SMART-METER FOR THE SMART FUTURE

STATUS REPORT & NEW CAPITAL PROJECTS
15TH OCT. 2017

TO MEASURE IS TO KNOW, IF YOU CAN NOT MEASURE IT, YOU CAN NOT IMPROVE IT

LORD KELVIN

Saudi Smart Electronics Company (SSEC) – KSU
Riyadh Valley
Saudi Smart Meter Company (SSEC) will explore & capitalize a SAR 12 bn Local Saudi market opportunity for Smart meters, which:

- are a basic and essential building block of Smart electricity grid that supports intelligent management & control of electricity
- Automate & reduces the average billing process by 90%
- Have a regulatory push for mandatory implantation by 2025
- Are a part of core 2025 strategy of Saudi Electricity Company
- Reduce Transmission losses and control Thefts
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- Traditional Grid VS Smart Grid
- Smart meter role
- Market Validation / Why now?
- Saudi Smart Electronic Company Smart Meter Project
- Business Development Overview
- Vision and Goal of the SSEC Company

- Scope & Estimate for Profit
- Current Status : Saudi Smart grid Project
- SWOT Analysis
- Major Players & Competition Landscape
- Founding Team CV’s
- Suggested Equity and share participation for partnership
- Conclusion
Replacement of the existing 8.6 MN\(^{(1)}\) meters by 2025

Limited National Competition

Among the First indigenously developers in KSA

350,000 New Subscribers every year added to existing base\(^{(2)}\)

Data Concentrators, GSM communication devices, Data Management Software etc.

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(1) - 2016
## Value Proposition

### Smart Grid vs. Traditional Grid

**Before – Smart Grid**
- “1 way” exchange of Energy & information
- No information flow about non-peak hours
- Customer gets periodic bills
- Manual reading ➔ Billing cycle = 90 days
- Can be tampered / Inaccuracy in reading

**After – Smart Grid**
- “2 way” exchange of Energy & information
- Ability to benefit from variable pricing
- Get real time alerts via email / SMS / App
- Manual reading ➔ Billing cycle = 9 days
- Couldn’t be tampered / Accurate reading
SOLUTION

FIRST STEP TO THE SOLUTION – HOW THE SMART METER WORKS

A house will consume electricity and can also produce electricity.

Automatic Real time Electricity consumption/providing data are taken by Smart meters.

The Smart meter sends Data to SEC and Billings are sent to the customer periodically.

Customer has online real time data about the demand, variable electricity pricing and plan accordingly.
Market Overview: Investment predictions for Smart grids

- Market research Inc. estimated that the smart grid market to grow from USD 19.77 Billion in 2016 to USD 65.42 Billion by 2021, at a Compound Annual Growth Rate (CAGR) of 27.0% during 2016–2021.

- BCC Research says the U.S. market for Smart Grid “enabling technologies” will grow at a compound annual growth rate (CAGR) of 15.3%.

- Morgan Stanley Research sizes the Smart Grid market is growing to $100B by 2030.

- Zpryme Research & Consulting reports that a total of $18.4 Billion was made available by the 10 top Countries that announced Stimulus funding for Smart grids in

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**Smart Grid Market Solutions include :**

- Advanced Metering Infrastructure
- Smart Grid Distribution
- Smart Grid Communication
- Grid Asset Management,
- Geographic Information System
- Billing & Customer Information System
MARKET VALIDATION / WHY NOW?

MENA MARKETS ARE UNDEREXPLORED

Smart meter penetration is significant in N. America & growing quickly in major global markets

- The % of smart meter installations as part of new installations expected to increase every year though 2021
- Smart meter installations for residential and small commercial customers across the globe has increased dramatically
  - The U.S is expected to have over 91% penetration by 2024
  - Asian & European markets continue to grow with penetration est. to reach 68-86% by 2022
- Saudi Electricity Company (SEC) has mandated for 100% replacement of Electromechanical Electricity Meters by 2025 by installing 12 mn units
- In 2017, Smart Metering Project Wave 1 has plans to deploy 2.5mn units for 2017-22

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1. Navigant Research
2. Smart Meters are Disrupting the Retail Energy Landscape – PARIVEDA Solutions
WHY NOW: SAUDI MARKET SIZE
MANDATORY REPLACEMENT OF ELECTROMECHANICAL METERS

8.6 mn
Smart Meters (2016)

350K – 400K Units/year (new housing)

2017

350K – 400K Units/year (new housing)

2025

12 mn
Smart Meters (2025)\(^{(1)}\)

PRODUCT INITIATION AT 2012 AT KSU RIYADH VALLEY

SMART METER PROTOTYPES WERE BUILT AT RESEARCH & DEVELOPMENT PHASE ACCORDING TO SAUDI ELECTRIC COMPANY SPECIFICATIONS
SSEC – SMART METER PROJECT: CAPTURE THE ADDED VALUE – ESTABLISHING NEW COMPANY

A proposal has been made in May 2012 to the Riyadh Valley Company (RVC), a holding company fully owned by King Saud University KSU - to develop a smart Electricity meter specifically designed for the Saudi Market started and to establish and sponsor a Smart metering company including a R&D lab in Riyadh and to build the first production Line within the RVC and King Saud University in Riyadh.

A company was established in 2013 and owned jointly between RVC and the smart meters developers & named: The Saudi Smart Electronic Company (SSEC) with initial capital of six million Saudi Riyals (6000000 SAR).

SSEC will have the task to work in close cooperation and technical exchange with the Saudi Electricity company (SEC) to bring the existing prototype to the industrial stage maturity and to be one of the few existing companies in the region capable to response to huge and fast growing need of smart grid infrastructure products.
Vision and Goal of SSEC Company

- Design, production and sale of 3 phase residential Smart Meter developed according to the SEC specifications.
- Design production and sale of other smart Grid Products (e.g. Concentrators, GSM & PLC communication devices, Data Management Software etc.)
- Build-up local expertise in the production, assembly, test, programming and calibration of the Smart Meters
- Technology transfer and build up local engineering expertise for the follow-up and the design of new smart meter or smart meter derivate for other GCC and MENA countries
- Tremendous Export potential for MENA market
Saudi Electric company offers the following advantages for Saudi Local Manufacturing:

- No References are needed for approval
- 10% price allowance in tender offers
- Short qualification process of 6 months instead of 2 years for foreign manufacturers
- Support through SEC Saudi nationalization committee
- After 2019 all SEC tender Wave2 bidders need to have a local smart meter manufacturing partner.
BUSINESS DEVELOPMENT OVERVIEW

JOURNEY FROM PROTOTYPE TO COMMERCIAL PRODUCT TO FINAL PRODUCT

ITEMIS(2) — was contracted to build & certify the FCP(1)

SAUDI SMART ELECTRONICS
COMPANY (SSEC) was established in 2013

KSU Venture Capital arm

Proposal made to produce Smart meter specifically designed for KSA n 2012 with German Expertise

Venture capital/SSEC Partnership

Final Development of industrial Product

FCP(1)

Product Testing & certification

Manufacturing Process

Sale, Maintenance, Installation & Training etc. center in Riyadh

Production Unit in KSA

Factory approval

Training, Manpower acquiring

SAUDI ELECTRICITY COMPANY

Participate in Public Tender announcement — Project Wave 2

(1) — Final Commercial Product.
(2) ITEMIS — France, a company owned by the German partner
## SCOPE & ESTIMATE FOR PROFIT

### Average Selling Price per Smart meter

- **700**

### Net Profit per Smart meter

- **273**

### Market Size after Project WAVE 1 (mn units)

- **10**

### Assuming a 10% Market share (mn units)

- **1**

### Scope for Profits spread over 8 years (2018-25)

- **SAR 273 mn**
- **NPV = SAR 131 mn**

### Description of Total Investment

<table>
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<tr>
<th>No</th>
<th>Total Investment Description</th>
<th>Description</th>
<th>No</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Product adaptation to the new SEC Specifications + Industrialization + Certification</td>
<td>1</td>
<td></td>
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<tr>
<td>2.</td>
<td>Electronics Production Line - Machinery</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Needed Additional Machinery</td>
<td>1</td>
<td></td>
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<tr>
<td>4.</td>
<td>Vehicles &amp; transport equip &amp; Other Machineries &amp; Pre operating</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
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### Calculations

- **Avg. Selling Price per Smart meter** = 700
- **Avg. Cost Price** = 219
- **Gross Margin** = 481
- **Gross Margin (%)** = 74%
- **Operating & Maintenance costs** = 70
- **% of Sales** = 10%
- **Operating Margin** = 411
- **Operating Margin (%)** = 59%
- **Selling, Gross & Admin costs** = 35
- **% of Sales** = 5%
- **Other Corporate Overheads** = 35
- **% of Sales** = 5%
- **Earnings before Tax** = 341
- **Zakat** = 68
- **% of EBT** = 20%
- **Net Profit per Smart meter** = 273
- **% of Sales** = 39%

### Notes

1. **NPV of the Net Profits spread over 8 years using Discount rate of 20%**
RFP is requested by Saudi electric company for mandatory deployment of 2.5 Million electromechanical meters, the required communication infrastructure, testing equipments and head end systems.

57 Companies submitted their proposals and 11 bidders Consortiums were established to fulfill SEC requirements, with only 4 alliances to be awarded the SEC contract. Non of these Consortiums have a ready smart meter in full compliance with SEC specification.

Consortiums have to submit their smart meters that meet SEC REV 8 Specifications (announced March 2017) and its updates. Some Consortiums companies signed MOU with Chinese, European and Saudi Advanced electronic company to build new meters that meets SEC specifications. After 2019 all SEC tender Wave2 bidders need to have a local smart meter manufacturing partner.

Saudi Smart Electronic Company (SSEC) is starting a new project with their German partner ITEMIS – France, to build and certify the Final industrial according to Rev 8 of SEC specifications. All SEC tender Consortiums are potential buyers of SSEC developed smart meter

Partner introduction & funding. Finalizing the SSEC meter certifications, manufacturing and sale to current and future SEC tender bidders.
CURRENT SAUDI ELECTRIC COMPANY TENDER
MANDATORY REPLACEMENT OF 2.5 MILLION ELECTROMECHANICAL METERS

The kingdom is in need for six factories for smart meters. Dr. Abdullah Al-Shehri Governor, Electricity & Cogeneration Regulatory Authority.

Public Tender Announcement

The Saudi Electricity Company (SEC) announces the launch of the Smart Metering Project Wave 1 public tender, which includes the deployment of 2.5 million smart meters, telecommunications infrastructure, testing equipment and head end system.

The project will consist of five stages including proof of concept, pilot, deployment, operation & maintenance and warranty. The scope of work includes performing the detailed engineering design, architecture, procurement, manufacture, supply, shipping, storing, transportation, delivery to the work site(s), installation, testing, commissioning, integration, training, operation and maintenance in order to put into service the smart metering infrastructure of the company.

The Request for Proposal number 4000055082 is open to purchase for the cost of SAR 15,000 (non refundable) starting 12 June 2016 and until 27 June 2016. As part of their proposals, bidders shall submit a bid bond issued by a Saudi Arabian bank worth SAR 30 million and valid for 180 days.

The RFP package, which includes documents such as the scope of work, technical specifications and instruction to bidders, can be purchased from SEC’s Contracting Department in Riyadh, Ghomata Business Center, Tower A6, Ground Floor.

The kingdom is in need for six factories for smart meters.

Dr. Abdullah Al-Shehri Governor, Electricity & Cogeneration Regulatory Authority.

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BUSINESS OPPORTUNITY IN SMART METERING NEW COMPANY

**SWOT ANALYSIS**
BUSINESS OPPORTUNITY IN SMART METERING LOCAL INDUSTRY: SWOT ANALYSIS

<table>
<thead>
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<th>Challenges</th>
<th>Opportunity</th>
<th>Weakness</th>
<th>Strengths</th>
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</thead>
<tbody>
<tr>
<td>Foreign products future competition</td>
<td>Start of SEC project for introducing smart grid at KSA</td>
<td>Limited venture capital in KSA</td>
<td>A technical team highly experienced from KSU &amp; Germany</td>
</tr>
<tr>
<td>Rapid change and advancement of technology</td>
<td>Existance of demand at other Gulf and Arab states</td>
<td>Market is SEC dependent</td>
<td>A customized smart meter technology based on SEC specific specifications</td>
</tr>
<tr>
<td>High cost of design and development of innovative products</td>
<td>Variety of smart products to be produced &amp; wide products line</td>
<td>Weak foreign investment in high Tech. at KSA</td>
<td>Small Number of national competitors</td>
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<tr>
<td>Weak spending on R &amp; D</td>
<td>Lunching of vision 2030 at KSA</td>
<td>Weak incentives for technology transfer and localization</td>
<td>Existence of abundant local financial resources &amp; local Manufacturing Industry Experience</td>
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<td>Tremendous market for the smart meter product</td>
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**MAJOR INTERNATIONAL PLAYERS**

Players in the international theater are focusing on expansionary activities in their own local market due to the strong growth prospects in their markets.

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<th>Country</th>
<th>Utility firms</th>
<th>Manufacturers</th>
<th>IT Firms</th>
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<tr>
<td>Austria</td>
<td>E.ON</td>
<td>Diehl Metering, Iskraemeco</td>
<td>Echelon</td>
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<td>Belgium</td>
<td>ENEL, Nuon</td>
<td>Elster, Iskraemeco, Landis+Gyr</td>
<td>EnergyiCT, Itron, Telit</td>
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<td>Denmark</td>
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<td>France</td>
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<td>Diehl Metering, Elster, Hager, Iskraemeco, Landis+Gyr, Sensus Metering Systems</td>
<td>Echelon, EnergyiCT, Itron, Wavecom</td>
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COMPETITIVE LANDSCAPE
CURRENT COMPETITION IN KSA

Local Manufacturer of Smart meter products

Potential Foreign Manufacturer of Smart meter products
( None have a meter that fulfill SEC specifications V8)
Prof. Dr. Sami Saleh Al-Wakeel
- Ex - Dean and Founding Member of College of Computer Sciences & Information – King Saud University
- Ex - Member King Saud university Council 2003-2009
- Masters and Ph.D. in Electrical Engineering from Stanford University, USA
- Core Competencies : · IT Curriculum Development & Training, Research & Reporting ICT Systems & Products, ICT USA Patents Holding, Consultancy to various Saudi government ministries and Private establishments

Abdelghani El – Kacimi, MSEE
- Master in Electrical Engineering, Ruhr University Bochum – Germany
- Member of the Board, Senior VP operations and Controlling itemis AG / Dortmund – Germany
- Partner Managing Director, ITEMIS (France) - MDSD of Embedded Systems, Mobile Solutions
- EX-Managing Director, MMC - Morocco Microelectronics Cluster
- Ex - Texas Instruments Engineer & Masters - Electrical Engg from Ruhr University Bochum, Germany

Stephan Eberle
- Chief Engineer of ITEMIS (France)
- Project Manager of Smart Meter Design for SSEC
Riyadh Valley Company
Established by Saudi Council of Ministers at 2010 with 100 Million SR Capital

**STRATEGIC OBJECTIVE:**

1. Support transformation towards knowledge-based economy
2. Transfer Technology and Value to Saudi Arabia
3. Leverage KSU Capabilities
4. Foster entrepreneurship and job creation.

**OPERATING MODEL COMPONENTS:**

1. **Venture Investment**
   - Investment fund(s) focused on identifying, accessing & bringing technologies & business models back to KSA

2. **Strategic Projects**
   - Later-stage business development initiatives – new businesses and/or joint ventures with KSA & co-investment partners

**ACHIEVING OUR OBJECTIVE – KEY HIGHLIGHTS:**

- Financial & strategic returns
- Longer-term horizon
- Strategically-selected focus areas
- Bring technologies back to KSA

- Primarily financial returns
- Shorter-term horizon projects
- Create new businesses & JVs
- Leverage real estate assets
- Partner to foster entrepreneurship
Riyadh Valley Company

Partners

- Partners in Saudi Sensors & Systems Co (Radar Systems)
- National Diabetes Center
- Adaptive TechSoft
- Partner in Knowledge Developers (Enterprise Systems)
- National Diabetes Center
- Partners in Saudi Health Information Systems Co (Hospital Services)
- Entrepreneurship building and education
Riyadh Valley Company

Environment & Structure

- KSU Tech
- KSU Incubators
- King Saud University
- KSU Research Centers
- Other KSA Research Centers
- RVC (Single Corporate Structure)
- RVC Ventures
- RVC Projects
- Global Investor Syndicates
- Local Investor Syndicates
- Other Strategic Partners
- Business Development Partners

Other KSA Research Centers
Riyadh Valley Company

Established by Saudi Council of Ministers at 2010 with 100 Million SR Capital

Infrastructure
- Land
- Labs and Research
- RTV Infrastructure

Scale
- KSU Size and Needs
- Largest market, most disposable income per cap. in MENA

Expertise
- KSU Centers
- RVC Joint Venturing Experience
- Local market knowledge

Access
- KSU Network
- Government Relations
- Investment Board
- Partners
- Talent pools

Value Add Proposition
Riyadh Valley Company brings value to co-investors and portfolio companies involved in connecting new technologies & businesses to attractive and growing markets in Saudi Arabia by providing infrastructure, scale, expertise, and access.

High Potential Markets for Target Sectors in Saudi Arabia
Itemis AG/France

Strong Automotive Position

Specialist for Model Based Software Development

Automotive Customers

- Systems Engineering & Optimization of Development Processes and Tool Chain Systems
- Engineering for Automotive and Industry Electronics
- Software- and System Architecture
- Test Automation & Integrated tool chain for ECU development

Open Platform Eclipse – Strategic Membership
Itemis AG/France

Strong Automotive Position
NEW COMPANY WITH VC SUGGESTED EQUITY AND SHARE PARTICIPATION

30-50% - Saudi Smart electronic Company: Know how, Consultation, Service and operation supervision

30-50% - VC Partner

Note: This is only a suggestion
THANK YOU

WELCOME TO THE WORLD OF SMART HOMES