

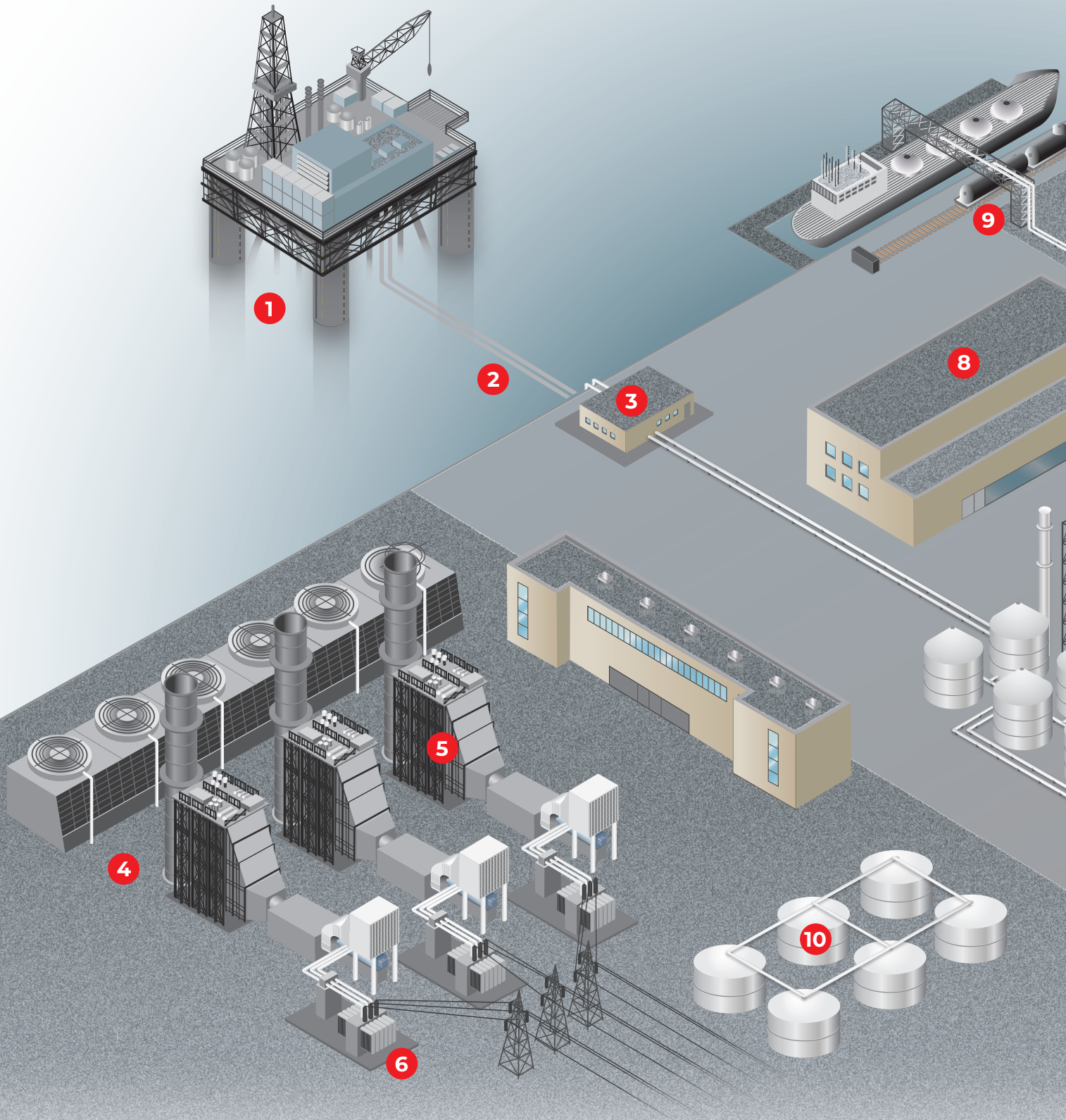


**INDUSTRIAL LEAK  
DETECTION SOLUTIONS**



**DAGMAN**

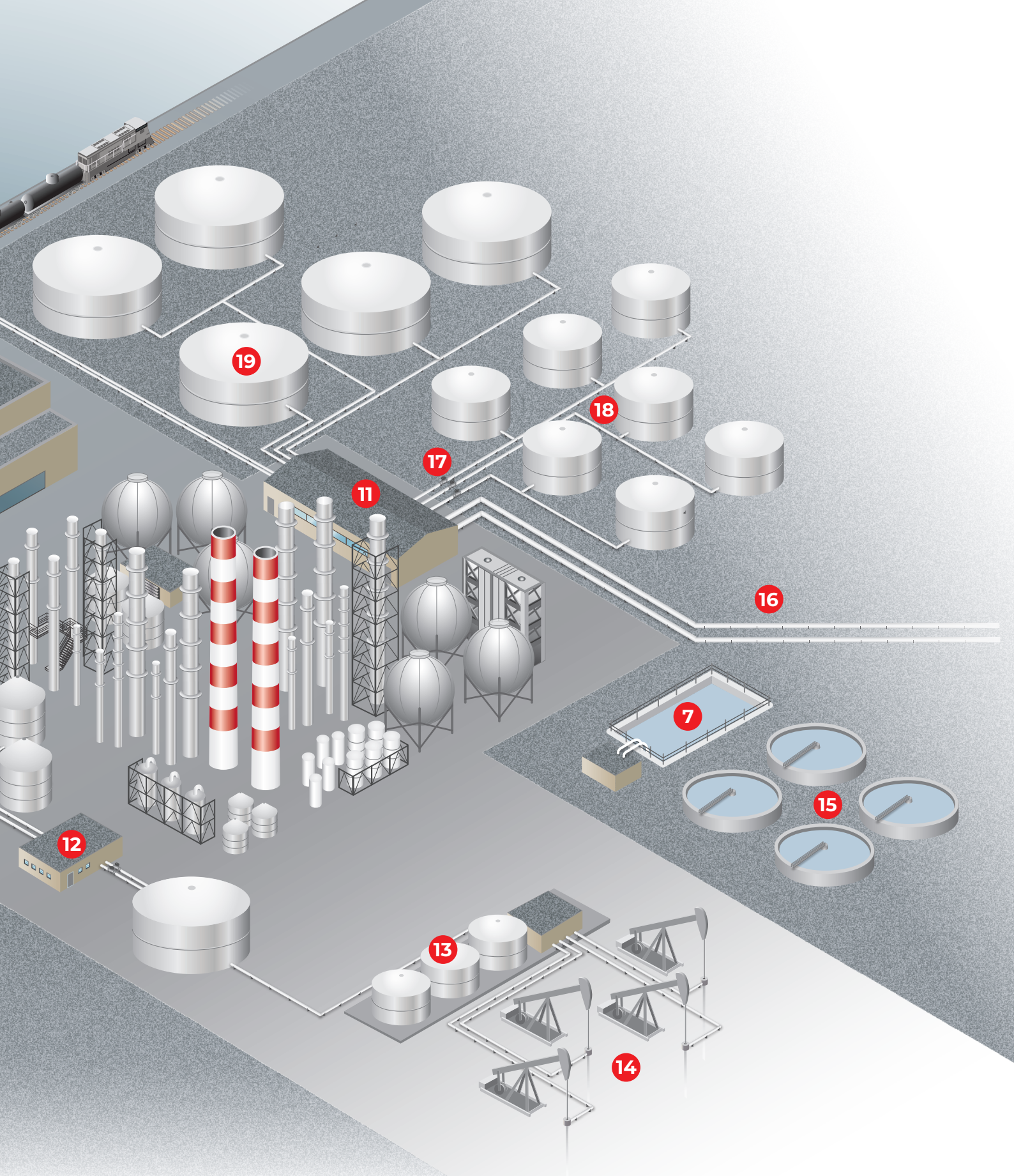




- 1** Off Shore Drilling
- 2** Submerged Transfer Lines
- 3** Pump, Filter, Metering Leak Detection
- 4** Power Generation Facilities
- 5** Turbine Oil Pump and Process

- 6** Transformer Monitoring
- 7** Oil on Water, Sump, Oil Water Separator
- 8** Facility: Generator, Boiler, Tanks
- 9** Hydrocarbon Filling Terminals
- 10** Synthetic, Bio-Fuels





- |           |                                  |           |                                 |
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# The Trusted Source in Hydrocarbon Leak Detection

Dagman designs and manufactures hydrocarbon leak detection systems based on addressable products which detect the presence of hydrocarbons such as refined fuel, light / heavy crude oils, lubricants, dielectric oils, solvents, and petrochemical compounds.

## Why Dagman is Ideal for Your Application

Dagman Leak Detection systems are extremely sensitive to hydrocarbon liquids and vapors. Some customers have baseline contamination in their facilities that cause other leak detection systems to alarm in “normal” operation. Others have problems during periods of excessive rainfall where hydrocarbons are released from the soil triggering a false alarm. Dagman solves ALL micro-exposure alarm issues by allowing real time volume reporting and field adjustability of the sensor to calibrate for existing conditions.

In addition, the Acquisition Module will report progressive leak alarms as the volume of the leak increases. Sensors are rugged and built to be immersed in a leak environment and still report the “increasing leak volume” until the sensor becomes completely saturated at full alarm. After the leak is remediated, Dagman sensors can be re-set and re-installed. Only when the sensor is completely saturated will you need to use our simple cleaning technique involving common household chemicals. Dagman sensors can be re-used with confidence for 10 years or more!

## Simple, Configurable, Outputs with Your Network

Communications from the Dagman system to your PLC, CMS, DCS, SCADA is quite simple. Utilizing your existing network in combination with your favorite wireless or hard-wired transmitter, to easily communicate leak volume, and location quickly and efficiently. The absence of complicated 3rd party panels and proprietary communication protocols allows a seamless, inexpensive installation with familiar equipment as the backbone of your new leak detection system.

## Customer Experience

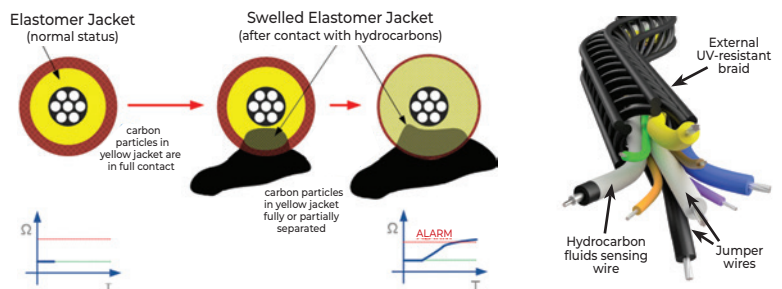
Dagman supports customers through knowledgeable and dedicated sales and support staff that can assist in selecting the proper leak detection system and matching ideal solutions with existing communications requirements. In addition, we maintain an extensive supply of product inventory on hand so that we can quickly fulfill orders and reduce lead times. Our sales and support staff are readily available and accessible, so customers get the support they need quickly.

## Commitment to Quality

At Dagman, quality means performance. Each of our products is tested multiple times before a Dagman label is placed on the product. With Production processes that strive for continuous improvement and exhaustive performance testing, we are confident that our products meet and exceed all applicable standards before they ever leave our facility. Dagman puts a 10-year factory warranty on all products to prove our commitment to the highest standards of installation.

## How Dagman Leak Detection Cables and Sensors Work

Dagman leak detection technology is based on Polymer Absorption Sensor (PAS) technology. Developed in the 1950s, PAS technology has a proven track record of detecting hydrocarbons in extreme conditions and enables real-time, cost-effective critical infrastructure integrity monitoring. In coordination with our patented controller technology, Dagman can indicate leak volume and decipher old and new material.



## Tested and Qualified

Dagman leak detection systems are tested to the most stringent industry standard to ensure maximum reliability and performance for our customers.

Intrinsically safe - Class I, Division 1, Groups A, B, C and D, Class I, Zone 0, AEx ia IIC

Atex: Intrinsically safe - II 1 G, Ex ia IIC Ga T4

IECEX: Intrinsically safe - Ex ia IIC Ga T4

Tested by FM Approvals for compliance as per FM Class 3610

## Robust Construction

Long service life assurance through patented sensor composition and construction materials.

## Life Expectancy

Our extensive scientific testing and field history prove that when properly installed and maintained, Dagman leak detection cables are expected to work for many decades.

An industry leading 10 year warranty is standard with all products sold.





# Industries Served



## Refineries

Modern petrochemical facilities look for reliable process equipment that contribute to overall safety and efficiency. Dagman has a rich history of rapid detection throughout the refining process.

## Pipeline

Dagman was created by exceeding pipeline companies demands for leak detection. Wireless communication, long life battery power, long term deployment in remote in arctic and tropical environments with no false alarms. There is no other product for remote detection with 10-year guaranteed reliability.



## Tank Farms

Greenfield new builds, existing, retro fit, or re-building tanks of all sizes, shapes, and construction methods are no problem for Dagman. With sensors that will never detect water you can be confident your hydrocarbon will be rapidly detected before the minor leak becomes an incident.

## Power Generation

One of the largest power generation facilities in the world utilize Dagman leak detection. With staff reductions and increased demand for power monitoring critical equipment in person is challenging. We provide confident remote monitoring of transformer fluids, turbines, generators, and other critical equipment.

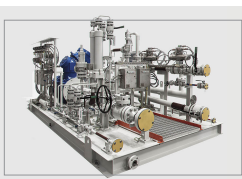


## Containment Basin / Oil on Water Detection

Many facilities are concerned with implications from releasing hydrocarbons into the environment via sumps and drains for containment basins. Dagman makes point sensors that are ideal for these often-remote locations. Drain with confidence by deploying Dagman.

## Horizontal or Vertical Drilling / Micro-Drilling

Leaks around old pipeline line repairs, aging tanks, and racked piping are challenging areas to find small leaks before disaster strikes. Using Dagman point sensors in small diameter slotted tubes is effective at detecting liquid hydrocarbons or their vapors.

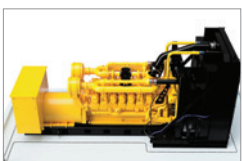


## Pump Skids, Filter Skids, and Portable Process Equipment

Oil and gas industry uses portable process equipment skids for countless applications. Dagman systems are easy to expand and add on different process areas with simple output to existing wireless networks. Why compromise safety even on temporary process platforms?

## Liquid Natural Gas Processing Plants

In the LNG plants, during the liquification process, a lot of LPG (Liquid Propane Gas) is used to cool down the natural gas and bring it to liquid state. In case of leak, the LNG itself does not create a hazard as the Methane is lighter than air. However, if LPG (the refrigerant) is leaking, as these vapors are heavier than air, they accumulate at the surface and create significant safety risk.



## Generator and Day Tanks

Dagman is known for building a complete and reliable leak detection system around emergency generators, diesel days tanks, and related plumbing. Modern buildings are susceptible to significant property damage, loss of human life, or environmental pollution. Fuel leaks are detected in seconds with Dagman leak detection systems.

## Marine

Fueling terminals and bulk freighters rely on piping to safely move hydrocarbons over water. Even the smallest leak in this environment has a significant impact. Dagman has the greatest sensitivity and will react to vapors as well as little as 1 ml of liquid hydrocarbons. This is a primary reason Dagman leak detection equipment is found on many ocean terminals.



## Water and Wastewater

The accumulation of losses from tanks over time can result in major issues from even minor leaks. Impurities can get in, if water can get out. Such leaks are detected quickly with Dagman leak detection systems.



# Leak Detection Products

## Cables and Sensors

Dagman has several models of high-performance, multiplexed, passive hydrocarbon detectors designed specifically for detecting the unwanted presence of a wide range of liquid hydrocarbons. With both multiplexed sensor cable, fixed length factory finished cables, and point sensors, Dagman provides quick reaction to light

and heavy hydrocarbons in most applications. Safe to use in extreme outdoor environmental conditions around tanks, vessels, pipelines, process equipment, skids, fueling depots, generators, and more. In addition, all sensors manufactured by Dagman have been tested and approved by EVTeam for use with their Intrinsically Safe monitoring modules.

### Leak Detection Cables

#### DAG-HCS Hydrocarbon Sensor

The DAG-HCS is a hydrocarbon detector designed specifically for detecting the unwanted presence of a wide range of liquid hydrocarbons, including gasoline, diesel, jet fuel, motor oils, lube, and transformer oils, etc.

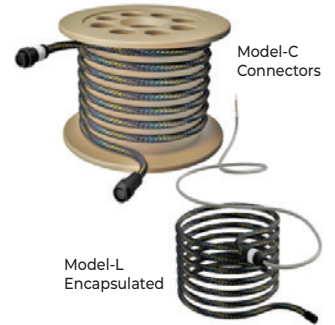
Offered as factory-terminated modular sensor with heavy-duty waterproof connectors (-C), or as fixed-length multi-section encapsulated sensor string with oil-resistant 3 m leader cable (-L). Used for above and below ground pipelines, large storage tanks, branch lines, combustion turbines, and larger coverage areas requiring multi-sensor strings.



#### DAG-DHCS Hydrocarbon Sensor

The DAG-DHCS is a hydrocarbon/solvents detector designed specifically for detecting the unwanted presence of a wide range of liquid hydrocarbons or organic solvents, primarily gasoline, diesel, jet fuel, acetone/MEK, methanol, ethanol, esters, transformer oils, etc.

With two sensor wires, it provides quick reaction to the target liquids and can be used in outdoor environment without being affected by exposure to water.



### Point Sensors

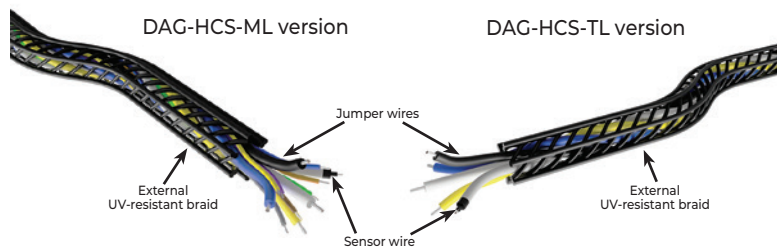
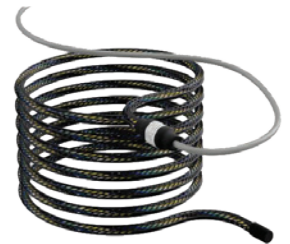
#### DAG-O2W-SP Sensing Probe

The DAG-O2W-SP is a fully encapsulated high-performance sensing probe designed for detecting leaks of refined products or crude oil floating on water surface in extreme environmental conditions. This probe can also be used as cost-efficient zero-false-alarms hydrocarbon fumes detector.



#### DAG-PHD Hydrocarbon Sensor Cable

The DAG-PHD sensor cable is offered as stand-alone sensor connected in factory with 3m direct-burial/UV-resistant leader cable. On request, the length of the leader cable can be extended up to 300 m. The length of the sensing section is limited to 25 m.



### Features and Benefits

- Detects reliably all fuels and oils
- Reusable after contamination
- Volumetric leak alarms, can decipher between old and new leaked material
- Insensitive to vibrations, methane, water
- UV Rated outer jacket safe for continuous exposure to sun light
- Wide operating temperatures range
- Reduced maintenance and easy troubleshooting
- 10-year warranty

### Typical Applications

- Liquid hydrocarbons leak detection in tank farms, compounds, along pipeline sections
- Detection of leaking fuel from airport hydrant systems, military, and custody transfer installations in harsh outdoor, demanding environmental conditions
- Monitoring of diesel generators, fuel storage tanks in commercial buildings, hospitals, data centers, etc.
- Monitoring of oil-filled power transformers, lube oil storage tanks, etc.



# Advanced Control and Monitoring System

## Systems that Monitor Sensor Cable Status and Alarm/Alert in the Event of Leaks

Dagman hydrocarbon leak detection systems for the oil & gas industry are engineered for the harshest environments and installed in various settings in hazardous and non-hazardous areas. Installations include underground or above-ground structures and myriad applications, such as tank farms, underground storage

tanks, pipelines, transfer lines, process units, and airports.

Dagman Control Panels and Monitoring Devices provide the supervision to Dagman leak detection cable for fast, reliable, and precise detection of the presence of unwanted hydrocarbons.

### Multi-Circuit Control Panels

#### DAG-eCAT Monitoring Panel

The DAG-eCAT is the high performance 7- or 12-inch touch screen leak detection controller. Rated for IP54/NEMA 3S outdoor environments, this rugged multi-zone controller can communicate efficiently with over 12 km of distributed network of leak detection cables and 100 monitoring modules (25 per zone maximum).



### Monitoring Modules (Made by EVTeam)

#### FLD-FBS Sensor Monitoring Module

Designed to monitor up to 8 sensor cables and provide ERBUS proprietary communications back to Dagman Control panels. IP67/NEMA4X field mountable enclosure with fully encapsulated electronic board.



#### FLD-MXM Multiplexed Monitoring Module

Designed to monitor "long line" applications of sensor cables. MXM can monitor up to 16 sensor cables and provide ERBUS proprietary communications back to Dagman Control panels. IP67/NEMA4X field mountable enclosure with fully encapsulated electronic board.



#### FLD-F4RTD Battery Powered Monitoring Module

Variable resistance output, self-powered Monitoring Module for remote monitoring up to 8 sensor cables. Polycarbonate IP67/NEMA 4X enclosure, fully encapsulated, battery powered, for long term outdoor deployment.



### Din-Rail Mounted Leak Detection Controllers

#### DAG-SMD Control Module for Panel Mount

The DAG-SMD offers the high-performance control module designed to be din rail mounted in your outdoor-rated enclosure! DAG-SMD Long range control Module capable of running up to 25 Field Acquisition Modules and up to 4 kilometers of sensing cables. Modbus, dry contacts and optional analog outputs are available.



#### DAG-LSM Control and Monitoring Module for Panel Mount

The DAG-LSM is designed for smaller leak detection applications where a single sensor under 25 m is used. The DIN-rail mounted controller is ready to be mounted in your outdoor-rated enclosure. Dry contacts and optional Modbus and analog outputs are available.



### Features and Benefits

- Extremely long range of leak detection circuit monitoring
- Modular design for easy assembly and integrating additional components
- Adjustable alarm threshold
- Very wide operating temperatures range
- Able to interface with sensor modules for various types of liquids as water, acids, bases, hydrocarbons, alcohols, ketones, etc.
- 10-year warranty

### Communication made easy

Utilize your existing network when integrating a Dagman leak detecting system. Compatible with any wireless and wired system via a host of standard communication protocols:

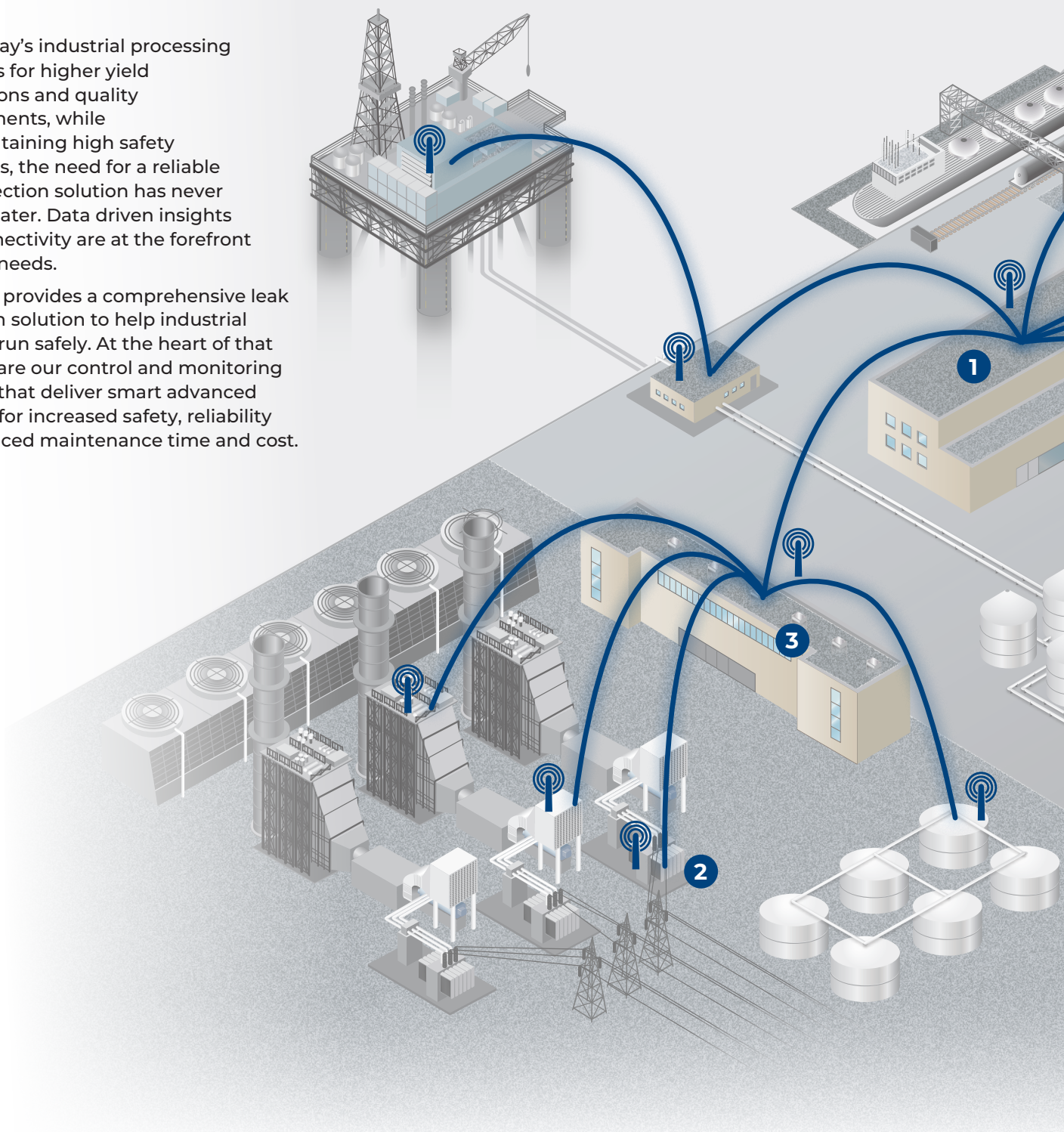
0-5V	RTD (Pt100)
0-10V	Modbus RTU (RS-485)
4-20mA	Modbus TCP



# Advanced Control and Monitoring Systems

With today's industrial processing demands for higher yield productions and quality improvements, while still maintaining high safety standards, the need for a reliable leak detection solution has never been greater. Data driven insights and connectivity are at the forefront of those needs.

Dagman provides a comprehensive leak detection solution to help industrial facilities run safely. At the heart of that solution are our control and monitoring systems that deliver smart advanced features for increased safety, reliability and reduced maintenance time and cost.



1



## Integration

Adaptable monitoring and configuration of leak detection circuits. Utilize existing network for SCADA / PLC integration via Modbus, 0-5V, 0-10V, RTD and 4-20mA

2



## Connectivity

Hardwired or wireless connection of all components for local/remote configuration, monitoring and integration

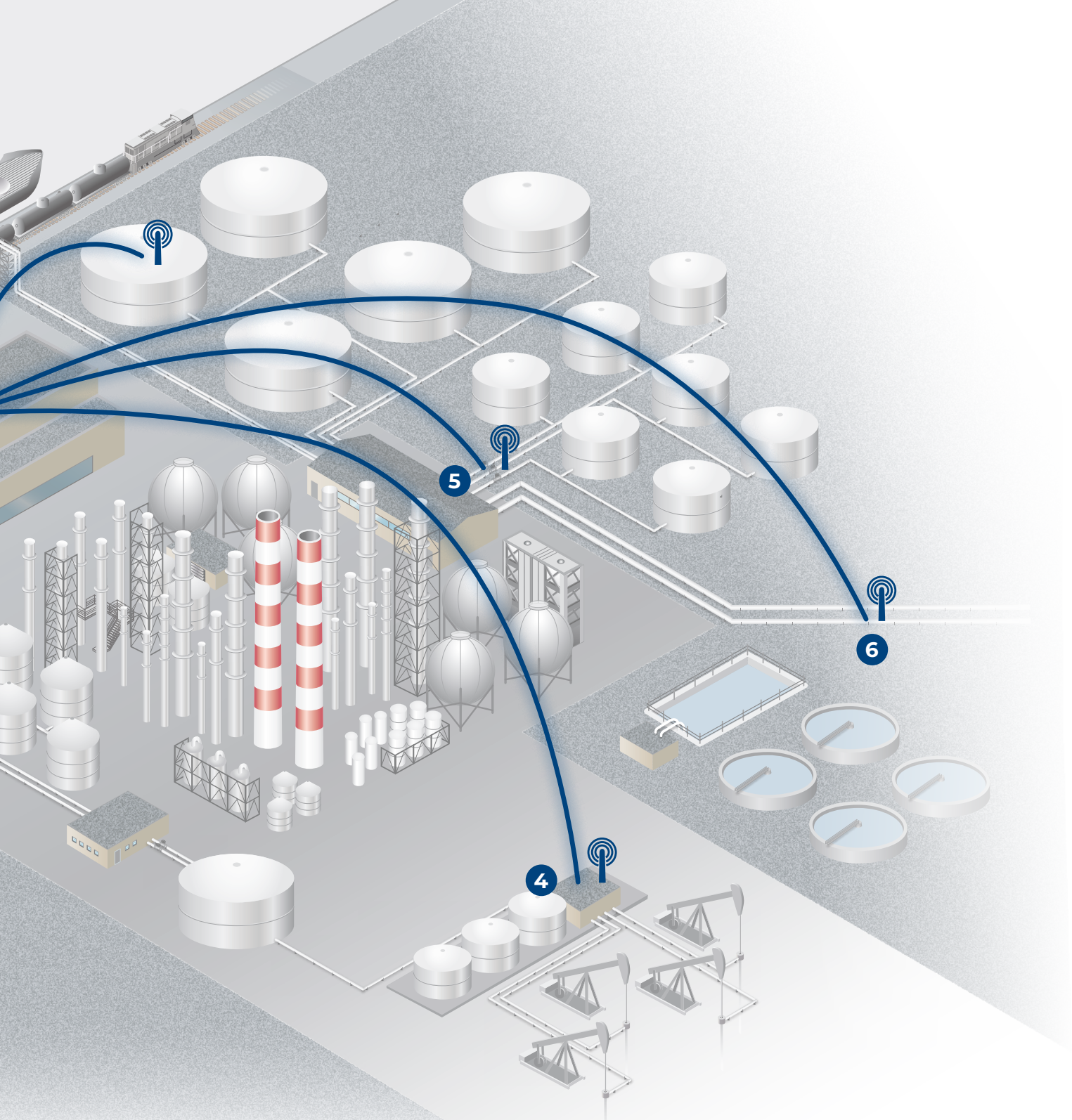
3



## Multi Circuit Control Panel

Monitoring of long line pipeline applications or coordinate an expanded network of localized leak detection locations





4



**Din Rail Mount Controllers**

Install directly into existing control cabinets. Seamless retrofit applications without additional enclosures. Modbus, 0-5V, 0-10V, 4-20mA and Dry Contacts

5



**Single-Circuit Field Control Module**

Hazardous and non-hazardous location approvals. Accelerated detection of even the most challenging hydrocarbons

6



**Battery Operated Remote Location**

Volume-based leak detection via common communication practices. RTD and Pulsed Signal





## Installation and Construction

Our installation teams are fully trained and experienced in leak detection installation techniques. Leverage our expertise to ensure timely and accurate installation of your leak detection system components.

## Commissioning

Our commissioning services ensure that the leak detection system is operating as expected. This includes full system audits, programming and set up of control panels and operational checks.

## Post Installation Services and Maintenance

Providing regular leak detection system audits or implementing a maintenance schedule, Dagman provides you with the security of having your system regularly evaluated by experts in the leak detection industry, allowing timely resolution of potential system problems.

## Site Services

Utilize our site services to access new or existing leak locations and engineer a solution-based design for early detection and proper communication.

## System Engineering

Our engineering team is available for pre-construction and design planning assistance to make your leak detection system an integral portion of your facility design.

## Not a Drop Spilled Around Us

World class performance -  
Commitment to quality -  
Customer committed -  
Visit our website at [dagman.com](http://dagman.com) or contact us at [sales@dagman.com](mailto:sales@dagman.com)







## Industrial Facilities

Dagman leak detection systems offer superior reliability with the highest lifetime value at lower installed cost and lower cost of ownership. 20+ years of time-tested quality, reliability and proven performance minimizes downtime and damage while ensuring ease of use, lower installed cost, lower cost of ownership, and worry-free operation.

## People and Safety

We connect and protect our customers with inventive electrical solutions. Our systems maximize safety and performance. We are committed to providing training, education and a safe work environment on all projects of any size and scope.

## Before You Buy, Weigh the Facts

Dagman offers the most complete line of leak detection technologies and services. Whether you need products, design tools, or project assistance from our leak detection experts, rely on the proven solutions leader to deliver optimized systems to protect your critical industrial processes.







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