Valence Pod System™

Trafficware
Engineered by Naztec

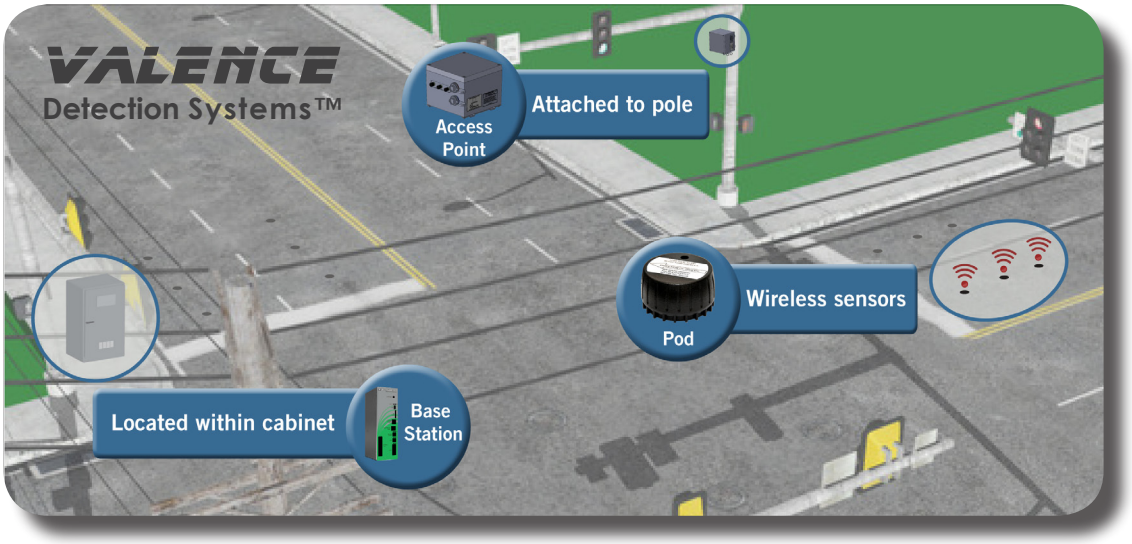
Overview

Trafficware developed the Valence Pod in an exclusive license agreement with **M.I.T.**, using technology developed and patented by the University. (U.S. Patent No. 6,662,099)

Trafficware has been solving some of the traffic industry's biggest problems since 1979. Accurate, economic, and flexible vehicle detection is one of the industry's current challenges. In 30+ years of developing our own detection systems, as well as interfacing with all leading manufacturers, Trafficware has collected a lot of data on how to approach and solve the detection problem.

Our answer is the Valence Pod System™, a wireless magnetic sensor embedded in the road to accurately measure vehicle occupancy and detection. Powered by an industry-leading D-cell lithium battery, the Pod will transmit real-time data autonomously for up to 10 years, providing a solution to a broad range of transportation needs.

The Valence Pod System is simple to install and easy to use, with three primary components: the Pod, Access Point, and Base Station.



Pod

The sensors are located in the roadway, wirelessly transmitting vehicle data and receiving administrative data.

- Stout and stocky (2"H x 3.6"D)
- Industry-leading D-size lithium battery, providing up to 10 years of life with an average of 700 activations per hour, 24/7.
- 900 MHz wireless frequency:
  - Allows greater range.
  - More reliable communication that can pass around buildings and penetrate foliage.
  - Better inroad performance, with the ability to communicate through snow, water, and ice that may have collected over the sensor.
  - Extended range eliminates the need for a repeater. This simplifies the system by reducing the number of components, as well as easing installation and maintenance.
- Auto-tune functionality, allowing the Pod to re-calibrate if the environment changes or roadway shifts or buckles.
- Three axis magnetometer with dual sensors in the Z-axis. Dual sensors in the most important axis provides redundancy and improved accuracy.
- Installation is quick, with minimal road closure duration:
  - Cut a hole that is 4.0" to 4.5"D x 2.5"D, using a diamond tipped drill bit.
  - Dab of epoxy in the bottom of the hole.
  - Set Pod in the hole, with upper edge 3/8" from roadway surface.
  - Fill balance of hole with epoxy.
- Relocatable and battery replaceable.

Access Point and Antennas

Mounted on an intersection pole or mast-arm, the Access Point and Antennas provide two-way wireless communication between the Pod and Base-Station.

- Band straps to the pole, within line-of-sight of the control cabinet. A wired connection is also available if there is occlusion.
- There are four (4) radios – three (3) to broadcast to Pods and one (1) to broadcast to the Base Station.
- The omni-directional antenna covers all Pods located at the intersection. Long-range directional antennas are used for advance detection where Pods are located up to 700 feet away. These antennas are typically mounted on the mast-arm and are mounted back-to-back. Use of these long-range antennas eliminates the need for a repeater.

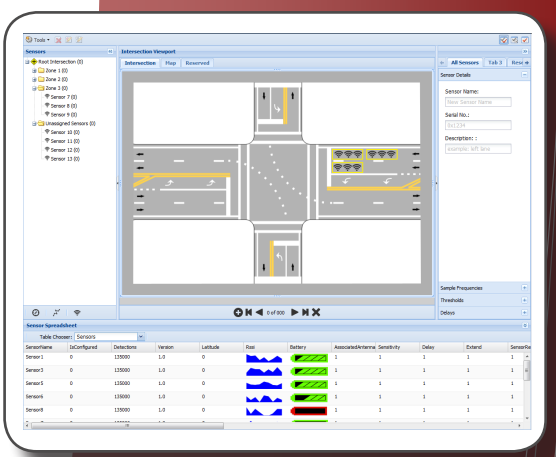
> "The Valence Pod is quick to install and easy to use."
>
> *Angelo Grasso*
> *Director of Public Works*
> *City of Galveston, Texas*

Base Station

Located in the control cabinet, the Base Station has the computing power of a full ATC controller, providing data processing and storage.

- SDLC connection for TS2 cabinets – allows direct connect and eliminates need for loop detector racks.
- Can emulate one to four BIU's, or run in parallel with loops and other forms of detection.
- Detector card interfaces with Caltrans cabinet.
- Either wired or wireless communication to the Access Point.
- Can support 130+ Pods per intersection.
- Linux operating system.
- Ethernet Port and USB connection.

Pod Connect



The Pod Connect is a graphical user interface (GUI) that can be easily accessed from a web browser, simplifying the process of configuring, monitoring, and reporting the Valence Pod System.

- May be conveniently accessed from tablets and smart phones.

How does a magnetometer or magnetic sensor work?

It senses the disturbances in the earth's magnetic field due to the presence of a car or motorcycle. There are algorithms that interpret this disruption to characterize it into meaningful and reliable data.

How does the Pod compare to other forms of detection?

Pod vs. Loops

- Much simpler installation process.
- Wireless - no cabling needed.
- Because of its small and durable form-factor, it is significantly less subject to a roadway breach due to movement in pavement.
- Much more durable and not subject to degradation in the roadway.
- Smart – can be grouped into larger detection zone or used as an individual point.
- Directional, capable of providing the direction of traffic flow.
- If there is a failure, it may be diagnosed through the web browser and the pods re-configured to work around the problem - without going into the field.
- More economical.

Pod vs. Video

- Pod response time is quick, allowing it to be used for Detection-Control System (DCS) for dilemma zone management.
- More economical.
- Accurate enough to be used for vehicle counts.
- Not affected by:
  - Shadows
  - Reflections
  - Winter white-out conditions
  - Dirty or smudged lens
  - Salt build-up on lens (common in coastal towns)
  - Vibration on mast arm due to wind
  - Re-direction/aiming due to storms

ABOUT TRAFFICWARE

Trafficware specializes in researching, designing, and developing electronic equipment and enterprise software designed to enhance the transportation industry. Our industry expertise comes from:

1. Hands on experience attained while solving traffic management challenges across the country since 1979.
2. Our in-house team including: Professional Traffic Engineers, Hardware and Software design and development staff, Manufacturing Personnel, and Customer Service/Field Application Engineers.
3. Regular dialogue with our customers to address their real-world operational issues and future traffic management requirements.

Trafficware manufactures a full line of traffic equipment in its 90,000 square-foot technology center located in Sugar Land, Texas. In over three decades of manufacturing in the USA, our products have earned a reputation for unmatched quality and reliability.

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