

Dr. Mounir Yehia (Chairman):

Near East Engineering and Development Services Company (NEEDS) Towards Leading the digital transformation Of utility business environment in the 21st century

Under the chairmanship of Dr. Mounir Yehia, NEEDS seeks to lead the digital transformation of utility business in the 21st century to realize a sustainable business environment with ultimate professional integrity. It also endeavors to be a pioneer consulting and engineering company specialized in the integration of advanced automation and information technologies with planning design, operations, finance, management, and other business activities. Our magazine interviewed Dr. Yehia, a reference and guide in his respective field of research and development:

Dr Mounir, from where did the need arise for a company of the size and importance of Near East Engineering and Development Services?

NEEDS was founded in 1997, 20 years ago, the major reason behind NEEDS is to specialize in the utility services (electricity, water, sewage, gas - all infrastructure). The challenge, which was the core of my research activities at AUB and part of AUB-MIT program sine 1990s, focuses on the integration of advanced technologies (IT, communication and media technologies) with the business environment of the power industry. Resolving the technical and financial problems associated with such challenge was not given enough attention in research and development. You can notice that in banking, trading, and tourism, the implementation of IT technology was fast, while in energy and power sectors, there was a serious resistance into transforming planning, engineering, and business activities on the basis of digital technologies.

What services does NEEDS offer to the private and public sectors?

NEEDS offers a number of services, mainly the ones in line with the vision of NEEDS: The Digital Utility and the Smart Grid. Any infrastructure platform consists of 3 major components: the assets, the physics, and the business. The problem arises whenever the modeling and digitization of these components are done with different technologies unable to be linked to each other. NEEDS Digital Utility aims at integrating the assets' modeling, physics' simulation, and business processes within an integrated digital platform. Last year in Vienna, the logo of the European Week was the digital transformation of the utility business.

Where do you find most of your clients in local and regional markets? Accomplished projects (most important projects).

The team of NEEDS was an active contributor to the success of Abu Dhabi Water and Electricity Authority (ADWEA)



DR. Mounir Yehia: 20 years ago, the major reason behind NEEDS is to specialize in the utility services

in performing the business transformation and implementing a comprehensive digital program. ADWEA is the leader of the Digital Utility in the area

We did great work in proposing the Smart Grid transformation in Lebanon, and in promoting the advanced metering technologies. We are participating actively in Saudi



DR. Mounir yehya: We are proud that most of our services resulted in a tangible results affecting the overall business transformation of the power sector

Arabia in multimillion smart metering projects. Our main clients are all utilities owned by governments or the private sectors working in these projects. We are in the core of engineering and management teams of large scale Consortia dedicated for such smart metering projects.

Can you elaborate on the nature of services you provide your clients with?

We are proud that most of our services resulted in a tangible results affecting the overall business transformation of the power sector. In addition to the previously mentioned work, I can add the Distribution Management System (DMS) Centers in Abu Dhabi and Al-Ain in the UAE. NEEDS Engineers were the client

representatives in building these centers which are the most advanced centers in the region. We promoted the concept of the Distribution Service Provider in Lebanon and were the Program Manager of this project. Sure I have to mention our initial projects: Ge-special modeling of Electricity and Water assets of Emirate of Abu Dhabi and much more...

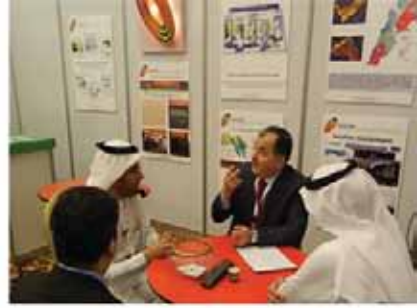
In addition to the above, we are doing innovative work related to the promotion and implementation of energy efficiency and renewable energies. We now have in Riyadh, for example, two projects where we are developing a complete solution to reduce the consumption of energy by 30%. We are now moving in our business to dealing with challenges and problems

facing the corporate and individual customers with a new program SMARTI.

How much does NEEDS combine technical activity with information technology and economical analysis with managerial and business issues?

We do not promote any type of IT, or control, or automation, or digital technologies as luxury services; they are promoted only when these technologies are going to present an added value to reduction of assets cost, improvement of operational efficiency, and achievement of the highest quality of services offered to the client. In any operation, we first go to a feasibility study that has to show a positive impact on cost, quality, and security.





DR. Mounir Yehia: The main challenges facing all governments consist of high capital investment requirement and substantial operational losses in the power sectors

How much do the chairman and staff of NEEDS contribute effectively in advancing the concept of "digital utility" on a regional level?

If we start with me, in addition to the 14 years as professor at AUB, I am now an external member of external advisory boards at the Electrical Engineering Departments at AUB and LAU. I was part of promoting; developing, managing, till now around \$4 billion of projects on digital technologies in the Gulf countries. The team was part of the management, engineering, or implementation of such projects including the promotion of the first energy storage battery in the area at the level of 100 Megawatt. If you take, for example, the senior staff of NEEDS, you have 7 people with more than 15 years of experience, mostly AUB graduates and of other prominent universities, holding Master degrees. The portfolio of anyone of them has been between \$500 million to \$2 billion worth of projects.

Who needs your services most today? And what about your consulting services?

In any country in the region, the power sector is losing 20-30% of non-technical losses, or losses not associated with physics. Moreover, countries are releasing the

subsidies and electricity bills are increasing tremendously. People need us because they need to minimize their losses and improve quality. We are continuing the promotion of advanced technologies and lately we initiated the promotion of the use of the first Internet of Things (IOT) technology for the utility sector. In brief, our services are needed for Governmental Authorities, financial institutions, large scale private developers, corporate customers (hotels, hospitals, industrial farms) and individual customers.

How to realize optimum energy performance in actual available conditions in Arab conditions?

The main challenges facing all governments consist of high capital investment requirement and substantial operational losses in the power sectors. As example, Saudi Arabia has currently 70 gigawatts of generation facilities, where each gigawatt is worth \$1 billion. They need an additional 30 gigawatts for \$30 billion, over the next 4 years if they continue to grow at the same demand level. The demand growth is high, which is not the case in Europe. European countries do not compete on who has more growth per year, but who does not allow the growth to take place. How to face these

challenges? By reducing capital investments, and making consumption more efficient through Energy Efficiency Programs, to optimize the power industry. As example, the trading industry (Shopping Malls and others) compete on decreasing the overhead cost and making more profit; if we reduce their energy consumption, we reduce their overhead costs. We implemented 15 years ago an energy efficiency program for a store in Saudi Arabia, which resulted in reducing the energy consumption by 15%. The challenge is becoming more important now with the increase of electricity tariff taking place in all Gulf countries.



DR. Mounir Yehia: 20 years of services



DR. Mounir Yehia: NEEDS is more a community than a company

The second challenge is the high level of overall losses where in some countries or areas losses are varying from 20 to 30 %. There are just 10% losses related to physics and the rest is known as “non-technical” losses. Most of gulf countries initiated the implementation of smart metering programs to deal with these losses. As example, In Lebanon, we have a yearly National budget deficiency of \$2 billion due to the power sector losses. Moreover, 38% of the Lebanese debt is cumulated to the power sector debt. The solution is to properly expand, invest, build manage and operate the power sector on a solid advanced digital platform. The same logic applies to water. Just try to know the level of water losses in the water distribution network.

Where have you provided smart effective means to reduce energy consumption at significant cost savings ensuring thus operational continuity?

We started lately our activities in Saudi Arabia. We were part of Saudi Arabia Smart

Grid initiative in the last two years. We have projects in Riyadh. Our initial findings are so encouraging. Results showing potential saving up to 30 % with non-significant investment and Internal Rate of Return (IRR) up to 3-4 years.

About your presence beyond local frontiers franchising NEEDS?

We have offices in Abu Dhabi, Dubai, Jeddah, and Riyadh. We are working with our partners in a different business models. There is no decision at this stage to franchise NEEDS.

Your participation in international specialized exhibitions and conferences.

Within 6 months, 26 trips were made by NEEDS staff to international and regional conferences. No companies, universities are active as we are; an average of 4 or 5 trips per month. At any time, four of NEEDS staff are somewhere around the world. We invest a huge amount on Research and Development (R&D), in addition to our participation in regional confer-

ences as main sponsors or main exhibitors, such as in Dubai, Jeddah, and Muscat.

From AUB passing by the Lebanese Electricity Company to former Advisor of Abu Dhabi Water and Electricity Authority to Chairman of NEEDS, where do you find yourself most?

The envelope is different, but the inside is the same. The academic experience of AUB was a starting point dedicated to the development of power engineering research focusing on the integration of the digital technologies within the power industry. Even for 4 years, my research with MIT was dedicated to that area and that industry. NEEDS was founded to transfer this vision into reality. Most of NEEDS senior staff were my students. In fact, NEEDS is more a community than a company. We are after achieving real results with significant impact to our clients, and most of our projects resulted in materializing a breakthrough in the power industry for the governments, the private sector companies, and the individual citizens.

NEEDS Participation in more than 23 Local, Regional & International Events & Exhibitions, May-Dec 2016



"Saudi Arabia Smart Grid 2016 (SASG)", Jeddah, Saudi Arabia - December 6th-8th, 2016



"6th Annual Smart Grids and Smart Meters Summit", Dubai, UAE - November 27 and 28, 2016



"European Utility Week", Barcelona, Spain - November 15, 16 and 17, 2016



"Ecomondo 2016" event, Rimini, Italy - November 8, 9, 10 and 11, 2016



"IOT Solutions World Congress (IOTSWC16)" event, Barcelona, Spain - October 25, 26 and 27, 2016



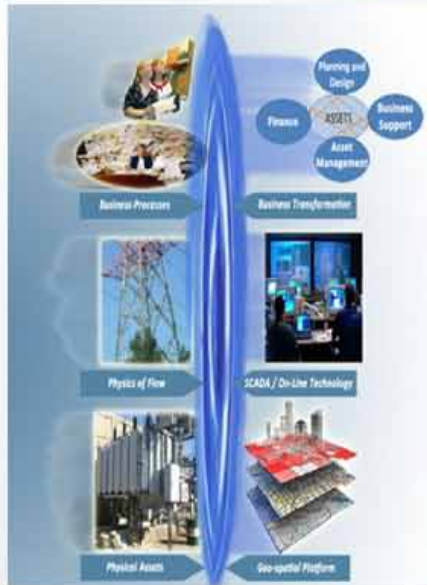
"Digital Energy Show - DES" event, Madrid - Spain BAR-TER - May 24 and 26, 2016



NEEDS

Near East Engineering & Development Services

THE DIGITAL UTILITY TRANSFORMATION



COMMITMENT TO LEAD THE DIGITAL TRANSFORMATION OF UTILITY BUSINESS IN THE 21ST CENTURY TOWARDS OVERALL BUSINESS SUSTAINABLE ENVIRONMENT WITH ULTIMATE PROFESSIONAL INTEGRITY

Digital Utilities: A Vital Leap in the 21st Century

Professor Mounir Yehia

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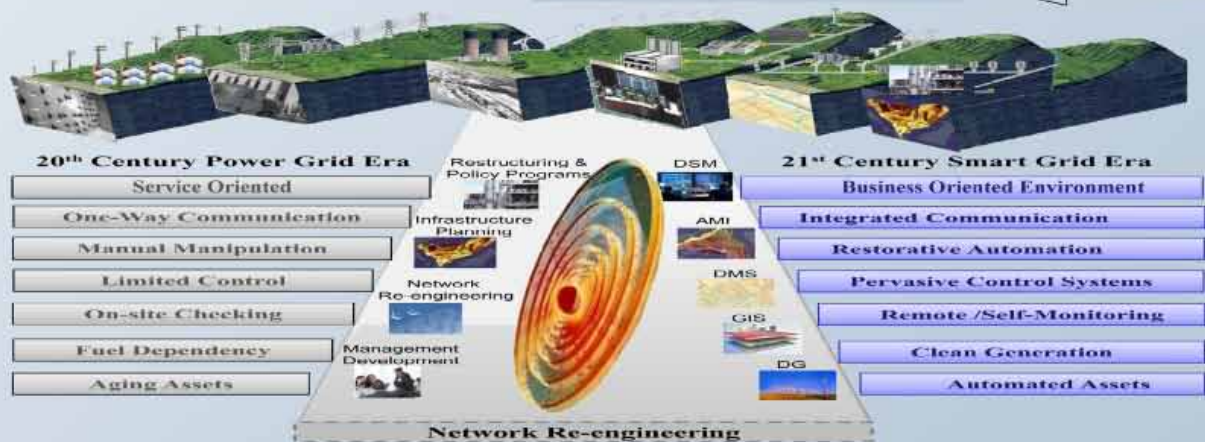
CONSULTING

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BUILDING THE SMART GRID



Ain Mreisseh, Ibn Sina Street, Mashkhas Center, 5th Floor
 P.O. Box: 113-7503 Hamra-Beirut, Lebanon
 Tel/Fax: +961 1 37 30 32/3 Email: info@needs.com.lb