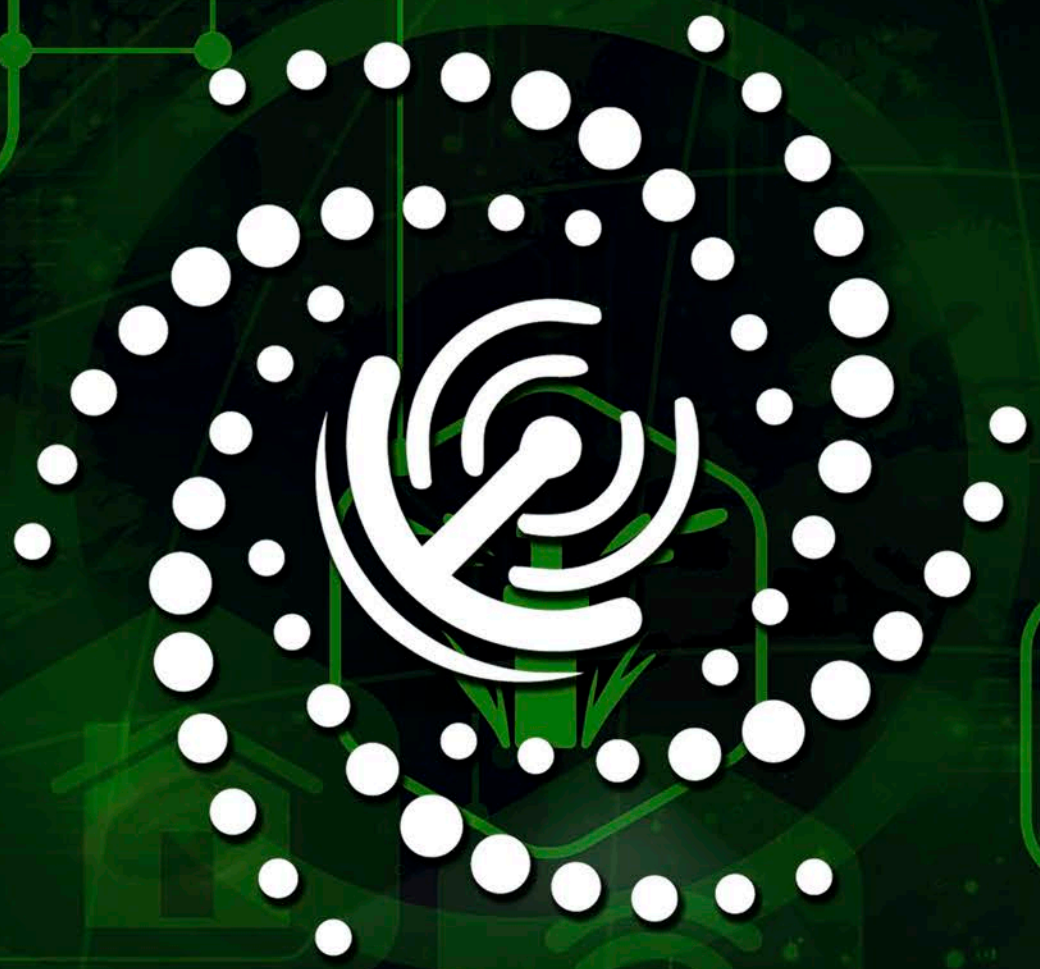
EXTREME

RANGE WIRELESS SMART-EMITTER

FOR IRRIGATION VALVES



IRRIGATION 4.0

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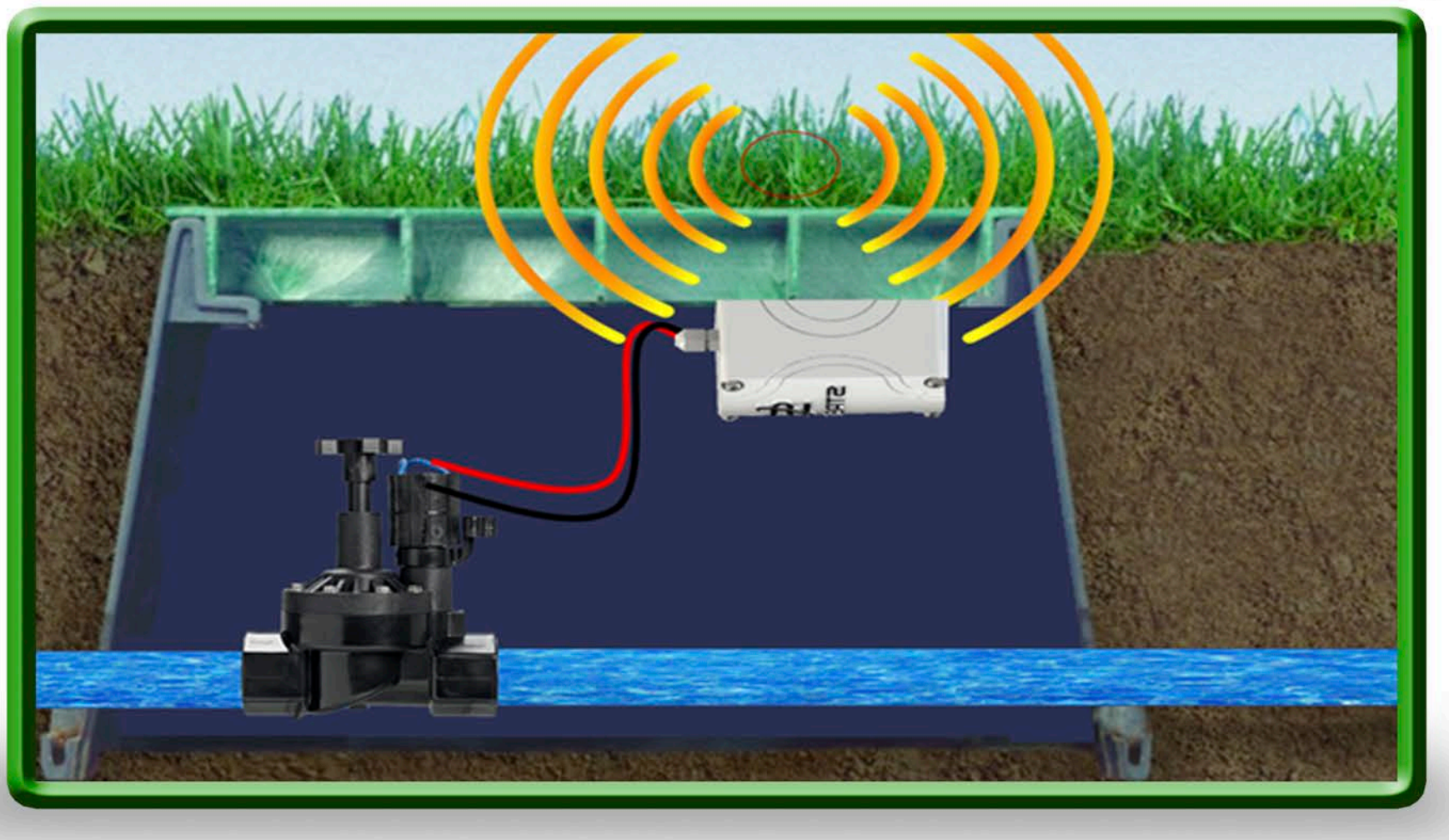
STREGA

Extreme range wireless emitter for irrigation valves

- Wireless battery operated smart emitter for irrigation valves
- Extreme range propagation (km+/mi+)
- Ultra-low consumption with 5+ years battery autonomy
- Smart operation with preloaded watering schedulers
- Secure operation with top-down encryption (AES128 + VPN)
- Fraud resistant with tamper
- Unlimited number of zones
- License free operation
- IoT ready (compliant with all Internet of Things platforms)
- Exceptional signal penetration through obstacles



STREGA LoRa wireless Smart-Emitter is a battery operated wireless device with embedded **LoRaWAN** technology developed to control irrigation valves. With its ultra-low-power consumption, the Smart-Emitter can trigger Open or Close operation of any valve equipped with a DC latching solenoid. The emitter is working on batteries during 5+ years and through extreme long distances from the gateway /concentrator with an exceptional obstacles penetration.

Operate your valve securely from your smartphone

Ultra-long range and battery operated

- **Extreme range:** ultra-long range propagation of the signal with deep obstacles penetration
- **Compatible with standard irrigation valve suppliers**: connects directly to any DC latching solenoid
- **Watering schemes**: preloaded watering schedulers
- **Smart control:** automatic switch-off in case of abnormal flow or leak detection
- **Accurate:** Open/Close feedback resent to the gateway/concentrator
- **Top-down secure communication:** data are encrypted between Emitter and concentrator (AES128) and between concentrator and the Control Center (VPN)
- **Industrial grade:** IP68 waterproof design with 0°C...+70°C operation
- **Low consumption:** ultra-low power with 5+ years autonomy
- **Tampering:** any misuse is immediately reported to the gateway/concentrator
- **Mobile Control:** operate your valves from your smartphone
- **Cloud platform:** proposed with a cloud software platform or your own software

Applications

Landscape Irrigation

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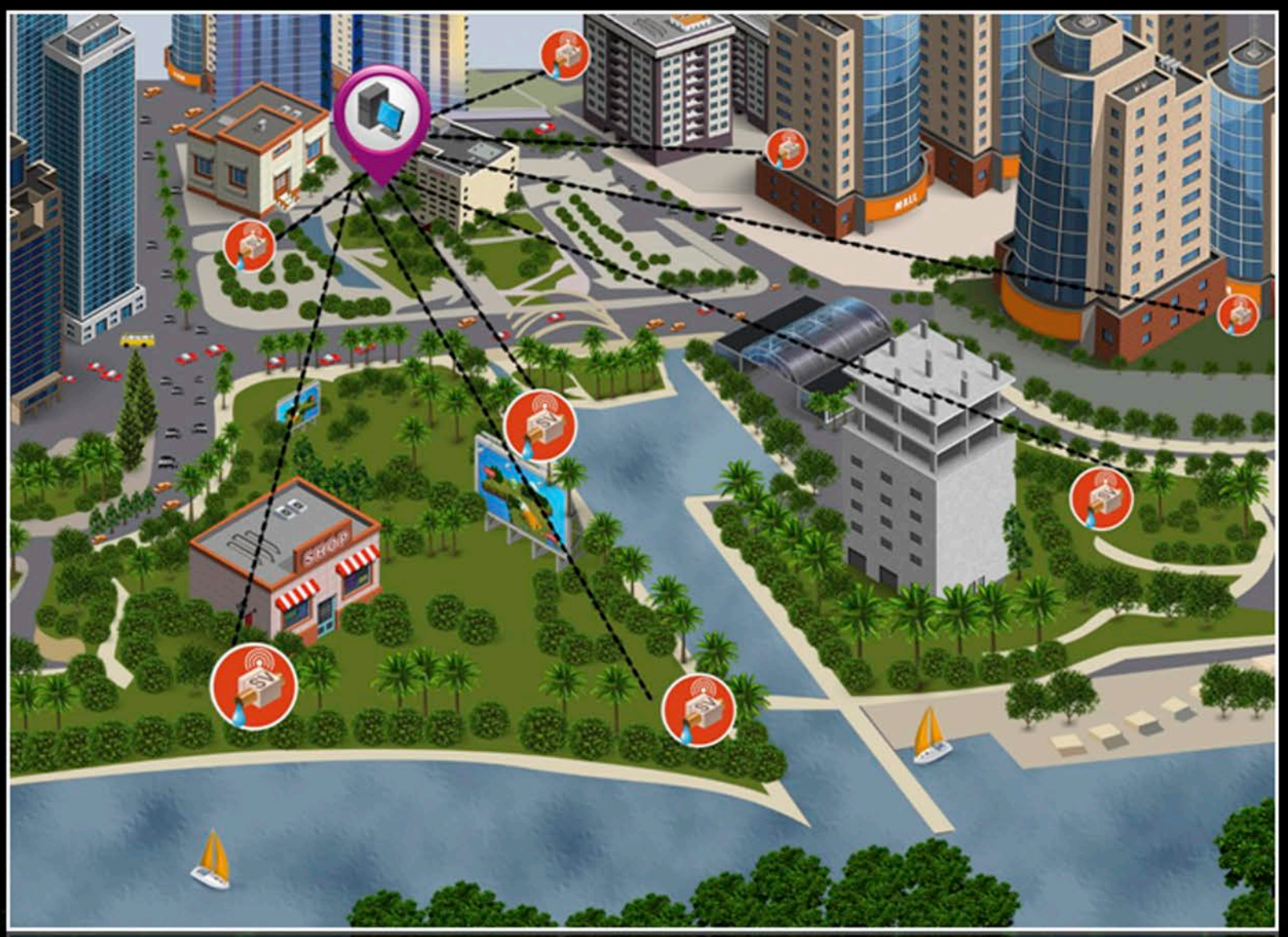
Landscape irrigation is a watering system that is used to create and maintain lawns, gardens, parks and custom landscapes. The primary function of a landscape irrigation system is to ensure that water is spread regularly and evenly throughout any given landscape. **STREGA LoRa wireless Smart-Emitter** can help Municipalities to provide a quick an easy implementation of remotely operated valves without the burden (and the costs) of encoders-decoders. Connecting a new zone to water becomes straight forward: add a smart valve onto the main line and you are ready to control the irrigation from your Control Center.



With the **STREGA LoRa wireless Smart-Emitter**, there are no extra satellite irrigation controllers required. Because satellites are very accessible, they are easy targets of vandalism. You get an immediate valve Open/Close control and a feedback (optional flow meter input) directly from each zone. Signal propagation is exceptional even if the weatherproof emitter (IP68) is buried below surface level. Each wireless emitter has its own identification number that is logged at central control. Future expansion has never been so easy: just install the valve and emitter into the irrigation box and you are ready to go.

Agriculture Irrigation

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Agriculture Irrigation is an essential component of sustainable development which faces challenges similar to those confronting other public and private sector economic activities.

The obvious one is ... water-savings

The overall performance of many irrigation projects is disappointing. Evaluations document a wide range of problems, including: cost and time overruns; poor management; the non-realization of full, planned benefits; adverse environmental and health impacts; and the exacerbation of inequities in the existing social and economic distribution of assets among farmers.

One of the most common problems with farm irrigation systems has to do with irrigation scheduling. Irrigation scheduling is simply answering the questions of “When do I water ?” and “How long do I water ?”. Starting an irrigation cycle too early and/or running an irrigation cycle too long is considered over watering. At the very least this practice wastes water and money. However, overwatering can cause crop damage if done on a prolonged basis. Likewise, starting an irrigation cycle too late or not running the system for a long enough period of time is considered under watering and can cause reduced yields and poor crop quality.

STREGA LoRa wireless Smart-Emitter helps farmers to simplify their installation by providing limited number of components together with extreme distance operation and appropriate scheduling.

Golf course Irrigation

Turf-grass requires good soils and adequate levels of sunlight, nutrients, and water to endure a wide range of environmental extremes and withstand traffic from golfers. Of these requirements, water may be the most challenging to provide because it must be distributed frequently and uniformly into the soil for uptake by the turf-grass root system.

STREGA LoRa wireless Smart-Emitter can help Golf Club owners to reduce their installation costs by avoiding the use of dedicated wires to control the valves from the control room.

The irrigation controller or the Control Room server is linked to the LoRa gateway which communicate on an extreme range to the valves.

The exceptional wave propagation of LoRa is guaranteed even if the wireless emitter is installed below grass surface and into the irrigation box. One LoRa Gateway/Concentrator is enough for the entire course !

Golf course irrigation using STREGA ultra-long range wireless Smart-Emitters simplify significantly implementation and extension of new zones

Irrigation 4.0 Cloud platform

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STREGA is proposing a unique monitoring and control solution hosted on the internet as a secure Cloud platform dedicated to a smooth implementation of your Smart-Emitters: “irrigation 4.0” is a seamless solution to remote operate your valves, know their locations and create the various irrigation schedulers that will be uploaded up to each Smart-Emitter level.

In Maintenance mode, installers can manually operate the valve, know battery power status, locate the GPS coordinate of each device and monitor signal quality

Each Smart-Emitter can have its own preloaded watering schedulers stored into its own memory

LoRaWAN radio and 3G/4G signal quality are reported at regular basis to the platform

Specifications

Product ID	Ultra-long range wireless Smart Emitter for irrigation valves	**Max. emitters per concentrator**	128 to 9000+ (depends on duty cycle and Rx/Tx frequencies
Radio technology	LPWAN LoRaWAN 1.0 Class A – star-of-stars topology	**Max. emitters per project**	not limited (each emitter has a unique ID key)
Frequency	License free 868 MHz, 433 MHz, 915 MHz, 920-928 MHz	**Tamper**	enclosure opening is immediately reported to the Concentrator
Autonomy*	5+ years on batteries – no limitation in case of external power source (i.e. solar panel)	**Smart operation**	Preload watering schedulers, automatic Open/Close depending on alarm status,..
Maximum output power	20dBm	**2 x Digital Inputs (optional)**	Moisture status or pulse input reading (slow pace)
Manual override	Press buttons for local Open/Close	**Data rate**	290 bps – 50 Kbps
Range	15+ km (10+ mi.) LOS (line of sight) - 2+ mi.in urban areas	**Data read**	valve Open/Close status – battery level – device ID – RSSI - enclosure tampering - digital inputs,...
Power supply	Batteries and/or external (i.e. solar panel): 9-60VDC	**Data write**	Open/Close command – transmit frequency – SF – Data rate,...
Solenoid type	DC latching	**IP protection**	IP68
Connectivity to solenoid	2 wires	**Antenna**	embedded
Security	Unique 128-bit AES encryption key	**Compatible brands**	TORO, Rainbird, Hunter, K-Rain, Bermad, Weathermatic, Signature...
Product Reference	STR-SEM-XXX (xxx for frequency)	**Spectrum Authorization**	License free operation

** battery life depends on Rx/Tx frequency and Open/Close frequency*

We are compatible with the DC latching solenoids of the following irrigation valve brands:

STREGA

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