



# SOLID WASTE MANAGEMENT AND DISPOSAL: CONSIDERATIONS AND RECOMMENDED PRODUCTS

## An Application Note

Every year, an estimated 1.3 billion tons of solid waste is generated around the world. According to the World Bank, solid waste is expected to increase to 2.2 billion tons by 2025. Environmentally sound waste management is one of the key elements for sustainable global development. The three main entities that play a major role in the management and handling of solid waste include:

- Equipment and machines such as garbage trucks, refuse containers, dump trucks, compactors, balers, conveyor systems, etc.
- Workers who operate equipment and oversee the entire process from collecting to disposing
- Facilities where solid waste is collected and sorted for recycling or further processing, such as for the production of energy and methane gas

As would be expected, waste handling is a dirty business, so these entities must be able to perform in harsh, temperature-varying environments with high levels of shock, force and vibration. Solid waste also has the potential to be hazardous and must be handled and disposed of properly to avoid contamination or bodily injury.

## RECOMMENDED PRODUCTS

### **MICRO SWITCH Heavy-Duty Limit Switch**

For superior performance in industrial applications, Honeywell precision snap-action switches are sealed in rugged housings and tested to withstand repeated use.

### **Limitless™ WLS Heavy-Duty Wireless Limit Switch**

Honeywell wireless switches have the same mechanical life, temperature ratings and sealing as MICRO SWITCH products, with the added benefit of 802.15.4 point-to-point wireless communication technology.

### **MICRO SWITCH Cable Pull Safety Switch**

Part of Honeywell's broad portfolio of safety switch solutions, cable pull switches provide safety stop capabilities and perform consistently even in varying temperatures.

## APPLICATIONS

### Refuse Trucks



Refuse trucks have an opening at the rear where the waste collector throws the garbage bags or empties the garbage bins. An articulated blade gathers the refuse deposited at the rear opening, and pulls it inside. These vehicles have compactors on board that compress the solid waste into compact pieces, which is then pushed into the loading hopper inside the truck. In some refuse trucks, the solid waste in the loading hopper is further compressed against the side walls.

In this application, an industrial limit switch can be positioned to monitor and control the safe travel of the blade. The NO/NC contacts of the switch can be wired to the control system of the refuse trucks so that if there is an unsafe or over-travel of the blade, the switch will actuate and break the power circuit of the blade.



For refuse trucks that use a mechanical arm, a limit switch can be used to prevent over-travel. A second limit switch can be positioned in the grasping lever to measure and control the amount of force being applied to the garbage bins to avoid damage.

Wireless limit switches work well in these refuse truck applications because there is no need for additional wires and conduits.

### Waste Compactor



In the waste compactor, the refuse is fed via a chute into a chamber and when a certain pre-determined level is reached, a hydraulically actuated or mechanically actuated metal plate applies force to the material in the downward or horizontal direction. The operator then disengages the hydraulic compression and opens the collection compartment door to take out the heavily compacted solid waste.

Heavy- or medium-duty industrial limit switches can be installed at proper locations in the compactor to stop the downward plate. If the electrical-hydraulic system malfunctions or if a mechanically actuated system exerts more than the recommended compression force, the limit switch will trigger and cut off power to the compactor power circuit.

### Conveyor



Waste management facilities have conveyor systems for recycling and waste separation and distribution. There are workers operating these conveyor systems as part of their daily jobs as well as another group of workers who perform service and maintenance activities on the equipment. Regulatory organizations

such as the Occupational Safety and Health Administration (OSHA) require safety mechanisms to be in place for industrial conveyor systems so that if for some reason there is an issue such as a system malfunction or a worker's clothing getting stuck, they can pull a cable pull safety switch, if available.

### MICRO SWITCH Heavy-Duty Limit Switch

#### Features



- Three series offer rugged, die-cast body and epoxy coating
- Sealed to NEMA 1, 3, 4, 4X, 6, 6P, 12, 13 and NEMA IP65/66/67
- Type 316 case stainless steel body available
- Multiple mounting and actuator options
- Boss-and-socket head design for secure head-to-body retention
- All-metal drive train
- UL, CSA, CE, CCC approvals

### MICRO SWITCH E6/V6 Series Limit Switch

#### Features



- Zinc housing with electrostatic-applied epoxy coating provides enhanced durability
- Sealed actuator versions available for wet or particulate environments
- MICRO SWITCH BZ basic switch element provides increased repeatability
- Precision switching of electrical and mechanical operating characteristics
- Wide variety of actuator options, circuitries, connection and mounting options
- UL, CSA, CE approvals

### Limitless WLS Heavy-Duty Wireless Limit Switch

#### Features



- Enables control and/or notification from remote parts where wiring is too costly or not possible
- Eliminates issues with wire connection integrity and cable degradation on moving equipment
- Limit, eyelet pull and non-contact switches along with single switch adapters allow for multiple wireless solutions to accommodate almost any application

### MICRO SWITCH Cable Pull Safety Switch

#### Features



- Models available for both short and long conveyor systems
- Multiple contact configurations available
- Bright, multi-cluster high-intensity LED status indicator light
- Large wiring cavity with straight-through wiring
- Electrostatic, epoxy-coated, die-cast zinc housing



### **WARNING IMPROPER INSTALLATION**

Consult with local safety agencies and their requirements when designing a machine control link, interface and all control elements that affect safety. Strictly adhere to all installation instructions.

**Failure to comply with these instructions could result in death or serious injury.**

#### **Find Out More:**

For more information about sensing and control products, visit [sensing.honeywell.com](http://sensing.honeywell.com), call **800-537-6945** or email inquiries to [info.sc@honeywell.com](mailto:info.sc@honeywell.com).

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