanbu started in January 2019 in coordination with Marafiq Water Academy and will continue throughout the year.



GIS practical session training which took place in Marafiq Water Academy Computer Lab.



GIS awareness session from PW, RW, SWC, CPO and TSD departments in Masa Water Academy



Example 1 of GIS tool: Manhole Trace tool in RW. This tool identifies all manholes related to a specific Lift Station and gives the option to download, print or send the information or the map to an operation team for flushing or other purposes.



Example 2 of GIS tools: Isolation Trace tool in PW. This tool allows the user to allocate pipe break location and identify all isolation valves and affected customers. It also gives the option to download, print or send the information or map to operation or maintenance teams to take the required actions.

MaSa Board of Directors Visit IWTP-8



MaSa's Board of Directors, together with some of Marafiq and MaSa Executive Management Team visited the Industrial Wastewater Treatment Plant (IWTP-8) in March 2019. The visitors were accompanied by the Business Unit Manager and the Plant Superintendent visited the existing treatment plants, in addition to the mitigation treatment plants which were added to the treatment process to handle the additional incoming flows to the plant.

The management team discussed with the visitors some of the challenges of managing the treatment facility. They presented them with a sample of the income untreated industrial wastewater, and a sample of the treated water used by Irrigation Department of the Royal Commission to irrigate the public parks and corniche in Jubail.



MaSa Organizes a farewell gathering for Marafiq seconded employees

MaSa organized a farewell gathering for Marafiq employees who were seconded into MaSa and returned to Marafiq. The gathering was attended by Mahmoud Al-Theeb (Vice President, Operations and Maintenance - Jubail), Hamad Al Suhaim (MaSa Executive General Manager), and MaSa executive management team and managers. MaSa executive management team thanked the seconded employees for their contribution and hard work in building MaSa, and presented them with certificates of recognitions to show their appreciation and wished them all the best in their future careers.



Work Management System Training for CPO Planners

The CPO Project Change Management team conducted an assessment and training for Work Management System including a walk down simulation for all Planners and Planning Engineers. The objective of the training

was to strengthen the Work Management System application and understanding before the implementation of the SAP MRS scheduling module.



Cybersecurity Awareness Training



Darweesh N Al-Buainain
GRC Lead, ERM Department

Cybersecurity awareness training generally consists of repetitive training and ongoing, sometimes random, testing in the following areas of exploitation. The most prevalent IT security threats (and thus the most up-to-date cybersecurity training) include:

Spam. Not limited to direct email, spam is now one of the main methods of attack via social media. When someone "invites" you to connect on LinkedIn, for example, that invitation may arrive in your email, but its effectiveness is directly related to your trust of various social media sites. Cyber criminals can even embed password-stealing malware from a simple LinkedIn invitation.

Phishing. Phishing is a common practice whereby hackers go after a broad target of users with emails that look genuine, but are actually intended to lead the uneducated user to click on dangerous links — possibly divulging usernames, passwords, personally identifiable information, even financial information. Phishing is akin to throwing out a wide net full of bait and pulling in whatever you catch.

Spear phishing. While phishing schemes cast a wide net, spear phishing takes a highly targeted approach to attacking specific individuals. The most infamous spear phishing attack in recent history was on John Podesta, then-chairman of the Hillary Clinton presidential campaign. Spear phishing attacks target high-profile individuals or people with access to valuable digital assets. The email usually hand crafted, and uses all available information to make the email read exactly like an actual email from a friend or colleague.

Malware. Short for "malicious software", malware refers to any type of software designed to cause harm to a device such as viruses, rootkits, spyware, worms and Trojan horses. Advanced Malware has a

specific target and mission typically aimed at an organization or enterprise. In 2017, the malware program known as WannaCry spread throughout the world, crippling hundreds of organizations.

Ransomware. Similar to malware, ransomware is used by attackers to extort money (or possibly other resources) from the target organization. In June 2017 NotPetya infected accounting software prevalent in the Ukraine. It encrypts files on the drive, requests \$300 in bitcoin, attempts to steal credentials in the memory and attempts to propagate through the network using stolen credentials or exploits.

Social engineering. This practice is simpler than it sounds. If you've seen the movie Catch Me If You Can, you've witnessed one highly effective example of social engineering. Social engineers use a variety of tools and resources to gain access to targeted resources, but the one-on-one direct attack remains the same.

In conclusion, Cybersecurity awareness training starts with the organization's acknowledgement that their employees are the weakest cybersecurity link. On the other hand, they're also the first line of defense against cyber-attacks.

The awareness training provides every employee with a fundamental understanding that there are imminent and ongoing cyber threats, preparing enterprise employees for common cyber-attacks and threats. Because of the rapidly changing environment and long list of vulnerabilities, security awareness training also cannot involve a one-shot approach or a "set it and forget it" program. Rather, in order to ensure the network security of any organization, cybersecurity training must be repetitive, updated and constantly tested.

Reference: Secureworks

Why you should take a walk every single day



Abdullah H. Al-Ruwily
Executive Secretary
President and CEO Office

The benefits of walking on the body are wonderful. One of the factors of walking is that it improves one's health and has a positive impact on the body's fitness.

Walking can be either a pleasurable exercise or even a sport. It is such a versatile activity that it can be practiced in many places, even when one feels stressed at work a short brisk walk can reduce stress and improve mood.

Walking helps to strengthen the heart, prevent heart disease, help in the treatment of diabetes, strengthen bones and joints, reduce high blood pressure, and reduce the incidence of chronic diseases.

Taking a purposeful walk to exercise helps you to lose weight and get rid of excess body fats. If you exercise frequently, science has shown that it will help control your weight and help you to get a slim body over time.

Walking helps people to feel comfortable and at the same time improves their energy levels. It is even said that walking positively affects the mind and helps one to become more confident. Walking helps to improve brain function, stimulate memory and reduce anxiety.

Walking is a simple, economical sport that does not carry a big price tag. Do not pass by your opportunity to take a walk today, even if it is only for one hour.



In May 2019, Marafiq received a Plaque of Appreciation from Eastern Province Governor HRH Prince Saud bin Nayef in recognition of Marafiq's support to the charitable activities of Patients Friends Committee and Tarahum Sharqia Charity



The Eastern Province Governor HRH Prince Saud bin Nayef honors Marafiq for sponsoring the Holy Quran Charity in Jubail



Highlights

Ghazi Ozair Mohammed (Specialist, Supply Planning, Demand Forecast) presented a paper at the 2nd Energy Management Conference, held at Jubail during 14-15 January 2019



Ali M. Al Ali (GIS Supervisor at MaSa) presented a paper at the 13th Gulf Water Conference on 12-14 March 2019

During the month of February Marafiq participated in the Royal Commission Yanbu Sport Festival 2019. Marafiq participated in 5 games (football, volleyball, tennis, table tennis and cycle race)





Marafiq with the support of Mouwasat Hospital conducted a volunteer blood donation campaign at the Yanbu Business Center on 5 March 2019

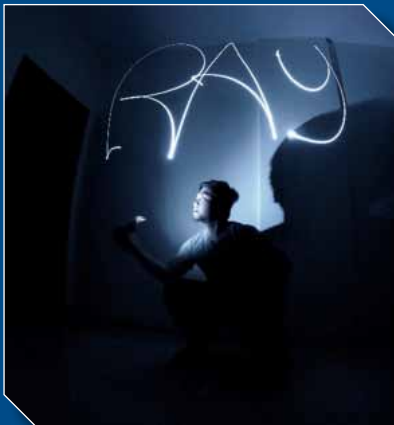


Tawreed O&M safely and successfully completed the 5-Years pipeline scrapping and In-Line inspection as guaranteed by Tawreed-Aramco Sale Gas Agreement.



International School Group of Jubail visits Marafiq's Treatment Plant #8 on 14 February 2019

Marafiq and employees participate in saving electricity during Earth Hour held 30 March 2019



Ray Angelo Pesayco Dungo



Yahya Abdulkhaliq Al-Ghamdi



Hani Kamil Mohammed Bakheet

Marafiq creates environmental awareness with over 40 students from International School Group Jubail, they enjoyed a tour of the Sanitary Treatment Plant (STP #9)



Motor Vehicle Safety for Children



Ghulam Qadir Ghulam Rasul
Technician, Protection
Power Transmission & Distribution –Yanbu

For children between the ages of 3 and 14, accidental injury-related deaths happen most often when riding in a car. Children are more likely to be injured, suffer more severe injuries, or die in motor vehicle crashes when they are not properly restrained.



With proper measures made in advance, such as the proper use of child safety seats that are appropriate for a child's age, most accidental injuries and accidental injury-related deaths can be prevented. Children can get hurt when parents or caregivers don't properly restrain them when riding in a vehicle, or are unaware of the dangers associated with certain motor vehicle situations. High-risk situations may include the following:

- Lack of the use of child safety restraints or improper use of safety restraints in motor vehicles
- Improperly used or installed child safety seats
- Placing children in front of passenger seat air bags (either in an infant safety seat or sitting facing forward)
- Allowing children to ride in the cargo areas of pickup trucks
- Trunk entrapments
- Leaving children unattended in cars

Use of safety restraints in motor vehicles

Physically, children are smaller than average adults. Their smaller size means that the standard safety belts in motor vehicles do not properly fit to protect children's bodies. One age group, from 4 to 8 years of age, is especially at risk for improperly using safety belts in motor vehicles. The children don't fit in adult shoulder and lap belts (without a booster seat) until they are 57 inches tall, and between the ages of 8 and 12.

However, children between the ages of 4 to 8 years who have outgrown their child safety seat often are placed too soon in adult

shoulder and lap belts without a booster seat. A booster seat is necessary if the shoulder strap of the seat belt crosses your child's neck rather than her chest and the lap belt crosses her stomach rather than her hips or upper thighs.

Use of child safety seats

Many people think they have installed their child safety seat correctly and believe they are using it properly. However, the National Highway Traffic Safety Administration proves differently. As many as 73% of child safety seats are found to be improperly installed and/or used. A child can suffer injuries or death in a motor vehicle crash if the child safety seat is not properly installed or used.

Some of the most common mistakes in installing or using child safety seats include the following:

- Safety belt not holding the seat in tightly or not in locked mode
- Harness straps not snug or positioned correctly
- Harness retainer clip not at armpit level
- Locking clip not used correctly
- Car seat recalled and not repaired (includes booster seats)
- Infants placed rear-facing in front of an active air bag
- Children turned forward-facing before reaching 2 years of age and 20 pounds

Parents and caregivers should carefully read their vehicle owner's manual and the instructions that come with the child safety seat to make sure that the seat belt is properly installed and used. Some child safety seats are not compatible with certain vehicles. Try the child's safety seat in your vehicle before you



purchase it. Also, place your child in the child safety seat before purchase to make sure of proper fit.

The danger of air bags

Air bags, when properly used with the vehicles' lap and shoulder belts system, can save adult lives. However, air bags can increase the danger to a child's safety.

When infants in rear-facing child safety seats and children who are unrestrained are placed in the front seat with an air bag, they may be too close to an inflating air bag in the event of a crash. An air bag will inflate at speeds up to 200 mph, which can hurt passengers who are too close to the air bag. In addition, because of the child's size, the air bag can strike him or her on the head or neck, resulting in serious or fatal injuries.

To make that your child is as safe as possible in a vehicle, never place him or her in front of an air bag. The safest place for small children riding in vehicles is the rear seat, away from the impact of head-on crashes. If your child must ride in the front seat, move the seat as far back as possible, away from the air bag. If the car has no back seat, infants will only be safe in their rear-facing child safety seats if the vehicle has no air bag, or if the air bag has been switched off (an option in some vehicles).

Leaving children unattended in cars

As tempting as it may be to run a quick errand, leaving children unattended inside a vehicle, "even for a minute," can be dangerous. When left unattended, children may be able to start the vehicle or put the vehicle in neutral. In addition, heat buildup or dangerously cold temperatures inside a vehicle can quickly become fatal to children.



Always lock your vehicle, including the trunk, when not in use.

Positive discipline in workplace



Fawad Inam
Training Coordinator (Human Capital Development) - Yanbu

Discipline in business is a type of exercise in which individuals are subject to particular regulations designed to mold behaviors. It is necessary to drill a disciplining program in your organization in order to move forward. An effective regimen will help improve workplace performance, provide a safe and honest environment conducive to production.



1) Promotes Appropriate Behavior

A disciplined environment helps put both management and employees on their best behavior. Managers must strictly adhere to the company's protocols in order to effectively lead those looking to set them as examples. Employees who enter this type of administration know what the expectations are as well as the penalties for committing violations. This knowledge promotes appropriate actions and conduct which are essential for an organization. Discipline should always be used as a means of ensuring that all employees adhere to a unified set of standards.

2) Efficiency

Efficiency is tied to a disciplined organization. Staff members must discipline themselves in working in a timely manner to produce quality output. Small business owners must strive to cultivate a workplace in which standards are set which everyone in the organization is called upon to meet. This allows management and workers to get things done. Discipline requires concentration, time management, and orderliness, which all contribute to efficient workforce.

3) Peaceful Environment

Peacefulness ensues when you have a workplace that is committed to values of a concentrated regimen. The environment that exists in organizations which do not issue specific guidelines for behavior is frequently impulsive, erratic and uncertain. It is extremely difficult for management to effectively lead workers under these conditions. A disciplined facility, however, encourages a pleasant environment that promotes good management and employee relations.

4) Impartiality

Discipline helps to produce an honest environment in which everyone is treated fairly. An employee does not have to fear being shouldered with an unfair amount of tasks because set protocols are in place that call for workers to share the load. Managers are less likely to play favorites in a disciplined environment as well, as they are subject to the same conduct requirements as all others in the company.

5) Ensures Safety

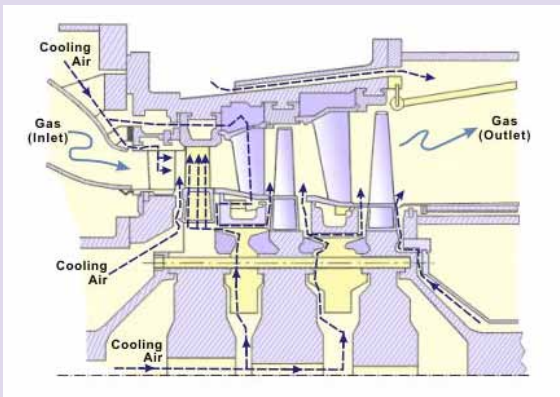
Safety in your company is of vital importance. You do not want any of your staff or customers to suffer preventable accidents from which personal harm occurs, which could also lead to possible legal action. You must abide by all occupational safety regulations and train your staff appropriately, a disciplined environment is necessary to provide a secure workplace. For this reason, it is necessary to train all employees on safety procedures. Employees who fail to follow safety directives are subject to disciplinary measures.

Keys for Heat Rate Improvement in Turbine Inlet Air Cooling



Karthikeyan Krishnamoorthy
Sr. Engineer, Projects Engineering
Project Engineering

It is fascinating to see the level of transformation that turbine inlet air cooling technology (TIAC) has brought to power generation. TIAC is a welcome relief for power producers that are seeking to improve plant efficiency for less operating and maintenance costs, and higher efficiencies. Turbine efficiency solutions are still advancing, but there are still things plant owners can do to achieve higher heat rate and efficiency. Reducing pressure losses and further optimization of components have been identified as possible areas of improvement.



It is a well-known fact that ambient conditions affect gas turbine performance. This can affect the efficiency of a power plant, hence the emergence of TIAC and other power augmentation solutions.

What TIAC does is eliminate the weather aspect; hence, it is popular in hot environments like Middle East and Tropical areas. You will find all over the Middle East and other regions that are experiencing such ambient conditions.

Heat rate improvement can increase annual savings as shown in these graphs.

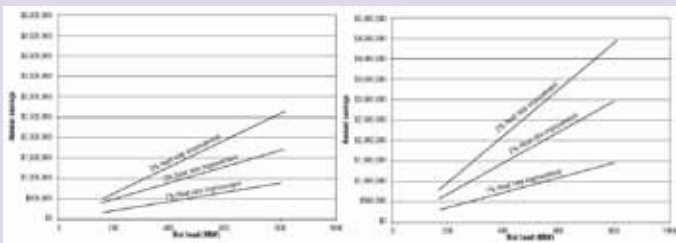


Figure: Economic Benefits of Heat Rate Improvement in a Power Plant

So with Turbine Inlet Air Cooling the heat rate of the Gas Turbine is improved. However, it is also very important to maintain a high efficiency on the TIAC system so the global efficiency is increased.

The key point for the efficiency is the design of the cooling plant of the TIAC system. Refrigeration equipment and specially the chillers must be industrial grade, specifically designed for TIAC purposes with high efficiency. But after putting into operation the TIAC system, a proper operation and maintenance are needed in order to maintain the efficiency levels as per the design.

Maintenance and Checks for High Efficiency Achievement

Most of the power plant like to look after their most prized possessions. In most facilities, maintenance is one of the cheaper endeavors-not at all comparable to new installations or modifications.

To provide you with an overview of what it makes to maintain a good TIAC system for improved heat rate, here are some things to do often.

1. Check compressor oil level
2. Confirm operational condition of oil heaters. Most chillers will only operate if the oil is preheated
3. Check cooling tower and take action if condenser-cooling temperature is not as per design. Once the system is up and running, you need to check the following things:
 4. Chilled water return line- it should be in full flow
 5. Temperature draw-down- system should operate within the design point
 6. Proper operation of control valve(s)
 7. Fully functional system temperature sensor
 8. Correct operation of heat rejection system in the chiller. Since most machine rooms operate optimally at around 80° F, it is important to check if the temperature is more than this standard. You might want to add ventilation to take care of this problem.

IoT (Internet of Things)



Fayeze Ali Al-Hassan
Consultant, SAP - BASIS
IT Applications Department

The world is changing fast and we are struggling to catch up. Many of us wondered if we can start the AC in our home while outside at will without the timer, the lights, the garage door or even tell the contents of the fridge while shopping.

Before we go any further we must know that the current Internet we use is called the Internet of People, which is created by the people, for people and about people, like the websites, audio files, images, etc. as it connects people and changed the world we knew, however there is a new internet emerging that will change the world a lot more called the Internet of Things or IoT for short.

The IoT is a network of physical internet-connected devices that can collect and share data across a network, the IoT concept started back in 2008 and since then it has taken the world by storm as it is estimated by 2020 there will be 31 Billion devices connected to through the IoT in comparison to the 25 Billion in 2018.

The IoT affects business in five possible ways:

1- **Predictive customer service:**

Collecting, analyzing and transmitting real-time data is at the heart of the IoT, as adding sensors to devices such as cars or home appliances can connect them to the Internet, thus their manufacturer can monitor them and give instant support once a defection is predicted.

2- **Business Process Monitoring:** It is said that if it can be measured, it can be improved. IoT can bring detailed monitoring Data to areas of business, including office work and field operations, through wearable devices

will act as sensors on field operatives to track their activities and provide information on them.

3- **Automated Services:** IoT can provide real time data instantly, as historical data can be utilized to improve future data, thus eliminate the human factor. For example, a utility company is aware of a particular customer average consumption of their product from historical data, however if the consumption starts goes way beyond its normal rate, the system can detect a malfunction and alert the maintenance team to serve the customer.

4- **Enable Block Chain:** Block Chain is a big subject in its own rights and I will be discussing it in another article, however to provide a brief summary it can provide information on any product registered through it down to its raw materials. For example, an orange juice in the market, Block Chain can tell you the name of the farm from which the oranges were harvested to make that juice and you can see the chain of events that led to the juice to reach the shelf, hence eliminating frauds.

5- **IT Embedment:** IoT technology is already changing how businesses work and compete. With your operations in mind, you should be investigating and deploying solutions where they will create the biggest benefits.

One of the biggest challenges the IoT is facing is the security as it is a double edged sword which on one hand can have many devices connected to the Internet to make our life easier, it can be utilized by hackers also, for example, before the cyber attacks were utilizing a huge number of PCs which can be

measured in 100 thousands, however with the IoT any device, which is measured in billions, that is connected to the internet is now a potential threat as they aren't full proof against hackers.

Some IoT devices can have compatibility issues due to the time frame of their release and the technology both devices support and sometimes to keep the data flowing a frequent upgrade is imminent.

The most dangerous part of IoT is that consumers are surrendering their privacy, bit by bit, without realizing it, because they are unaware of what data is being collected and how it is being used. As mobile applications, wearables and other Wi-Fi-connected consumer products replace "dumb" devices on the market, consumers will not be able to buy products that don't have the ability to track them. It is normal for consumers to upgrade their appliances, and it most likely does not occur to them that those new devices will also be monitoring them

IoT is approaching and very fast, as it will change the world how we know it and we need to adapt to it, as it will impact our lives with everyday objects are being combined with Internet connectivity and powerful data analytic capabilities that promise to transform the way we work, however, it raises significant challenges that could stand in the way of realizing its potential benefits. Which can be the attention of headlines about the hacking of Internet-connected devices, surveillance concerns, and privacy fears that is already a public and business concerns. Thus, the technical challenges will always remain and new policy, legal and development challenges are emerging.

How to deal with an emergency?



Naveed Ahmed
Safety Specialist
Human Capital Development

Marafiq and safety goes hand-in-hand. Marafiq strongly believes in its safety ethos and its Human Capital Development Department plays a pivotal role in uplifting the safety culture.

Safety is all about attitude and we should not be complacent at any stage. It is the never-ending journey and everybody has to run hard to win the marathon but without having any finish line. Marafiq is proactive on all safety issues and now we are going to discuss emergencies and how to address them. An emergency can happen at any time without any forewarning. If we are well prepared and organized we will be able to curtail the effects of that particular emergency.

In simple words, an emergency can be defined as an impeding or sudden situation which may be dangerous for life or could cause injury, property and environment damage and must be given immediate attention and require remedial action.

There are four pillars for the emergency model:

1. EMERGENCY PREVENTION
2. EMERGENCY PREPAREDNESS
3. EMERGENCY RESPONSE
4. EMERGENCY RECOVERY

Emergency Prevention: Is a proactive approach in safety, where we will not allow an emergency to happen in our operations. We apply positive attitude and stay focused. But, nobody can design a foolproof system and we should

always think out of the box. An ideal example is the Titanic ship, which faced failure during its first journey.

Emergency Preparedness:

Shuttle challenger from NASA (USA) and recent nuclear plant radiation leak during Tsunami in Japan have reminded us that we cannot rely on proactive approach. In fact, we need to be prepared for an emergency in order to be more proactive. An ideal example is training of all individuals and provision of systems to manage unavoidable situations. This should be applied not only on the job but we should also educate our families and communities in the vicinity. An ideal example is provision of firefighting systems, chemical handling procedures, relevant Personal Protective Equipment's, and control & command center to meet the challenges.

Emergency Response: Is vital for any emergency. Remember your worst enemy during any emergency is time and we have to win the race against time in order to minimize the impact of the emergency. This is only possible if we are well prepared and organized and do not panic. The ideal example is conducting scenario based drills and motivating employees to remember emergency phone numbers and report incidents.

Emergency Recovery: last but not least, as it is crucial to recover from shock and embrace the situation. One should always focus on diversity and do not lay all the eggs into one basket.

In other words, the organization or individuals who are well prepared can handle the situation and will be able to accept the truth and redirect their energies. This will help to minimize the impact of emergencies.

To summarize, emergencies are unavoidable and can hit any organization or individuals. Only way, we can get prepared is if we focus on these three words: THINK- PREPARE and ACT.

Think: What could go wrong?

Prepare: What means I have to deal with the emergency?

Act: Well in time before emergency can further worsen.

"An emergency reminds us that being humans, we have limitations and we should be ready for worst case scenario. Those who are prepared will be able to minimize the impact of emergencies"

Strategic Thinking: Emergence of Bilateral Contracts Market in the Kingdom and its Implications



Dr. Zulfiqar Bashir
Lead Specialist, Opportunity Evaluation
Business Development

The opening up of the power sector is a process, which lead to fully competitive wholesale and retail markets. The participating entities in the sectors compete with each other and have the common goal of maximizing their profits. In competitive electricity market, the Bilateral Contract is an Agreement (BCA) between a willing purchaser and a willing trader to sell electricity under commonly agreed terms for a stated period of time. It allows both parties to have the price stability and certainty needed to achieve long-term planning and to make balanced and socially optimal investments.

It is a transaction for exchange of energy (MWh) between a specified buyer and a specified seller, directly or through a trading licensee or discovered at Power Exchange through anonymous bidding, from a given point of inclusion to a specified point of withdrawal for a fixed or flexible quantum of power (MW) for any time period during a month.

Bilateral exchange includes a means for energy businesses where two parties consult and get an agreement with no interference of third-parties. In transactions via bilateral contracts, almost all conditions - including price, time of delivery and energy volumes - are dependent of the goals and concession

tolerance of each intervenient in the negotiation. The adapted long-term bilateral contracts are flexible and conferred privately to meet the needs of both entities. They usually involve the sale of large amounts of power over long periods due to large transaction costs associated with the negotiation of such contracts, making them useful only when the parties want to buy or sell large amounts of energy. On the other hand, short-term bilateral contracts, famous within a short maturity prospect are categorized as spot market operations.

The electricity market is comprised of several key entities who ensure a proper electricity delivery service with substantial safety and reliability including;

Energy Market Main Entities

| Entities | Roles and Responsibilities |
|---|---|
| Generation Companies (GenCos) | <ul style="list-style-type: none"> Responsible for producing electrical energy and sell it through the variety of trading mechanisms at their disposal. Provide a range of ancillary services to the System Operator, helping this entity to maintain the electrical balance of the grid, and consequently the security of the system. Also, participate in the market by buying energy to their competitors. Each company can own a single power plant or a portfolio of producing units that may provide the producer considerable power to influence the market. |
| Transmission System Operator (TSO) | <p>Responsible for the O&M and the development of transmission lines, transformers and reactive compensation devices.</p> <ul style="list-style-type: none"> An independent actor responsible for running the last resort market and balancing demand and supply in real-time towards a secure electrical system. <ol style="list-style-type: none"> Implement open access Provide real time system information Develop payment structure for backup power and ancillary services Enable scheduling |
| Distribution Companies | <ul style="list-style-type: none"> Ownership and responsibility for the operation of the distribution network. |
| Electricity Retailers | <ul style="list-style-type: none"> Responsible for the resale of the electricity bought from producers in the wholesale market. Not need to own physical infrastructures to operate, retailers have proliferated in liberalized systems. |
| Consumers | <ul style="list-style-type: none"> Commonly categorized according to their level of consumption. Consumers in liberalized markets are free to choose the retail company to whom they agree to buy electricity. Large consumers due to their dimension and consumption volumes can operate in the wholesale market and buy electricity directly from the generation companies and may be directly connected to the transmission network. |
| Regulator (ECRA in case of KSA) | <ul style="list-style-type: none"> Most commonly embodied by a government agency, responsible for ensuring the efficiency and transparency of all operations that occur within the sector. <ol style="list-style-type: none"> Implementation of the BCA including contract registry Stakeholder education Definition and enforcement of open access through enforcement Dispute resolution between the licensed entities performing system activities (such as National Grid Saudi Arabia) and counterparties only Limiting the stakeholders' influence to manipulate the Market Collection of information and dissemination of guidelines Establish and oversee transparent processes for setting-up multi-year transmission use of system ("TUoS") charges and Bulk Supply Tariff ("BST") |
| Market Operator (MO) / Principal Buyer | <ul style="list-style-type: none"> Responsible for managing both sale and purchase bids, matching them and guaranteeing the proper course of all trading processes. <ul style="list-style-type: none"> Determine treatment of contracts in price formation Address settlement procedures Assure existing commitments appropriately funded Incorporate bilateral contracts into forward procurement planning Established procedure for orderly transition between contracts and PB service Principal Buyers are generally counterparties to a wide range of contracts For the contracts they are involved in, they would likely need to coordinate scheduling with System Operator and Market Operator Principal Buyers would normally not have visibility into contracts to which they are not a party Issue arises if Principal Buyer revenue adequacy threatened or size of future procurements fails to factor in extent of bilateral trading |
| Ministry of Energy (MEIM in case of KSA) | <ul style="list-style-type: none"> Continue to issue policy directives (including endorsing directives to support the BCA) Directs fuel allocation (bilateral contracts will benefit from fungibility of fuel allocation framework) |
| Other institutions (Ministry of Finance) | <ul style="list-style-type: none"> Ministry of Finance ("MoF") may be involved via utilization of the Balancing Account |

Status of Bilateral Energy Markets in the Kingdom

In the Kingdom being regulatory authority of power sector, ECRA is;

- updating the competitive electricity market road map,
- developing the rules of the electricity market and their application procedures, and
- devising the systems and rules of bilateral contracts.

Following milestones are expected to be achieved in the bilateral energy markets

| Period | Status |
|--|---|
| i. Initial Period | <ul style="list-style-type: none"> A few industrial generators calling large customers and arranging customized transactions |
| ii. 3-5 Years after Arrangements in Place | <ul style="list-style-type: none"> Small number of brokers arise to facilitate trading Generators develop specialized trading divisions Customers create more formal power procurement desks |
| iii. Spot Market Opening | <ul style="list-style-type: none"> System Operator provides day-ahead and spot pricing Exchanges develop products that settle based on System Operator prices |
| iv. 5-10 Years After Spot Market Opens | <ul style="list-style-type: none"> Increasing diversity of product offerings Consolidation among brokers/ exchanges Greater sophistication of all participants Illustrative evolution of bilateral contract |

Reference: ECRA Workshop 2018

Implications for Electric Utility Providers

Due to the implementation of the bilateral contracts in the energy markets, electric utility providers could have following implications;

- The electric utility providers may build and own their own generating facilities or do so jointly with other utilities, from long-term purchase arrangements with independent facility developers and operators, or engage in transactions with neighboring utilities to their mutual benefit.
- They can optimize their generation mix and limit their exposure to fluctuations in fuel prices, construction costs, regulatory requirements, and other economic factors over time by managing their portfolios of self-owned resources and power purchase arrangements.
- They can have opportunities for new builds outside of mandated procurement processes and support a framework of bankable Power Purchase Agreements (PPAs), and may an avenue for financing both renewable and conventional generation projects.

"It allows both parties to have the price stability and certainty needed to achieve long-term planning and to make balanced and socially optimal investments"



How to Practice Office Etiquette



Bassim Mohammed Al-Khazal
Senior Accountant, Accounts Receivable
Treasury

Good workplace manners are the glue that hold the happiest companies together. With good office etiquette, you will feel comfortable around your coworkers and make a great impression on your supervisor. Your workplace will feel like a second home in no time!

Some practical tips on practicing good personal workplace habits

- Dress appropriately
- Avoid overpowering perfume or cologne
- Stay home when you are sick
- Be polite over email
- Keep your social media appropriate
- Eat in the lunchroom or outside
- Do not take other people's food from the communal lunch area
- Avoid office gossip
- Take phone conversations in a private room
- Decorate your cubicle simply and tastefully
- "Knock" before you talk
- Leave a note if a coworker is busy or away from their desk
- Ask before you borrow any items
- Use your cubicle for working, not personal time

Finally, remain peaceful and keep a happy face, avoid arguments, do not get involved in un-necessary discussions especially if it is not related to your business. Simply brand yourself in a friendly way.



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