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A New Approach To Installing Blower Systems

Upgrading the aeration system in a wastewater operation is typically burdensome because of the design work, permits, construction, and commissioning required for a structure before a new blower system can be installed. This time-consuming process means municipalities need to wait that much longer to commission and realize the benefits of a planned upgrade.

Courtesy of Kaeser Compressors, Inc.

Even when an existing facility can accommodate new blower equipment, the result is often less than ideal. Users will often cram equipment into spaces that are poorly ventilated and don't provide enough room and lighting for proper maintenance. This reduced access puts additional strain on equipment, thereby shortening its service life.

An affordable, purpose-built blower system delivered in its own secure, weatherproof enclosure can be produced faster and provides a strong, financially viable alternative. These custom engineered solutions can typically be designed, sourced, constructed, delivered, and commissioned faster than construction contractors can secure a traditional building permit.

The Downfall Of Conventional Approaches

Population shifts that necessitate a change in aeration requirements or older equipment that no longer performs efficiently can prompt the need for new blower systems at wastewater treatment plants sooner than expected. In either case, the existing facilities may have been designed around specific machines and will likely not be adequate for the new, modern replacement systems.

In these situations, operators typically work with their consulting engineers to create specifications for equipment, then initiate a separate design project for the space after the equipment is specified. From there, the process can take many months, as it requires a series of permits, construction, inspections, and final approvals. Managing the schedule of contractors and subcontractors working the project tends to be difficult and commonly prone to unforeseen issues, such as weather delays and additional expenses.

Conventional projects also require additional space onsite for materials, and each blower has needs such as power, ventilation, and piping. Additionally, design aspects of the blower are subject to incorrect interpretation when the facility is being built by a third party (i.e., the system installation does not meet manufacturer specifications).

By comparison, the process of creating a

custom engineered solution is streamlined. It typically starts with the municipality providing detailed specifications about the aeration needs and specific site requirements to a full-service vendor, such as Kaeser Compressors, which can quickly offer plans and a quotation. The buildout can then be performed in a controlled environment similar to that of a prefabricated home.

The units are considered portable, so the permit process does not apply, and they arrive at the wastewater plant with everything in place and having been tested prior to delivery. The enclosures are designed to make the most efficient use of the space possible while protecting the equipment from weather as well as ensuring proper ventilation and service access. Additionally, because they are built by the blower manufacturer, there are no specification issues when it comes to the compatibility of the equipment and the structure.

Custom engineered solutions arrive ready-to-use, so the units can be dropped in place and start operating as soon as power and the process piping are connected.

Building The Business Case

A common misconception is that the cost of a custom engineered solution for aeration is significantly greater than the traditional approach. However, when municipalities consider the total costs as well as risks, time, and labor involved with a renovation or construction of a new structure, the numbers are favorable toward the turnkey system. Eliminating the risks of conventional construction — the time and cost overruns that cannot be projected — is one of the biggest values in custom engineered solutions.

With a custom engineered solution, the vendor will act as a single source for the project and be able to handle every step of the process — including drawings, documents, and wiring diagrams — with in-house staff. Because it is a complete package, the unit will also come with a warranty. The traditional process, by comparison, may offer warranties but they will be separate for the structure and for the blower equipment. The latter can be problematic if the blowers aren't operating at manufacturer specifications because of facility constraints.

Other benefits to a custom engineered solution include the ability to adjust for ambient conditions, such as regional weather variations or seismic activity, and flexibility to create multiple modular pieces that can be connected in the field if the unit would be too large to transport on one vehicle. ■