

# The newave® smartShelf™

A major RFID technology advancement to monitor retail inventory on-shelf in real-time and no item-tags are required



## smartShelf can help prevent Out of Stocks (OOS) without needing to tag each individual item.

When an item leaves the shelf, our patented “smartShelf” sees it even when it is not tagged. smartShelf places the tags on the product pusher, the spring of the pusher blocks the tag until an item is removed and the tag is exposed to be read with 99+% read rate accuracy. There is no need to tag items, so you get all the benefits of an RFID solution, without the added labor, item tag and maintenance costs.



## Dramatic Reductions in Out of Stock (OOS)

Based on criteria set for low inventory limits, smartShelf signals an immediate alert to appropriate personnel to restock specific items in a timely way before they are OOS. In real-world in-store tests, on shelf product availability improved by nearly 70% and OOS were reduced by over 60% once personnel were trained on the system.

| LowStock Occurrences Report                  |              |        |                                  |  |   |                     |       |        |  |
|--|--------------|--------|----------------------------------|--|---|---------------------|-------|--------|--|
| View of all occurrences of LowStock by store |              |        |                                  |  |   |                     |       |        |  |
| Summary By Product                           |              |        |                                  |  |   |                     |       |        |  |
| Product #                                    | SKU          | Size   | # of Times A Facing Was LowStock | # of Times All Facing Were Simultaneously LowStock | Total Minutes All Facing Were Simultaneously LowStock | Low Stock (Minutes) | Stock | Facing |  |
| 10   | Product #010 | 250 ml | 1                                | 0  | 0   |                     |       |        |  |
| 11   | Product #010 | 250 ml | 1                                | 0  | 0   |                     |       |        |  |
| 12   | Product #222 | 250 ml | 0                                | 0  | 0   |                     |       |        |  |
| 13   | Product #222 | 250 ml | 1                                | 0  | 0   |                     |       |        |  |
| 14   | Product #222 | 250 ml | 1                                | 0  | 0   |                     |       |        |  |
| Occurrences By Product                       |              |        |                                  |  |   |                     |       |        |  |
| Product #                                    | SKU          | Size   | Low Stock At                     | Restocked At                                       | Amount of Time Low Stock (Minutes) [This Report]      | Low Stock (Minutes) | Stock | Facing |  |
| 10   | Product #222 | 250 ml | 2016-08-07 09:42:16              | 2016-08-08 21:43:13                                | 1303  | 2150                |       |        |  |
| Occurrences By Pusher                        |              |        |                                  |  |   |                     |       |        |  |
| Product #                                    | SKU          | Size   | Low Stock At                     | Restocked At                                       | Amount of Time Low Stock (Minutes) [This Report]      | Low Stock (Minutes) | Stock | Facing |  |
| 10   | Product #010 | 250 ml | 2016-07-08 10:04:41              | NA   | 1439  | 1011                | F502  | 18     |  |
| 11   | Product #010 | 250 ml | 2016-07-31 21:43:24              | NA   | 1439  | 11656               | F502  | 10     |  |
| 12   | Product #010 | 250 ml | 2016-08-02 17:28:15              | NA   | 1439  | 5011                | F502  | 12     |  |
| 13   | Product #222 | 250 ml | 2016-08-05 10:15:42              | 2016-08-08 21:43:13                                | 1303  | 5007                | F503  | 18     |  |

## smartShelf works for Theft Prevention too

Loss prevention personnel receive an immediate alarm message when an unusual (as defined by the end-user) number of items are taken off the shelf signaling a theft is taking place. This event can be backed-up by a video capturing the action at the shelf. smartShelf in real-world tests reduced theft of a popular energy drink from 30% to 3% in just three days. Alert response is determined by the end-user, for example, “customer assistance needed at (item location)” with follow-up by appropriate store personnel.

## Key Features and Benefits of the newave smartShelf

### Accuracy and Timely

- 99.9% read rates provides a high degree of confidence in data accuracy
- 10 second alert reliability to any authorized smart device
- Instant visibility to OOS and shoplifting activity
- Data gathered offers business insight not previously available, in any desired form and timeframe.

### Versatile

- Can be retrofitted and installed within hours to be operational and can be easily powered up, e.g. via POE
- Can ensure planogram compliance and optimization
- Readily scalable and can be linked to ERP or as a “black box”
- Data is highly secure
- If it can be pushed smartShelf can track it

### Efficient

- No recurring label tag costs or costs to tag
- Attractive Return on Investment (ROI), in months not years
- Simple to use barcode scanner for easy installation, maintenance and planogram adjustments



Small Items



Large Items

## This Solution Provides Real Time Visibility to Your Shelf Inventory via any smart device as well as the capability to prevent OOS!

- Real time information on Low Inventory, OOS, Shelf Movement, and needed Replenishment
- Detailed information on shelf sales by item, season, week, day, and time of day
- Ensures Planogram compliance and effectiveness
- Real time inventory analytics are easily customizable and can be available in timely reports (see the Smart Shelf presentation for actual report samples).  
<http://www.newaverfid.com/RFID-Solutions/Smart-Shelf>

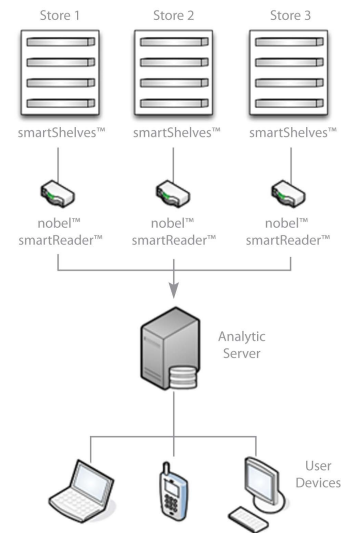
newave sensorSolutions Innovation Center

Phone: 888.677.7343 | 9011 Heritage Drive | Plain City, Ohio 43064  
www.newaverfid.com | sales@newaverfid.com



## How smartShelf Works

- Patented wave® antennas installed on or under the shelves instantly detect product movement.
- Data from the wave is transmitted wirelessly to our patented nobel™ reader installed under the shelf.
- The nobel has an embedded small board computer that collects, processes, compresses and sends the resulting data to a highly secure server then to the end user in any desired format and frequency desired.
- The nobel monitors the inventory movement detected by wave antennas.
- In-store alerts are triggered when inventory conditions occur such as Low Stocks, ORC sweeps, or restocking. These alerts can also start recording video of the shelf area if a camera is installed.
- Alerts can also be sent over the PA system, text message, or email.



## Major smartShelf System Components (Quantity varies based on # shelves, product sections, and product size)

- wave® antennas (vertically mounted or integrated into a shelf)
- nobel™ smart reader
- Product Pushers
- Product Dividers and Front Fence
- Cables
- Wireless Bar Code Scanner
- Wifi Module and internet connectivity



## The end result: Customizable Information

- Real Time Information for any desired time frame, data is highly secure
- Item Low and Out of Stock condition, alerts, time and duration
- Out of Stock Occurrences by SKU
- Restocking compliance
- Item Movement on Shelf
- Planogram compliance and Effectiveness

| Manufacturer | # pushers per SKU | Total Items Sold in 7 days | Total Restock Order in 7 days | Total Items in Stock | Total 7 days Out of Stock (by) | Total 7 days Restock (by) | Total 7 days Move (by) |
|--------------|-------------------|----------------------------|-------------------------------|----------------------|--------------------------------|---------------------------|------------------------|
| P1           | 4                 | 2312                       | 183                           | 1                    | 183                            | 0.75                      | 1                      |
| P1           | 4                 | 1895                       | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 4                 | 1665                       | 632                           | 0                    | 231                            | 1.62                      | 0                      |
| P1           | 4                 | 1492                       | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 4                 | 139                        | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 4                 | 121                        | 638                           | 1                    | 638                            | 5.44                      | 0                      |
| P1           | 4                 | 118                        | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 4                 | 88                         | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 3                 | 85                         | 338                           | 1                    | 338                            | 8.91                      | 0                      |
| P1           | 3                 | 72                         | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 3                 | 48.5                       | 34                            | 0                    | 4.86                           | 27.64                     | 0                      |
| P1           | 3                 | 45.5                       | 33.0                          | 0                    | 0                              | 29.0                      | 0                      |
| P1           | 2                 | 36.5                       | 33.0                          | 0                    | 0                              | 3.0                       | 0                      |
| P1           | 2                 | 36                         | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 2                 | 34.2                       | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 2                 | 32                         | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 2                 | 28                         | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 2                 | 27.5                       | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 2                 | 22.5                       | 0                             | 0                    | 0                              | 0                         | 0                      |
| P1           | 2                 | 22.5                       | 32.82                         | 1                    | 32.82                          | 25.24                     | 0                      |
| P1           | 2                 | 22                         | 32.82                         | 1                    | 32.82                          | 6.82                      | 0                      |

## About newave®\*sensorSolutions, llc:

The newave® sensorSolutions company is a leading provider of optimized solutions for today's most challenging item-level Radio Frequency Identification (RFID) needs. The company develops industry-standard RFID technology based on the patented wave® antenna that sets a new standard for accuracy, versatility and efficiency. The wave is the first and only antenna specifically designed to be used for item-level RFID solutions. newave's core technology was developed by the world-class Electro Science Laboratory (ESL) of The Ohio State University, a pioneer in RF research and development, under the direction of newave's Chief Technical Officer (CTO) and is produced in partnership with Wistron NeWeb (WNC), a Taiwan-based global leader in antenna manufacturing. The newave management team leverages a strong technical and international business heritage in a variety of industries for accomplishing its mission of providing optimized solutions to today's greatest RFID challenges. For more information, please visit us at [www.newaverfid.com](http://www.newaverfid.com).

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**newave sensorSolutions Innovation Center**

Phone: 888.677.7343 | 9011 Heritage Drive | Plain City, Ohio 43064  
[www.newaverfid.com](http://www.newaverfid.com) | [sales@newaverfid.com](mailto:sales@newaverfid.com)

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 superior  
 rfid accuracy