I feel much of confidence when I review with Alkhorayef Industries (AIC) management the performance of the company. AIC combines between Alkhorayef Group values; excellent customer service, high quality for products and unified team spirit of employees and on the other hand receptiveness for change, responsiveness to markets and continuous improvement.

I have lived AIC’s development from assembly plants in early 80’s to a company composed of four plants that reached to universal level of offering unique products and technologies.

A lot of farmers in our beloved Kingdom used to order the “Khorayefian” Pump. Today, and because of the change in the nature of underground waters, AIC offers Poly-Ethylene Lining Technology for corrosion protection to offer its customer with a modern “Khorayefian” Pump.

In the same sense, the Irrigation Systems Plant has grown from a simple factory in early 80’s to a worldwide pioneer. This supremacy has been realized this year by AIC’s launching “Al Mutawwar” irrigation system, which is the first pivot in the world to use programmable logic control technology (PLC) in its control panel. Using PLC will open a new horizon for our customers in irrigation management and water savings.

I remember when we made a decision -10 years ago - to invest in a modern steel pipe mill that supports AIC products, how some commentators considered this a risky decision.

Our confidence in the future - Good willing - was profound and today we look at a brighter future, in it we serve our customers in the Kingdom and the regional markets while keeping an eye - always - for other markets that are waiting for us.
Alkhorayef’s Mission

To strive for leadership in all its business activities by supplying quality products along with professional after-sales support through its carefully selected and highly professional employees and to play a vital role in technology transfer and environmental protection.

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Views published in Alkhorayef Bulletin express only their writers and the Bulletin shall hold no responsibility towards them.
Sheikh Abdulrahman Alkorayef, ACC Chairman of Board of Directors, received a cordial and tender message from his brother Sheikh Abdulrahman bin Abdullah Alkorayef, AIASC Chairman of the Board of Directors, where he personally and on behalf of all members of Alkorayef family and staff expressed his profound appreciation for his successful talks with John Deere Company. The message reads:

"My brother, I write to you these words to express my true feeling, personally and behalf of all members of the family and staff of Alkorayef companies, in appreciation to the big efforts exerted in your discussions with John Deere Company which culminated in a major success. "Dear brother, I am proud of the big achievement and pray to God for greater success. I also thank the team that worked with you and helped realize this achievement. My special thanks to brother Fareed Alleeny."

Sheikh Saad bin Alabdullah Alkorayef, ACC chairman of the board of directors, left Riyadh for Turkmenistan with an elite Saudi businessmen’s delegation, in coordination with the Exports Development Center at the Saudi Chambers of Commerce and Industry.

ACC held a banquet in honor of the visiting delegation in Turkmenistan. It was attended by HE the Turkmenistan Minister of Water, the Saudi Ambassador in Turkmenistan and members of the Saudi Chambers of Commerce and Industry accompanying the delegation.
Sheikh Mohammed Alkhorayef Participates in Sponsoring Irrigation Technologies Panel in Khartoum

The state of Khartoum (the Sudanese Capital) hosted an important panel in irrigation technologies held here. The Sudanese Minister of Agriculture in Khartoum state and Sheikh Mohammed Alkhorayef, representative of Alkhorayef Group, which has a major investment activity in Sudan, sponsored and participated in the panel.

An Egyptian businessmen’s delegation visited Abdullah Ibrahim Alkhorayef Sons Company (AIASC) in Riyadh. The delegation discussed ways of cooperation between them and Alkhorayef Group in manufacturing commercial fields. The Alkhorayef Group held a dinner for the delegation in Alkhorayef farm at Dirab on this occasion, which was attended by Mr. Mohammed Mursi, deputy Egyptian Ambassador. The delegation viewed Almutawwar center pivot irrigation system in action in the field. They were briefed about the system and the scope for development.

Mr. Fahd Almutairi, joined Alkhorayef Group of Companies (AGCs) as General Manager of the IT Department. His joining to AGCs is regarded as an addition, since he is a Saudi qualified cadre in his specialization.

Engineer Fayez Khlayfat has been promoted as the General Manager of Alkhorayef Industries Co. Engineer Fayez hold a Bachelor degree in Industrial Engineering and MBA from Strathclyde University.

Mr. Ian Yarood joined ACC as general manager of Lubricants Section (Castrol). He expressed his happiness for the company’s trust in him.

Alkhorayef Group Honors Egyptian Businessmen
ACC Participates in the Festival Activities of Aljouf, The Lovely City

During the Aljouf summer festival held in Prince Abdullah Modern Center with the banner of “Aljouf, the Lovely City”. ACC’s branch in Aljouf contributed in holding the agricultural exhibition. It was one of the distinguished and successful exhibitions in the festival. Prince Fahd bin Bandar bin Abdulaziz Al Saud, Amir of Aljouf region, attended the opening ceremony. He visited ACC’s stand and expressed his admiration. ACC’s branch in Aljouf received a letter of appreciation from the director of Agriculture at Aljouf region for the distinguished contribution and support in making the exhibition a success.

ACC Attends Farewell Ceremony of Alshidi

ACC attended the farewell ceremony of Mr. Abdulaziz Alshidi, former Riyadh sales manager, Sheikh Saad Alkhayef, ACC chairman of board of directors, Sheikh Mohammed Alkhayef, ACC 1st deputy chairman, Mr. Abdulmohsen Alkhamees, general manager of Alkhayef Operation and Maintenance Company (AOMC), Mr. Saad Alsemary, ACC general manager of the Agricultural Section, Mr. Saud Alswailem, general manager of Human Resources Department and a number of ACC directors and staff attended the ceremony.

Accounting Course for Non-Accounting Staff

As part of its continuous concern for qualifying its employees in the different work locations. Alkhayef Group of Companies (AGCs) organized two accounting courses for the non-professional accounting staff. The first course was held in the ACC training hall in Riyadh where Mr. Omar Othman, ACC director of the Internal Auditing delivered lectures. The second course was held in Alhamra Hotel “Sofitel” in Jeddah.
Training is most important element in any of the successful company. Alkhorayef is definitely one of such a company that invests in human resources training to provide or increase the skills required for the job of every body in the company. Alkhorayef started emphasizing more on training in 1999. As one of the certified companies of ISO9001: 2000 and API 5L International standards, AIC committed to provide any training to its employees by providing budget and excellent training room with all required modern training aids like Digital projector, T.V., Video etc. as their needs demands. AIC had trained 308 employees, in which 75 are Saudis by spending 909 man-hours in year 2002. Training in AIC includes 1. New employee orientation, in which the new employees are familiar with the administrative rules, product orientation, safety rules, Quality System and on-job training.

2. Internal trainings, which includes products related trainings, managerial skills related trainings, safety trainings, software trainings related to products.

3. External training as advised by the department managers which includes English language training for Arabic speakers, Management skills, Sales related training, Maintenance, Finance and Quality related trainings.

Alkhorayef had provided computer application training for all its group employees under the program "Training till qualification", which run for 2 years and had a great impact on employees and company, which includes all windows applications and its operating system.

AIC also invites its group employees to attend its training especially Sales team. The future training of AIC include the following: Irrigation Basics and Center Pivots, Nozzle programming with Sennpack and winchart, Robot machine operation, Plastic lining operation, Shielded metal arc welding, Gas tungsten arc welding, Vertical Turbine Pump Trouble shooting, Pro Engineering software, Material Properties, CNC-2 axis, CNC-3 axis, Introduction to vertical turbine pumps, Introduction to water lube pumps, How to select a Pump, Basics of PLC, Accumulator, High frequency welding, Internal and external scarfing of ERW Pipes, Customer care, Preventing back injury, First Aid, Chemical safety, ISO 9001: 2000 awareness, Engineering metrological instruments, Interpretation of engineering drawings.
Almutawwar Panel Technology

Due to the requirements of modern era in terms of speed, accuracy, and flexibility in industrial and agricultural operations, the traditional control methods should be developed and replaced by programmed control methods. As Alkhorayef Industries (AIC) is a pioneer in the field of center pivot irrigation systems and was the first to use the programmable logic controller (PLC) with the irrigation system in the world, this programmed system performs all main functions that include start, stop and change the direction and speed of the center pivot irrigation system.

The panel designed in AIC labs, the designation diagram sent to ACSYS (the international USA Company specialized in the electric control) in order to compare it with other panels. The report showed that Almutawwar panel is totally different from the other center pivot irrigation panels; more advanced and they expect high efficiency in performance. Lab examinations are conducted to make sure of the panel main functions works properly, field experiments for one year under different climatic conditions are also conducted.

Characteristics of the Panel:

- The main circuit breaker is used to protect the system against faults without any need for main fuses.
- The panel is made of the best electric parts and from the best international sources.
- Almutawwar panel has safety features for center pivot irrigation system represented by protection against under voltage, phase sequence and phase losses.
- It also has safety features for users: most electric parts have protected against touch during panel operation and all electric parts are subjected to the international standards (CSA, UL).
- The panel has also a ventilation system with an inner fan with a filter protecting against dust and dirt that makes temperature inside the panel equal to that ambient temperature. This leads to longer operation life of the electric parts.
- New modern numeration methods are approved by making signs on electric wires that bear same location signs for fixing them in the electric part. Therefore even non-technician can easily change any part without committing mistakes.
- Using PLC gives the electric panel flexibility. Therefore Almutawwar panel can be installed on any center pivot irrigation system by changing the program in the memory.
- Almutawwar panel is a quality shift in the field of center pivot irrigation systems and it will open future horizons through possibility of operating center pivot irrigation system and stopping it according to specific timetable, and possibility of sending warning signals through the mobile system.
Alkhorayef Industries Co. (AIC) has contributed to Saudi Arabian industrial and agricultural progress since 1970. We realized that the fluid transportation products are the one of the major contributors to the growth of any country and started production activities of vertical turbine pumps, steel pipes, right angle gear drives, irrigation systems, engineered parts and systems, plastic lining under one umbrella, which is AIC. The introduction of each one of the total four plants in AIC are as follows:

1. **Pump Plant:**
   
   **A. Pump products:** Pump plant has been distributing Western Layne pumps for more than 40 years in the Kingdom of Saudi Arabia. In late 1970's, it was decided and started to manufacture Western Pumps in Saudi Arabia for the first time. To cope up with the increased demand of the customers and competition, AIC introduced modern technology machines, CNC Machines and CNC Machining center in 1990. Due to high capacity and accuracy provided by the CNC Machines a wide variety of custom made engineering parts can be manufactured to the accuracy of 0.001 inch. Pump plant is equipped with Pump test facility, which is capable to test the pumps for flow, pressure and horse power to guarantee and maintain the high efficiency to our pumps. AIC’s field research continues to solve the customer problems and to provide the excellent solutions to the customer problems. Modern manufacturing facility, ISO 9001: 2000 Certification and dedicated staff enabled it to produce reliable pumps of high performance, long life and efficiency for deep and shallow wells down to 1200 feet and outputs from 300 to 3000 US GPM.
   
   **B. Right angle Gear drives:** A new building was constructed with complete CNC machines capability to accommodate the product line, Right Angle gear drive in 1993. High tensile strength castings were used throughout for rigidity and durability of the gear. This drive may be used in agriculture, municipal or industrial applications. The annual production exceeds 3000 gears at various horse power ratios from 80 to 1000 HP and speed ratios (1:2; 4:5; 2:3; 3:4; 4:5; 5:4; 5:6; 10:11). Our high quality gears, taper bearings, fan cooling and water cooling and ISO 9001 Certification ensure a trouble free operation for a very long time in worst operation ambient conditions. All the gears manufactured in AIC are subjected to 100% final testing on the Gear drive test stand to evaluate the performance of every gear we made.

2. **Pipe plant:**
   
   AIC installed a new and totally automatic tube mill for manufacturing of high strength black steel tubes and pipes utilizing the recent technology in pipe manufacturing, the
E.R. Welding in 1993 with an annual capacity of 42,000 tons. The pipe plant is equipped with a slitting machine that is capable of slitting steel strips as required by our mill and outside clients in the local market. Our slitting machine capabilities includes the coil thickness between 1.00-8.20 mm, coil width up to 1560 mm, coil weight up to 23.0 tons and for maximum of 17 slits.

The pipe production line consists of strip preparation, tube forming section, welding process, sizing section, cutting unit and finishing unit. Our capability includes the range of pipes from 2-1/2" to 8" up to the thickness of 8.20 mm and the length in between 4000 to 13410 mm. The pipes produced are used for transporting water, oil, air and gases. Additional applications are in structural works and street lighting poles. Our production of pipes conforms to ASTM A53, ASTM A513, BS 1387 and API Spec 5L (Licensed).

3. Irrigation Plant:

A. Irrigation systems: AIC started manufacturing irrigation systems in 1985, it was at that time the kingdom's only center pivot irrigation machines factory with a production capacity of 1200 center pivots per annum. The center pivots were produced either with 6-5/8" or 8-5/8" diameter pipes. Our irrigation factory is one of the largest of its kind in the world.

The most two advanced welding technologies used in irrigation plant are submerged arc welding (Subarc) and the metal inert gas welding (MIGPILS). These latest welding technology machines are producing smooth, high weld strength, deep penetration and high productivity for all our products.

In 2002, AIC introduced two new machines i.e. Robot welding machine and the Truss rod machine.

Robot welding machine: Robot welding machine is used to produce Truss angle brackets and Truss rod brackets for the irrigation pipes. It allowed us to save time, produce high quality welds for intricate parts and the high efficiency. The speed of the Robot machine is 50-1200 IPM with 6 controlled Axes by utilizing the wire size of 0.6 – 2.4 (solid) under the repeatability of +/- 0.04 mm.

Truss rod machine: Truss rod plays a vital role in design of the irrigation system as the strength and stability of the whole system depends upon it. AIC is proud to introduce such a machine in its capabilities. The high strength rods of required length are gradually heated to 800 deg. F grade on two stages and the ends of the rods are forged to the semi circle through dies under the pressure of 1400 PSI for 5-6 seconds. The capability of truss rod machine is 4 rods/ minute, Both sides forged simultaneously.

B. Plastic Lining Systems Plant: Our PLS Plant produces plastic lined system (PERMAPIPE) to resist corrosion-caused by water with salinity- is the only one of its kind worldwide and our exclusive production of plastic lined systems is exported to all over the world.

Ultra pipe: in addition to internal plastic lining, Any pipes can be externally sleeved with HDPE tube or coat to customer desire and specifications, utilizing a variety of materials and techniques such as Fusion bonded epoxy (FBE), Plastic coatings, zinc etc. These Ultra pipes will resist fluid pressure upto 200 bar and much more, depends on the steel pipe quality and remain in service long after all the other pipes have been replaced.

AIC Laboratory supports all our products / parts inspection and testing activities as per international standards. Our Lab capability includes 1500 accurate measuring instruments and its Master gages to calibrate, Mechanical properties testing machines like hardness, tensile, yield, proof strength , elongation etc, Macro and micro structural analysis of ferrous based materials, Mould preparation equipments etc. all the records of calibration of gages were maintained through specialized software.

All our activities in all the four plants are backed and controlled through ISO 9001: 2000 Quality Management System. However we are confident that our QA System surpasses ISO 9001: 2000 requirements in many aspects. Our QA System not only address quality issues, but it also address the safety and environment with particular emphasis on customer satisfaction and continual improvement in all processes.
ACC Petroleum Division Participates in Three Important Oil Shows

The Petroleum Division of Alkhorayef Commercial Company actively participated in three important oil shows during the 1st half of this year as follows:


This forum was sponsored by Saudi Aramco Southern Area Oil Operations at the Hawtah site. Over 70 high caliber participants from various Saudi Aramco departments including Management Operations, Engineering, Technology and Finance attended the event.

ACC participation in the forum sessions started with a presentation by Mohamed Al-Fozan, Saudi Operation General Manager, who highlighted
the word class runtime results
achieved in hawtah as a result of the teamwork between Saudi
Aramco and Alkhorayef. Chuck Wheeler, Training Manager, and
Mike Findley, Progressive Cavity Pumping Systems Manager, both
from Centrilift gave three presentations on pump sizing, trouble-
shooting, and applications of the Electrical Submersible Pumping
(ESP) technology. Abdulsalim Alaini, ACC Eastern Province
Regional Manager, Abdulaziz
Al-Qahtani, ACC Hawtah Site
Manager and Abdulatif Solan,
ACC Senior Petroleum Engineer,
also participated and enriched the
discussions during the forum ses-
sions.

A site visit by all participants
to Alkhorayef Hawtah workshop
was part of the forum program.
There, our engineers and techni-
cians from Hawtah and Riyadh
Repair shops conducted a com-
plete ESP system teardown and
tour of the facilities. The par-
ticipants witnessed a thorough
explanation of the functions of
each component of an ESP system
that was set up in a hospitality tent
at the site where refreshments and
snacks were served. This was well
received by the visitors.

At the end of the forum, Cer-
tificates of Appreciation were pre-
sented to all Alkhorayef/Centrilift
participants.

2- MEALF (Middle East
Artificial Lift Forum) 7th & 8th
June, 2003:

Alkhorayef was one of the
sponsors of the first MEALF
forum along with Engineering in-
sights, SPE. Oman, Shell Explora-
tion, Schlumberger, Petroleum
Development of Oman (PDO),
Wood Group ESP, Kuwait Oil
Company (KOC), and Weather-
ford. Abdulsalam Alaini, Eastern
Province Regional Manager of the
ACC Petroleum Division, served
as member in the Forum Technical
Committee.

The Forum was held at Al-
Bustan Rotana Hotel in Dubai on 7
and 8 June 2003. It was organized
in response to the high demand
expressed within the industry and
the rapid increase in the use of
artificial lift technologies in the
Middle East region. The forum
had a huge success with over 220
participants from over 20 coun-
tries representing major oil pro-
ducing and service companies.

Engineers Mohamed Al-Fo-
zan, Saudi Operation General
Manager, Faisal Ayesh, Kuwait
Country General Manager, Ahmed
Al-Qadi, International Sales
Regional Manager, along with
Abdulsalam represented ACC and
participated in this forum.

During sessions Alkhorayef
was constantly recognized as one
of the leading service companies
in the region in the field of Elec-
trical Submersible Pumping for
oil and water. Due to the big suc-
cess of this forum, it was decided
to hold it on yearly basis.

3- 13th Middle East Oil
& Gas Show and Conference
(MEOS), 9-12 June, 2003:

MEOS is considered the main
oil show in this region. It is held
every 2 years since 1979 and this
year was the 13th turn. Alkhor-
ayef participated this year as it did
for the last three events. This year,
Over 150 companies from around
the world were there which made
it the largest show in the history of
the series.

The Petroleum Division par-
ticipated with newly designed
stand and brochures reflecting the
ACC Petroleum Division mission
as one of the leading service com-
panies in the region in the field of
electrical submersible pumping
systems, surface pumping and
metering technologies.

Sheik Saad Alkhorayef (presi-
dent and CEO) attended the show
and received the many officials
and visitors who stopped by our
stand. Members of the manage-
ment and technical team of the
Petroleum Division manned the
stand, presented brochures and
magazines and engaged in techni-
cal and business discussions with
a large number of this show’s
attendants. Our presence was
praised by many of the visitors.
Training and Development Center of the Chamber of Commerce and Industry in Riyadh awarded a course completion certificate in preparing and qualifying procurement and warehouse supervisors to Mr. Badr Ahmed Bukhari, of Alkhorayef Operation and Maintenance Company (AOMC) with a very good estimate. Congratulations.

Mr. Mohammed bin Abdulrahman Aldahami, of ACC in Buraidah, received an appreciation certificate from the governor of the General Organization for Technical Education and Vocational Training (GOTEVOT), for (agricultural machines technician).

On the other hand, Mr. Aldahami was blessed with adorable baby boy. He named him Abdulaziz. Congratulations.

Mr. Bandar Abdullah Almilhan, of the Petroleum Section, got married on Friday night 25/5/1424H (25/7/2003). Congratulations.

Engr. Khalid Alsubaie, is also newly married. Congratulations.

Mr. Fahd Abdullah bin Shanan is also married. Congratulations.

Mr. Asaad Joudah has been transferred to the Development and Support Department in the post of director. The Development and Support Department is a newly established entity in the Agricultural Section in ACC. We wish him success and good luck.

Mr. Ahmed Almufaraq has been promoted to the post of assistant director of personnel in AGCs. Congratulations.

Mr. Mohammed bin Abdulrahman Aldahami, of ACC in Buraidah, received an appreciation certificate form the governor of the General Organization for Technical Education and Vocational Training (GOTEVOT), for (agricultural machines technician).

On the other hand, Mr. Aldahami was blessed with adorable baby boy. He named him Abdulaziz. Congratulations.

Mr. Sammy Silvestre is also blessed with a handsome baby boy. Congratulations

An Appreciation Certificate and Congratulations

Mr. Fahd Abdullah bin Shanan is also married. Congratulations.

Mr. Badr Ahmed Buhkari Obtains a Qualifying Certificate

Training and Development Center of the Chamber of Commerce and Industry in Riyadh awarded a course completion certificate in preparing and qualifying procurement and warehouse supervisors to Mr. Badr Ahmed Bukhari, of Alkhorayef Operation and Maintenance Company (AOMC) with a very good estimate. Congratulations.
Do the Right Thing:
Do the right thing. This statement is commonly used in management theories, seminars, and articles. However, in practice, few plants pay more than lip service to this concept, especially in the areas of operations and maintenance. The following are typical examples of the right things to do; though common it is, that the wrong things are done.
I think it is important to develop a maintenance strategy based on the idea it is more important to do the right things than to do things right. This approach leads to continuous improvements because people dare to try new ways without being held back by fear of making mistakes. Sooner or later, you will come up with a new, superior way of doing things.

Equipment Efficiency:
Equipment is becoming more complex and operating at higher speeds, producing more products with less manpower. As automation takes over more works, we become more dependent on technology and maintenance productivity.
Twenty years ago, it was very common to do work measurements, such as percentage of maintenance staff with “hands on tools” at any given time. This is one of the best examples of doing the wrong thing. A busy person is not necessarily productive. This is also a very negative approach and makes it difficult to develop enthusiastic and committed people. Instead, the focus should be to keep the equipment busy producing a maximum volume of quality product.

Fighting production losses is the right thing to do. The three big production losses are Downtime, Slowdown, and Rejects. The fight to eliminate these losses and to increase manufacturing efficiency is not only a mission for the maintenance department but also a joint venture with operation.

1. Downtime (Availability). Reducing planned and unplanned downtime will result in increased availability (A) which is measured as follows:
   \[ A = \frac{(\text{Uptime} \times 100)}{(\text{Uptime} + \text{Downtime})} \]

2. Slowdown (Capacity Utilization). Reduction of slowdown will result in increased utilization of equipment Capacity. Capacity utilization or operating speed (S) is measured as follows:
   \[ S = \frac{(\text{Actual Speed} \times 100)}{(\text{Actual Speed} + \text{Slowdown})} \]

3. Reject (Prime Quality Volume). Reduction of rejects will result in increased volume of prime quality (Q) which is measured as follows:
   \[ Q = \frac{(\text{Prime Quality Volume} \times 100)}{(\text{Prime Quality Volume} + \text{Reject})} \]

The Overall Equipment Efficiency (OEE) = A x S x Q
Example: assuming for a certain plant A = 95%, S = 85 %, Q = 95% then OEE = 76.7%

Conclusion:
With an approach to maintenance that includes overall equipment performance efficiency and a plan for reducing the enemies of efficient production (downtime, slowdown, and reject) it is obvious that the right thing to do is to increase prime quality production output and then look at costs for maintenance.
So, it must be more important to focus on the opportunity to increase prime production by 5 to 10% than to keep people busy!
The conservation of water resources appears now as one of the most important programs, especially in the Kingdom of Saudi Arabia. To obtain the maximum utilization from the water resources, we need to make use of the highest possible efficiency of sprinklers and water applications. To attain maximum efficiency, we should use the modern sprinklers technology. Alkhorayef Company is dealing with two international companies producing these modern sprinklers technology, Senninger and Nelson, which produce a big variety of sprinklers suitable for all soils, crops, and wind conditions and operating by low operating pressure varying from 10 to 20 psi.

Alkhorayef Industries Company (AIC) has five training programs available to train all Alkhorayef Company’s branches on modern irrigation systems, including irrigation basics and nozzles/sprinklers programming aiming at developing the skills of all Alkhorayef Company’s employees.

Sprinklers divide into two types: fixed and rotating ones. Concerning fixed types, Alkhorayef Company has a Low Drift Nozzle (LDN) sprinklers with single, double and triple pads and has a D3000 with eight-color plates suitable for all farm operations like germination, irrigation and chemigation. As for rotating types, Alkhorayef Company has the I-Wob, Rotator (R3000), Spinner (S3000), Nutator (N3000) and Accelerator (A3000). All previous sprinklers have a low instantaneous application rate.

Now let us talk about the problems commonly facing the sprinkler irrigation system and how can we get the best solution for these problems. The common problems that face some of the users of the sprinkler irrigation systems are wind drift, evaporation,
runoff, soil erosion and soil compaction. Now we can solve all previous problems by using the modern sprinklers technology, but how? That’s a complex question. We can answer this complex question by a simple answer; just go ahead for Alkhorayef Company and buy the modern sprinklers technology. Don’t take it as an advertisement; it is a reality for the following reasons.

**Modern Sprinkler Technology.** Sprinklers from Alkhorayef Company have a high application efficiency ranging from 80% to 97% rather than the old ones, which have lower application efficiency, ranging from 50% to 65%. Sprinklers application efficiency is often used to account for wind drift and evaporative losses that occur after water leaves the sprinkler and before it reaches plants and soil surfaces during application. For example, if the water required for irrigation is 30 GPM/hectare and we have 50 hectares that means we need 1500 GPM to irrigate this area. By using the modern sprinklers technology, we don’t need to add any extra water to meet the wind drift and evaporation losses due to the highest sprinkler application efficiency and a big variety of plates and pads suitable for all conditions. On the other hand, by using the old sprinkler technology we have to add approximately twofold of this volume to compensate wasted water, caused by evaporation and to ensure that the required water will reach the plants and soil surfaces at the right volume. This extra water needs additional operating hours of the center pivot, resulting in a lot of diesel consumption, machine depreciation and machine maintenance, which cost the farmers more money. Hence, using the modern sprinkler technology reduces evaporation losses to its minimum and faces the wind drift.

**Pressure Requirements** for modern sprinklers technology are lower than the old ones because the operating pressure for the modern sprinklers is varying from 10 to 20 psi as shown in Fig. 1 compared to the old ones which operate at a high operating pressure. As everybody knows, producing high operating pressure, will force farmers to pay more money.

**What’s the Instantaneous Application Rate?** It is the rate at which water is applied to a given point on the soil surface during an instant in time. Modern sprinkler technology has a low instantaneous application rate, which cause unmatched uniformity and large diameter of coverage to minimize run-off, reduce surface soil compaction, maintain soil structure and maximize infiltration rate as shown in Fig. 2.

**Sprinkler Nozzles & Distribution Uniformity,** flow rates from the individual outlets along a center pivot; increase as you move from the pivot point out to the end of the machine. This occurs to maintain uniform coverage, as the area of responsibility for each nozzle gets larger as shown in Fig. 3.

**Why Pressure Regulator?** That’s a very important question. Pressure regulator are used to maintain constant preset outlet pressures; provide consistent nozzle flow and more uniform water application, despite changes in pressures or elevations. By using pressure regulator, farmers don’t need to level their fields, saving a lot of money spent for leveling as well as creating the ideal conditions for the sprinklers to get the highest efficiency and uniformity as shown in Fig. 4.
Deputy Egyptian Ambassador in Riyadh says:

“We Feel Proud that the Center Pivot Irrigation System in Saudi Arabia is Manufactured By Saudis.”

During the Egyptian businessmen’s visit to Alkhorayef Group of Companies (AGCs), which hosted a dinner at Alkhorayef farm at Dirab, Alkhoaryef Bulletin interviewed HE Mr. Mohammed Mursi Awad, the plenipotentiary and deputy Ambassador of the Arab Republic of Egypt. The following interview tackled the Saudi and Egyptian relations and cooperation in the economic field with AGCs:

* What is your evaluation of the role of businessmen in both the Kingdom of Saudi Arabia and Arab Republic of Egypt in supporting cooperation and developing it in the economic field especially that you witnessed the visit of a group of Egyptian businessmen to AGCs? At the outset, let me express my thanks and appreciation to Sheikh Abdulrahman Alkhorayef, chairman of the board of directors of Abdullah Ibrahim Alkhorayef Sons Company (AIASC), for hosting the dinner in Alkhorayef farm at Dirab, in honor of the Egyptian businessmen’s delegation. I was very glad to participate in this meeting for it’s a practical demonstration of all theories and views intended to improve the environmental commercial and investment relations. I was also glad that to be given this chance to see the modern irrigation system developed and manufactured by AGCs, which was demonstrated by the engineers. I am very proud that it is manufactured by Saudis here in the Kingdom of Saudi Arabia. I also came to know that Alkhorayef Industry Company (AIC), one of AGCs, owns the second largest plant for pivot sprinklers in the world. As regarding my evaluation to the role of businessmen in both the Kingdom of Saudi Arabia and Arab Republic of Egypt, they are the executive arm in supporting the commercial and economic relations between the two sister countries. We in Egypt pay a special attention to this matter whether at the bilateral or Arab level as regards the commercial freedom and the steady trade exchange agreement approved by the Arab League which will abolish 60% of the customs duty between the Arab states in preparation for establishing a free trade zone among the Arab states.

* What is your view about the future of trade relations between the Kingdom of Saudi Arabia and the Arab Republic of Egypt under the global changes? I am very optimistic because all the global variables require us to support economic cooperation between the Arab states, especially between the Kingdom of Saudi Arabia and Arab Republic of Egypt. For there are already a lot of areas of cooperation and coordination in both countries, available investment atmosphere and the will of Saudi and Egyptian businessmen. It is also economically feasible for both countries. This led every Arab businessman to rearrange his portfolio because of the positive results of the Saudi and Egyptian partnership. Most importantly is the integration in political, cultural, and religious aspects.

* As you are in the diplomatic corps, what is the role that the embassies can perform to support economic cooperation between the two countries? Of course, there is a very big role. Embassies have to do the major part of the work assigned to every embassy in the world, which is encouraging trade exchange between the host country and the specifically concerned embassy. This is called in Egypt (development diplomacy). Therefore one of the most important roles the embassy has to do is: First, define trade in the host country and the country of the concerned embassy for businessmen in both countries. There are trade offices in each embassy with commercial and orientation brochures that speak about the commercial nature, systems, capabilities, and investment opportunities in both countries. Second, prepare and sign commercial agreements, protocols with the host country or directly contact the Chamber of Commerce and companies. But the role of the Egyptian Embassy in Riyadh is far bigger than that. It is not limited to diplomacy and embassies, but extends to supporting direct communication on all political, cultural, economic levels and direct contact between businessmen.

* Do you want to direct a message through Alkhorayef Bulletin? We support the businessmen in both countries because we believe that every step taken by them will benefit both countries in the first place and will serve the people of the two countries. We are also prepared to support them with whatever possible and I am very optimistic about the future.