

Philadelphia School District

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Tom McGlinchy,
Chief Operating Officer, School
District of Philadelphia

School District of Philadelphia Facilities Department uses Invensys Asset Performance Solution

by Invensys Operations Management

Goals

- To get a 50 percent increase in the number of work order tasks to be accomplished in facilities maintenance;
- Manage the entire work order process, including scheduling and materials availability;
- Better way to track staff activities, spare parts inventories, and work orders.

Challenges

- Upgrade aging system, reduce operation costs and increase service levels with a greater accountability for a \$100 million annual capital budget.

Solutions and Products

- Avantis.PRO.

Results

- Doubled productivity from 50,000 to 100,000 work order tasks a year;
- Reduced average cost of completing a task down from \$627 to \$400;
- Expected savings to be almost \$10 million in the first year;
- Improved average operational cost of \$5.53 a foot, compared to other government facilities cost of \$5.91 per square foot;
- Increased ability to monitor parts inventories and purchasing activities so mechanics no longer have to wait for parts.

Philadelphia, Pennsylvania – Philadelphia has long been known as America’s ‘Cradle of Liberty’. It is famed for the Liberty Bell, Independence Hall, America’s first capitol, and historic homes dating back to pre-revolutionary times. The city has also received worldwide notice for the famous graduates of its well-known High School for the Creative and Performing Arts. Thanks to the success of its alumni that make up the group Boyz II Men, that high school is one of the most famous in the nation.

The school probably would not have existed, much less enjoyed such public attention, without the behind-the-scenes work of thousands of employees in the School District of Philadelphia’s Facilities Department. The Facilities Department was responsible for all the work needed to turn an old, abandoned, rundown library into the architectural classic it is today. The High School for the Creative and Performing Arts is now world-renowned for being a unique historical facility and employing an excellent faculty, both of which help to attract outstanding students from all over the city.

The people of the district’s facilities staff are the unsung heroes of the massive city school district. They are responsible for operating and maintaining the 337 buildings that make up 267 school campuses throughout Philadelphia. As important as teachers and administrative staff are, they would have no place to educate city youth if it were not for the Facilities Department.

Thanks to a major system upgrade that came online in 2001, Philadelphia now has one of the most advanced facilities operations in the nation.

Maintaining Old Facilities and Systems

With such a large and diverse set of facilities to manage, the district’s chief operating officer, Tom McGlinchy, has been faced with many obstacles in making the most efficient use of the 400-plus building engineers, 400 mechanical trades people, and 1,300 cleaning personnel in the department. It is not easy to be efficient when you are responding to 100,000 or so work requests for everything from replacing a light bulb or fixing a plumbing leak to keeping heating and air-conditioning systems in tip-top shape for facilities with an average age of almost 70 years.

This used to be a real problem because the district could not even measure worker productivity

accurately. The old mainframe-based facilities system could only account for about 44 percent of workers’ available time on the job. That all changed in 1995 when a private-sector task force conducted an independent study of all school district business operations. The task force knew that systems needed to be upgraded, not only to become more efficient, but also to head off any Y2K problems.

The facilities task force reviewed all operations, from transportation to facilities cleaning and maintenance, food services, human resources management, manufacturing information systems, and purchasing. The study came up with some serious questions for the Facilities Department. On an annualized basis, about 51,000 trade service tasks were being completed at an average cost of \$627 per task. The task force concluded that the operation was high-cost and service levels were too low.

The choice was to either upgrade operations or outsource the function. They decided to upgrade and the targets were substantial. Newly defined goals included a projected 50 percent increase in the number of work order tasks to be accomplished in facilities maintenance; better management of the entire work order process, including scheduling and materials availability; and greater accountability for a \$100 million annual capital budget. In addition, the department sought a better way to track staff activities, spare parts inventories, and work orders via a new enterprise asset management computing system so that jobs would be completed and not fall through the cracks.

“One of the major criticisms of how we did work in the past was that requesters would ask for something to be done, and we’d generate a paper-based work order that would promptly disappear into a ‘black hole’ of a filing system. No one would be able to find out where the work order was or what the project status was. All too often we’d wind up with multiple requests for the same repair job, only we didn’t know it,” said Tom McGlinchy, Chief Operating Officer.

After a complete review of software packages that were available to do the job, the School District of Philadelphia selected the Avantis® solution from Invensys Operations Management. The district hired the System Integrator Management Results Inc. in nearby Pottstown, PA, to design and install the system.

The school district began replacing its old systems with the Avantis.PRO® product in 1998. The district

installed a new centralized database system at department headquarters, and then built a network of PCs via Microsoft® Windows® Terminal Services at individual schools for building engineers to use in coordinating all parts, labor, and accounting activities.

McGlinchy said, *“The job was daunting, to say the least, because it involved not just adding computer systems, but a whole rethinking of our approach to managing facilities. We had to set up new procedures for managing our work before we could computerize it effectively.”*

Industrial Approach to Maintenance

“We decided to take a whole new approach to the way we worked, treating our facilities systems more like a manufacturing industry would, rather than approaching it like a government agency would,” said McGlinchy. *“Traditionally, a system like this is used exclusively in a manufacturing industry. We are one of the first school districts anywhere, especially of this size, to take on a computerized management maintenance system (CMMS) package with the power of Avantis.”*

The new system is built on several major features of the Avantis.PRO product. The district makes use of the ‘entity management’ concept to track every room in every building and every piece of equipment at each school. So far, the staff has created more than 100,000 ‘entities’ for tracking anything that may need to be repaired or serviced. They use the Work Management feature not only to ensure that maintenance people have control of incoming work, but that people who request a repair also can track work in progress.

According to McGlinchy, *“We began our pilot program three years ago and almost immediately saw an increase in productivity. We went from 51,000 work orders processed in one year to more than 50,000 in the first six months under the new system. I’d call that a significant gain — and we now project that we’ll perform well over 100,000 work tasks in the current year.”*

The system provides complete instructions for repairing critical equipment and maintaining safety rules, right on the building engineers’ PC screens.

“In addition, every task that’s done is tracked on the computer to provide a detailed history of equipment

information in the central database, which helps us conduct proper reliability analysis so we can judge how to continue improving workforce efficiency,” said McGlinchy.

This capability has allowed the department to combine and reduce the number of trade skills that people can perform, so supervisors can assign personnel more efficiently.

McGlinchy commented, *“Our department included 22 different types of trade professionals. For instance, within the electrical trade, we had fire alarm systems, elevators, time clocks — all of which had specific mechanics. As a result of our last collective bargaining agreement, we’ve reduced the number of trades from 22 to 8, with multiple organizations within those 8. We can train mechanics and certify them in various disciplines so that now, when we go to schedule a mechanic for a job, we can compare the task and the skill requirements in the Avantis database and put the appropriate person in a building to do multiple tasks.”*

This has even helped eliminate much of the travel time from one building to another, since a single mechanic can now handle more flexible assignments.

McGlinchy added, *“Another huge advantage we’ve received from this system is the ability to monitor parts inventories and purchasing activities so that mechanics won’t have to wait for parts, and the district can make more efficient purchases of needed equipment. Through the Avantis system we’ve been able to reduce our central inventories, yet still ensure that staff members have what they need to do the job.”*

Proof in the Results

The results of using the Invensys Operations Management Avantis solution have been excellent. The Facilities Department has doubled its productivity from 50,000 to 100,000 tasks a year — and with a smaller staff. The average cost of completing a task has come down from \$627 to just \$400, so it is saving money at the same time. It is all because the system is so easy to use that everyone makes use of it.

“This is an organization where more than 1,000 people are using Avantis, and we could be talking about 2,000 workers over time,” said McGlinchy. *“The striking thing about the product has been its*

ease of use and its configurability to the problem. The Avantis solution clearly has its roots in the manufacturing sector, but an institution as large as the School District of Philadelphia is equally dependent on its assets to make sure that children are properly educated. The importance of those assets has driven the district to want to manage those assets more professionally than they historically had been doing.”

The early results of using the Avantis solution have already made the Facilities Department more efficient than other government and commercial buildings in the city. The school district's average cost per square foot to run its buildings is just \$5.53 a foot, according to BOMA (Business Owners and Managers Association) standards. By comparison, other government facilities in the city cost an estimated \$5.91 per square foot to operate, and the buildings in the city's private sector cost an average of \$6.20 per foot to run.

The Avantis solution has also become much more than just a maintenance system for the School District of Philadelphia. Its deployment is being expanded to many other areas of district operations, including the busing of more than 30,000 students each day and the serving of 45,000 breakfasts and 160,000 lunches each day.

One of the truly unique uses for the Avantis solution is in the education process itself, which will be self-

perpetuating at the School District of Philadelphia. It is now part of the actual building engineering curriculum being taught at Frankford High School. One of the districts building engineers, Robert Donsky, decided to leave the Facilities Department and create a curriculum for teaching 'education for employment' classes in all that is required to become a building engineer.

Donsky suggested that the district offer a three-year course to train students to get their building engineer licenses as part of their high school education. The program was designed to meet two needs. It would offer students a career path that would almost automatically land them well-paying jobs upon graduation, and it would help the school district increase the pool of building engineering talent available to fill its own positions.

The program has been successful, and now the Avantis solution will be an integral part of the curriculum at Frankford High School. The district has budgeted funds and created a computer facility with eight PCs to use in training students. Management Results Inc. has donated the necessary servers and set up the entire system, and Invensys Operations Management has provided a copy of the Avantis solution along with all of the supporting training materials. Therefore, the Avantis solution now has the distinction of being the only automation software ever used to run a school district and be taught by it at the same time.

*This document was realized thanks to the support of:
Tom McGlinchy, Chief Operating Officer, School District of Philadelphia.*