Disney World’s Magical Solid Waste Disposal System

From the desk of...

Peter H. Lulien

Walt Disney World "Avacuates" its refuse!

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Walt Disney World is showing the rest of the world that there is a more economic and hygienic way of removing and disposing of solid waste material through innovative planning and engineering.

The method in use at the showcase vacation resort near Orlando, Florida is an automatic waste disposal system designed to carry solid waste at speeds up to 60 miles per hour to a central collection point.

This automated vacuum collection system is the largest and first operating system of its kind in the United States, and is actually a prototype. Other such units are now being planned for many projects all over the country, ranging from hospitals to housing developments. The ultimate aim is the same — the efficient, economic, and clean removal of trash.

Walt Disney and his brother, Roy, both knew the first such system would be expensive and present unique problems. But both wanted a change from the old method of putting trash out in front of the house in the morning, having a noisy refuse truck pick it up, spilling trash all over the street, then having a street sweeper follow along, which would still be retrieving the empty trash cans that night.

Their foresight in the use of an automatic waste disposal system eliminates most of the inconvenience and problems many of this country's large institutional complexes have with trash collection.

The automated vacuum collection system consists mainly of a network of 20-inch transport pipes originating from different points in the Vacation Kingdom, and leading to a central collection building where the bulk trash is compacted. The compressed refuse is then trucked to an incinerator.

Located in this central building are three 200-horsepower exhausters which create the 60-mile-an-hour vacuum. Only two of these exhausters operate at any given time, leaving one in reserve. Each exhauster is permitted to run for a certain period of time before it cuts off and is replaced by the idle exhauster. This system enables each exhauster to operate for an equal period of time.

The transport pipe branches off into 16 different depositories (charging stations), strategically placed throughout the theme park and the Contemporary Resort hotel. Each of these stations is divided into two sections, the upper and lower level. The upper level is the actual dumping station and is tapered from 20 inches to 30 inches, thus allowing easy emptying of cans. This end of the cylinder has both a warning light and a safety-lock lid built into the system. When the depository is about to be activated, the light comes on and the lid automatically locks.

The charging station is housed in a small room which is large enough for storage of the fiberglass trash container liners not in use. A water hose in each room is used to keep the room and cylinder clean. Each station is cleaned with a disinfectant daily.
The lower level includes the section of pipe connecting the individual station to the main line. Also found in this lower level is the control box for that particular station. This box has two switches which control the discharge valve and are turned off position during cleaning to ensure safety.

The automated vacuum collection system is operated by computer, with the master control panel located in a central computer room. Actually, the system can be operated manually or by computer and is programmed to cycle every 15 minutes during peak periods. The time factor can be changed by reprogramming to different intervals. Also located on the control panel are a series of warning lights which indicate cycle interruptions, mechanical failures, and virtually any problem that may occur. In turn, the operator can notify the maintenance crew in a matter of seconds and tell them the probable nature of the problem.

Although the system is somewhat complex, the idea is still quite basic—moving a large quantity of bulk trash at great speeds to a central location with the least amount of effort. At present, the volume of trash that can be transported in one hour is five tons. The average guest at the Magic Kingdom creates one-and-one-half pounds of trash during his stay. That figure, multiplied by 10.7 million guests in Walt Disney World’s first year of operation, is a staggering 16 million-plus pounds of trash, not including commercial packaging. The man-hours that would be involved in getting rid of that much trash in the normal manner are staggering.

Other compactors are used on the property in areas where the automatic waste disposal system is not installed. This refuse also is trucked to Walt Disney World’s advance trash incinerator facility, which consists of two incinerators. The building which houses them has space for additional units, if needed. Wet scrubbers, using water from the project’s three-stage sewage treatment facility, and filters, reduce smoke stack emissions so that only steam is emitted from the stacks. The scrub water is recycled back into the waste water system and the fly ash captured by the scrub water is used as a flocculant, to collect the effluent.

As much as 100 tons of solid waste material has been disposed of in a day by the incinerators.

*Trash is deposited in automatic disposal system charging station, beginning a journey that culminates in modern incineration. The brain of the system, the main control panel (top of opposite page), is checked by Ted Crowell (left), vice president of Facilities Division, and Bob Mathesion, vice president of Operations. Trash is placed into charging station (opposite page, bottom) and travels through a network of pipes at 60 miles an hour to a central collection building. Maintenance inspector Frank Cornelius, left (center photo, this page) and Wayne Culver, supervisor of the Custodial Department, check hydraulic device on lower level of system’s charging station. Refuse which has been transported from 16 depositories in the Vacation Kingdom winds up in central collection building (bottom photo). It is compacted and trucked to pollution-free incinerator. For information on the automated vacuum collection system, circle number 4 on reader service card.*
AVACUATE your refuse!

Aavacurate (vāˈvə-kər-ət) [csw. Automated Vacuum Collection (AVAC)] evacuation

The rapid, efficient and hygienic collection of materials by means of a pneumatic piping system, whereby the airstream is introduced by vacuum-generating equipment near the end point of the piping network.