Catalogue

2023

Spark Irrigation System

make your farm smarter!

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GSM Scan URL

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SPARK IRRIGATION SYSTEM

OBJECTIVES :

From anywhere with safety, using your Smartphone, tablet or PC, you can completely control the irrigation of your farm with adequate of the amount of water, fertilizer and energy, while with a follow-up of the staff tasks and resources.

SPARK MODULES:

- SPARK SOURCE
- SPARK WATER
- SPARK ENERGY
- SPARK EV
- SPARK INJECTOR
- SPARK SENSORS
- SPARK WEATHER STATION
- SPARK CAMERAS
- SPARK STAFF

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SPARK SOURCE

OBJECTIVE:

It allows you to know the level and quantity of water available in the basin in real-time, and to turn on/off the filling and irrigation pumps automatically according to the configuration. All of these operations are performed automatically and can be monitored and configured via Spark Apps across the Internet with security.

FEATURES:

1. Set the minimum and maximum threshold level for your reservoir (basin) using the Spark Apps.
2. The pump will automatically turn on when the water level reaches the minimum threshold to fill the basin and will turn off when it reaches the maximum threshold.
3. These threshold levels of the basin can be configured dynamically depending on the season.
4. Know the level and quantity of the water in Tons (m3) in your basin in real-time.

Notification/alert in case of any malfunction.

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6. Complete reporting (configuration changed, time the pump started and stopped, level and quantity of water in real time, notifications, alerts ...).

COMPONENTS OF SPARK SOURCE:

1. **Hardware:**
   - Spark Source controller with wireless (Wi-Fi/Radio) for 2 solenoid valves
   - 1x Level Sensor
   - 3x Filling Pump Control Outputs
   - 1x Irrigation Pump Control Output
   - Other accessories needed
2. **Software:**
   - **Spark Manager**:
     - Spark Manager: Service in the Cloud included in the Spark package to manage and visualize your farm via Spark application (installed in Smartphone/tablet/PC).
     - Spark Manager Local (option): This is an integrated hardware server that will be installed locally in the farm where it will allow you to completely manage your farm offline in the event of an internet outage. When the connection is restored, it will be synchronized with the Spark Manager Cloud.
3. **Installation of Apps in your Smartphone/tablet/PC**
4. **Training**

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PRE REQUIREMENTS FROM THE CLIENT:

1. Internet Connection with wireless (Wi-Fi/Radio) in the farm.

RELATED PRODUCTS:

1. *Spark Water:* gives real-time water consumption and helps in automation, ex, you can decide how much water you want to irrigate on the specific plot of your farm.
2. *Spark EV:* It will be installed in each section (plot) of the farm where each solenoid valve system can be managed by Spark Manager via application

SPARK IRRIGATION PRODUCTS:

1. Spark Source
2. Spark Water
3. Spark Energy
4. Spark EV
5. Spark Injector
6. Spark Sensors
7. Spark Weather Station
8. Spark Cameras
9. Spark Staff

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SPARK WATER/EAU

OBJECTIVES:

It gives real-time water consumption used in irrigation and helps in automation, ex, you can decide how much water you want to pump on the specific plot of your farm. It allows a significant saving of water and pumping energy (electricity/gas/…).

FEATURES:

1. You will know the irrigated water in tons in real time via your apps.
2. You will know the water consumption for each plot and for each tree of your farm.
3. Based on the received data (amount of water pumped), you can turn on/off the pump remotely:
   - Manually: using the application installed on the Smartphone by clicking on the stop buttons to stop the pump.
   - Automatically: program configuration at application level so that the pump should be stopped automatically when it reaches the desired quantity of water.

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4. Notification/Confirmation in case of cloudy or rainy weather.
5. Complete reports showing when and how much irrigated water used in each plot.

COMPONENTS OF SPARK WATER:

1. **Hardware:**
   - Spark Water Controller with wireless (Wi-Fi/Radio)
   - Flow meter
   - Pressure sensor
   - Other necessary accessories
2. **Software:**
   - **Spark Manager:**
     - Spark Manager: Service in the Cloud included in the Spark package to manage and visualize your farm via Spark application (installed in Smartphone/tablet/PC).
     - Spark Manager Local (option): It is an embedded hardware server that will be installed locally in the farm where it will manage completely your farm offline in case of Internet failure. When the connection comes back, it will be synchronized with the Spark Manager Cloud.
3. **Installation of Apps in your Smartphone/tablet/PC**
4. **Training**

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RELATED PRODUCTS:

1. *Spark Source:* Allows you to know the quantity of water available in the basin in real-time and allows the stopping/starting of the pumps remotely in complete safety via your Smartphone with detailed reports.
2. *Spark Energy*: gives real-time energy consumption of the electric components of Control Room and entire farm.
3. *Spark EV*: The farm is divided into different plot. In each plot or section of the farm will be installed Spark EV, where each solenoid valve can be managed by Spark Manager via application

SPARK IRRIGATION PRODUCTS:

1. Spark Source
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SPARK ENERGY

OBJECTIVES:

Provide real-time energy (electricity) consumption in kilowatts and Dirham of the electric components of the control room or your entire farm.

FEATURES:

1. Via your application, you can know in real time the electricity consumed by electric components of the control room or your entire farm in KW/hour and in Dirham.
2. You will know the history consumption of the pump or others in kilowatt and Dirham.
3. Notification of power failure.
4. Complete reports indicating when and the quantity of electricity consumed with estimated cost in Dirham according to the section.

COMPONENTS OF SPARK ENERGY:

1. **Hardware:**

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- Spark Controller with wireless (Wi-Fi/Radio)
- Other necessary accessories

2. **Software:**
   - **Spark Manager:**
     - Spark Manager: Service in the Cloud included in the Spark package to manage and visualize your farm via Spark application (installed in Smartphone/tablet/PC).
     - Spark Manager Local (option): It is an embedded hardware server that will be installed locally in the farm where it will manage completely your farm offline in case of Internet failure. When connection comes back, it will be synchronized with the Spark Manager Cloud.
3. **Installation of Apps in your Smartphone/tablet/PC**
4. **Training**

PRE REQUIREMENTS FROM THE CLIENT:

1. Internet Connection with wireless (Wi-Fi/Radio) in the farm.

RELATED PRODUCTS:

1. *Spark Source:* Allows you to know the quantity of water available in the pool in real-time and allows the stopping/starting of the pumps remotely in complete safety via your Smartphone with detailed reports.
2. *Spark Water*: gives real-time water consumption and helps in automation, ex, you can decide how much water you want to irrigate on the specific plot of your farm.

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SPARK EV (ELECTROVANNE)

OBJECTIVES:

The farm is divided into different plot/section. In each plot or section of the farm will be installed Spark EV Hardware (each solenoid valve system can be managed by Spark Manager via application

WHY SPARK EV?

In classical irrigation solution with solenoid valve that works with AC power, you need to make tranches to deploy good quality cable from power source in the control room to each location of the solenoid valve.

So we need to dig a lot tranches with kilometers of cables, therefore, heavy infrastructure investment in term of money and time.

With Spark EV, instead of digging the tranches and deploying kilometers of cabling, we will provide plug-play solution with adequate solar panel with its battery where the communication with Control Room is via wireless (Wi-Fi/Radio) signal.

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The benefit of Spark EV solution is the lower infrastructure cost and execution time.

FEATURES:

1. Via your app, you can know in real time which section or plot is being irrigated.
2. Can be programmed (individually or by group) via app to close and open automatically.
3. You will know the quantity of water in Tons used by plot/section linked to this EV.
4. Based on received data of humidity soil sensors you can close/open EV remotely:
   - Manually: using the application installed on the Smartphone by clicking on the closing/opening buttons of one or more EVs
   - Automatically: program configuration at the application level to close/open one or more EVs automatically
5. Notification in Case of Error.
6. Complete reports showing when and which section(s) were irrigated.

ADVANTAGES:

1. **Plug & Play:** Each Spark EV is powered by a battery charged by solar panel (solar plate optional). There is no need to install an electric cable (may be km with civil engineering work). Save installation time and cost.
2. You can combine Spark EV with Spark Source and Spark Water for complete automation of your entire farm irrigation. Therefore, it will increase efficiency and revenue, minimize

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expense cost, staff workload and human error, and reassigning extra number of staff to other work.

COMPONENTS OF SPARK EV:

1. **Hardware**::
   - Spark EV Controller with wireless (Wi-Fi/Radio)
   - Solar panel & Pylon
   - Battery & extension battery (option)
   - 2x Pressure Sensors
   - 2x Solenoid Valves
   - Other accessories needed

2. **Software**:
   - **Spark Manager**:
     - Spark Manager: Service in the cloud included in the Spark package to manage and visualize your farm via Spark application (installed in Smartphone/tablet/PC).
     - Spark Manager Local (option): It is an embedded hardware server that will be installed locally in the farm where it will manage completely your farm offline in case of Internet failure. When the connection comes back, it will be synchronized with the Spark Manager Cloud.
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PRE REQUIREMENTS FROM THE CLIENT:

1. Internet Connection with wireless (Wi-Fi/Radio) in the farm

RELATED PRODUCTS:

1. *Spark Source:* Allows you to know the quantity of water available in the basin in real-time and allows the stopping/starting of the pumps remotely in complete safety via your Smartphone with detailed reports.
2. *Spark Water*: gives real-time water consumption and helps in automation, ex, you can decide how much water you want to irrigate on the specific plot of your farm.
3. *Spark Sensors:* Soil Moisture and soil temperature sensor are installed in each plot of the farm. These installed sensors and mobile soil NPK sensor data will trigger the irrigation and Fertilizer (NPK) processes.

SPARK IRRIGATION PRODUCTS:

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SPARK INJECTOR

OBJECTIVES:

Automatic injection of the amount of fertilizer already prepared according to the plot being irrigated.

FEATURES:

1. Via your Smartphone, you configure:
   - Fertilizer name,
   - Fertilizer composition,
   - amount of fertilizer
   - Plot receiving this fertilizer
2. While we irrigate the plot, we automatically inject the amount of fertilizer dedicated to that plot.
3. Via your Smartphone, you will know in real time the area that has received the fertilizer.
4. From your Smartphone, you will have the history:
   - Fertilizer name and composition

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- Injection start time
- Injection end time
- How long and Quantity of fertilizer injected
- Plot received the fertilizer

COMPONENTS OF SPARK INJECTOR:

1. **Hardware:**
   - Spark Injector Controller with wireless (Wi-Fi/Radio)
   - Level sensor for each fertilizer container
   - Solenoid valve for each fertilizer container
   - Other necessary accessories
2. **Software:**
   - **Spark Manager**:
     - Spark Manager: Service in the Cloud included in the Spark package to manage and visualize your farm via Spark application (installed in Smartphone/tablet/PC).
     - Spark Manager Local (option): It is an embedded hardware server that will be installed locally in the farm where it will manage completely your farm offline in case of Internet failure. When the connection comes back, it will be synchronized with the Spark Manager Cloud.
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SPARK
SENSORS/CAPTEURS

OBJECTIVES:

Soil Moisture and soil temperature sensor are installed in each plot of the farm. These installed sensors and mobile soil NPK sensor data will trigger the irrigation and Fertilizer (NPK) processes.

INCLUDED SENSORS:

1. Soil moisture sensor
2. Soil temperature sensor
3. Soil NPK sensor

FEATURES:

1. Via your application, you can know in real time the status of each plot in terms of soil humidity, soil temperature and taken samples of soil NPK.

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2. Based on the received soil humidity and soil temperature data you can irrigate the plots:
   - Manually:
     - You will turn on the irrigation pump of the current plot that you want to irrigate until the data received is the same or greater than the targeted data of soil humidity. Then you will turn off the irrigation pump.
   - Automatically:
     - For each plot, we define the target humidity (best soil humidity value for the trees in that plot).
     - If the value of soil moisture received from the Spark sensors hardware is less than the targeted one in the current plot, then:
       - The system will open the solenoid valve of the current plot.
       - It will close all the rest of solenoid valves in the farm.
       - It will turn on the irrigation pump if it is not on until the data received is the same as the targeted data of soil humidity.
3. Notification in case the values detected by the sensors are out of range of the targeted values.
4. Complete reports/history indicating the soil status of each plot/section.

ADVANTAGES:

1. Save the time and water, fertilizers, labor and therefore energy with a better yield:

- Each Spark Sensor is installed in each plot (solar panel) can trigger the Spark EV of the plot concerned for irrigation with the right amount of the water at right time (saving water).
- With mobile NPK sensors data, you can provide with the correct and necessary amount and type of fertilizers at right time for trees in each plot (saving fertilizer).

2. If you combine Spark EV with Spark Source and Spark Water, you get full farm-wide irrigation automation. Therefore, it will minimize expense cost, increase efficiency, increase revenue, minimize staff workload and human error, and minimize the number of workers or reassign staff to other work.

COMPONENTS OF SPARK SENSORS:

1. **Hardware:**
   - Spark Sensors Controller with wireless (Wi-Fi/Radio) including Sensors of Temperature, soil Humidity and NPK
   - Solar panel & Pylon
   - Batteries included
   - Other necessary accessories

2. **Software:**
   - **Spark Manager**:
     - Spark Manager: Service in the Cloud included in the Spark package to manage and visualize your farm via Spark application (installed in Smartphone/tablet/PC).

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- Spark Manager Local (option): It is an embedded hardware server that will be installed locally in the farm where it will manage completely your farm offline in case of Internet failure. When the connection comes back, it will be synchronized with the Spark Manager Cloud.

3. **Installation of Apps in your Smartphone/tablet/PC**
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4. *Spark Injector:* Automatic injection of the amount of fertilizer already prepared according to the plot being irrigated.

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SPARK
WEATHER STATION

OBJECTIVES:

Spark Weather station is an effective tool for monitoring daily fluctuations in the weather by sending the collected data wirelessly (Wi-Fi/Radio) consistently and automatically.

FEATURES:

1. Spark weather station data will send directly to Spark Manager wirelessly.
2. There are two types of weather data collection:
   - Regional mode: it is already embedded in our solution Spark where the weather data is more for entire region.
   - Spark Weather Station mode: with this hardware you will be able to get weather data in your local farm more accurately.

     The benefit for this mode is as example in terms of rain: In the regional mode, it might be raining in

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other location but not in your farm. Therefore, with Spark Weather Station, you will overcome this problem.

3. The data collected by Spark Weather Station are:
    - Air temperature
    - Air humidity
    - Wind speed
    - Wind direction
    - Atmospheric pressure
    - Rainfall
    - OPTIONS: Sun radiation, Ultraviolet, Luminance

ADVANTAGES:

By monitoring the weather data, the benefits are:

1. Irrigation scheduling: change the irrigation schedule automatically by receiving the data Spark Weather station in real time, ex, if it is raining , we know how many millimeter of rainfall, so we know how many cubic of water received from rainfall, therefore we know the amount of water needed for irrigation.
2. Save water resources: knowing the exact rainfall for each crop can help optimize watering, thus preventing over-watering, which can impact the crop health.
3. Save time and be more organized (a tool to let you know why and what you are doing).
4. Easier to make decisions: Everything from pesticides, seeding, irrigation, and labor can be done more accurately with precise data. You can better predict spraying times by tracking

historical weather patterns for the exact area and better anticipate disease risks through weather patterns and conditions.

5. More efficient crop monitoring with less human error.
6. Save costs: lower costs on labor, water, energy and nutrients for crops.

COMPONENTS OF SPARK WEATHER STATION:

1. **Hardware:**
   - Spark Weather Station Controller with wireless (Wi-Fi/Radio)
   - Solar panel and Pylon
   - Battery
   - Necessary accessories
2. **Software:**
   - **Spark Manager**:
     - Spark Manager: Service in the Cloud included in the Spark package to manage and visualize your farm via Spark application (installed in Smartphone/tablet/PC).
     - Spark Manager Local (option): It is an embedded hardware server that will be installed locally in the farm where it will manage completely your farm offline in case of Internet failure. When the connection comes back, it will be synchronized with the Spark Manager Cloud.
3. **Installation of Apps in your Smartphone/tablet/PC**
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RELATED PRODUCTS:

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2. *Spark Energy:* gives real-time energy consumption of the electric components of Control Room and entire farm.

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SPARK CAMERA

OBJECTIVES:

Enable monitoring your farm and staff from Spark Manager

FEATURES:

We provide 3 kinds of cameras in Spark Irrigation Solution:

1. Type 1: Security camera (wired or wireless)
2. Type 2: Mobile camera with battery and option solar panel.
3. Type 3: Panoramic snapshot camera, taking snapshots every, ex, 1minutes. At the end of day, it will convert to video and send to the server. The main purpose is to view the whole day events, like the movement of the workers, the jobs done during the day in short period of time. Example, you will visualize 12 hours in 28.8 seconds video

COMPONENTS OF SPARK CAMERA:

1. **Hardware:**

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- Cameras type 1, type 2, and type 3 depending on your needs
- Batteries included
- Solar panel
- Other accessories needed

2. **Software:**
   - **Spark Manager**:
     - Spark Manager: Service in the Cloud included in the Spark package to manage and visualize your farm via Spark application (installed in Smartphone/tablet/PC).
     - Spark Manager Local (option): It is an embedded hardware server that will be installed locally in the farm where it will manage completely your farm offline in case of Internet failure. When the connection comes back, it will be synchronized with the Spark Manager Cloud.
3. **Installation of Apps in your Smartphone/tablet/PC**
4. **Training**

PRE REQUIREMENTS FROM THE CLIENT:

1. Internet Connection with wireless (Wi-Fi/Radio) in the farm.

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RELATED PRODUCTS:

1. *Spark Staff:* Monitor the ENTRY and EXIT of each staff on your farm, the number of employees present, the number of working hours per day of each employee and grant access to areas for each worker.

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SPARK STAFF

OBJECTIVES:

Monitor the ENTRY and EXIT of each staff on your farm, the number of employees present, the number of working hours per day of each employee and grant access to areas for each worker.

FEATURES:

1. You will know the date and time that the workers get in and off from your far.
2. By Access management, you can set the access rights of each area for each worker.
3. Via application, you will have the real-time presence of your staff into your farm.
4. There is a reporting by day, week, month and year for each worker:
   - Presence: what time get in and off
   - Areas accessed by the worker

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- Notification

COMPONENTS OF SPARK STAFF:

1. **Hardware:**
   - Spark Staff Controller with wireless (Wi-Fi/Radio)
   - RFID Badges
   - Other accessories needed
2. **Software:**
   - **Spark Manager**:
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3. **Installation of Apps in your Smartphone/tablet/PC**
4. **Training**

PRE REQUIREMENTS FROM THE CLIENT:

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RELATED PRODUCTS:

1. *Spark Camera:* Enable monitoring your farm and staff from Spark Manager.

SPARK IRRIGATION PRODUCTS:

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3. Spark Energy
4. Spark EV
5. Spark Injector
6. Spark Sensors
7. Spark Weather Station
8. Spark Cameras
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