



TEKLA® Structures



TEKLA STRUCTURES IN PRACTICE:
MARYLAND GENERAL HOSPITAL

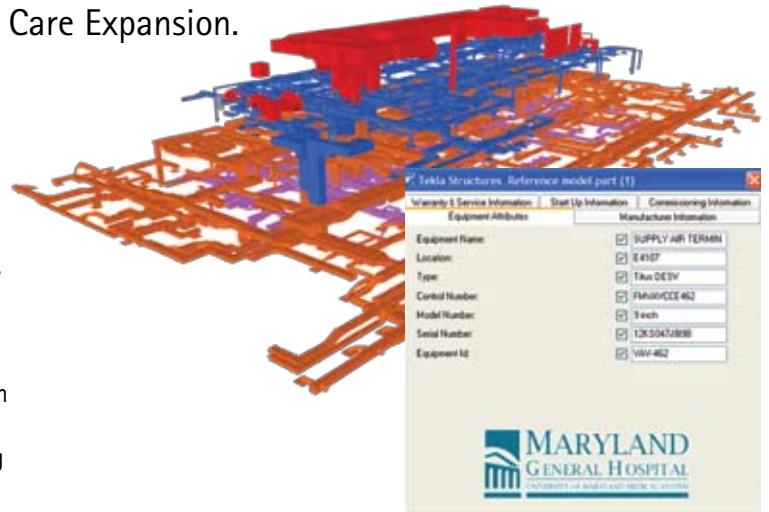


TEKLA Structures

DRIVING THE VALUE OF BIM THROUGH COMMISSIONING INTO OPERATIONS

> Maryland General Hospital (MGH) in Baltimore, Maryland, is best-known for its reputation as a top-notch, university-affiliated teaching hospital. That reputation will most certainly grow with the completion of the \$57 million five-story Central Care Expansion.

> As part of an innovative effort by the construction management team to drive the benefits of Building Information Modeling (BIM) and field-based technologies beyond design and even construction, MGH operations and maintenance staff are now implementing a comprehensive digital documentation, maintenance and preventive care system that is literally changing the way they work.



COMMISSIONING CONCERNS

> As the Central Care Expansion project neared completion, Barton Malow's Corinne Ambler turned her attention to commissioning. This renovation/addition includes a vast array of indoor air handling units, two new 650-ton electric centrifugal chillers and 650-ton cooling towers, temperature and humidity systems as well as the necessary duct work, air handlers, dampers, and fans.

Ambler's job was to gather all the closeout documentation and maintenance information about the mechanical, electrical and plumbing (MEP) systems to pass along to Maryland General Hospital. She says, "Commissioning typically creates binders and binders of information that are not easily managed and updated."

Ambler recalls, "It seemed like a waste not to capitalize on the Building Information Model (BIM) that had already been created by our contractors for coordination by utilizing field-ready solutions such as tablet PCs and field software along with our preferred BIM construction management tool Tekla Structures to leverage data in order to increase intelligence. This streamlines our commissioning and closeout procedures while creating a model with real value for the owner."

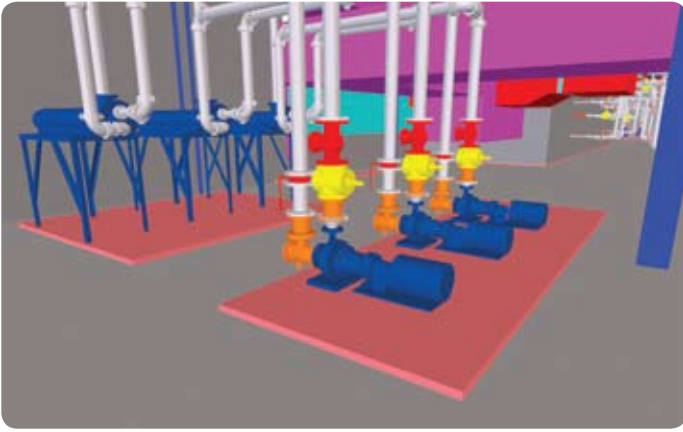
TAKING THE MODEL TO THE FIELD

> Tekla Structures for Construction Management, was used to manage the Building Information Model (BIM), which shows the mechanical system locations and geometry. But, that's not where the value ends.

"The value of the MEP systems models is in the connected data and documents," says Ambler. Her vision went beyond delivering electronic product cut sheets and owner's manuals. The goal was to create a visual, centralized database that compiled field-generated data gathered during construction with electronic closeout files. Then, using the Building Information Model, associate all information and documents with the relevant MEP systems component. This would maximize intelligence and utilization of data throughout commissioning and into facilities maintenance procedures.

"Once the building is complete and our job is finished, the owner should be able to access the database we have created during construction in the field for each piece of equipment with the simple scan of a barcode."

- Corinne Ambler, Project Engineer, Barton Malow



Ambler adds, "I wanted the ability to manage MEP commissioning process in the field and office to eliminate timely data re-entry. Once the building is complete and our job is finished, the owner should be able to access the database we have created during construction in the field for each piece of equipment with the simple scan of a barcode."

With the Building Information Model portion of the implementation in place, Ambler looked to Vela Systems Field Software for the AECO Industry™, bar coding and the F5 tablet PC from Motion Computing.

BEYOND THE MODEL

> Vela Systems software automates the execution and oversight of field activities on construction and capital projects. Instead of carrying a field notebook and paper plans or specs, the commissioning team used Vela software on Motion Computing's F5 tablet PC. Commissioning activities and field reports are completed in the field and then update the BIM.

Each unit in the mechanical system is tagged with a unique bar-code. The built-in barcode scanner on the F5 tablets is used to identify the unit. Within the Vela system, Ambler stored serial numbers, maintenance, warranty and inspections information for every tagged unit.

Ambler says, "All data is compiled on the tablet PC. Then, the information recorded on the tablet PC is synchronized to the Vela server which is synchronized to the Tekla Structures Building Information Model."

MANAGING FROM A MODEL

> Back in the jobsite trailer, Ambler and her team can track the commissioning process. "The BIM becomes a digital dashboard, documenting every step, giving operators a very fast, accurate picture of the exact status of the commissioning process," explains Ambler.

"When the mechanical contractor completes a Functional Performance Test for a pump, the pump's BIM twin turns green in Tekla. When the owner accepts the same pump it turns red."



> *"The same tasks that used to take us days to manage and track, now take just hours."*

- Corinne Ambler, Project Engineer, Barton Malow

"The same tasks that used to take us days to manage and track, now take just hours," she adds.

Once the commissioning process was complete, Barton Malow handed the F5 Tablet PCs to Maryland General Hospital facilities management staff for use in facilities management and operations activities. Using the tablet PC, the MGH team will continue to routinely access the database created utilizing Vela Systems and Tekla Structures for Construction Management software for maintenance and preventative care activities.

STREAMLINING FACILITIES

MANAGEMENT

> One of MGH's goals with the new construction is to achieve energy savings and improve operational efficiency across the new and old building infrastructure.

"It's up to the Support Services team to keep mechanical systems operating at peak performance." Plank says, "At the end of the day, having a technology-driven solution to manage our system and its preventative maintenance systems is critical. The more we do that, the better we look to the Joint Commission for the Accreditation of Healthcare Organizations (JCAHO)."

TEKLA STRUCTURES – INTELLIGENT 3D MODELING

ABOUT BARTON MALOW

> Founded in 1924, Barton Malow Company is an eighty-five year old company providing construction management, design-build, program management, general contracting, technology and rigging services throughout North America. The ISO (quality) certified company has LEED™ Accredited Professionals on staff and is an industry Building Information Modeling (BIM) leader. Niche market specialties include healthcare, sports and special event, educational, federal, industrial and energy facilities. Barton Malow has a staff of 1,200 in 13 offices and is headquartered in Southfield, Michigan. Annual firm revenues exceed \$1.3 billion.

For additional information, visit www.bartonmalow.com

ABOUT TEKLA

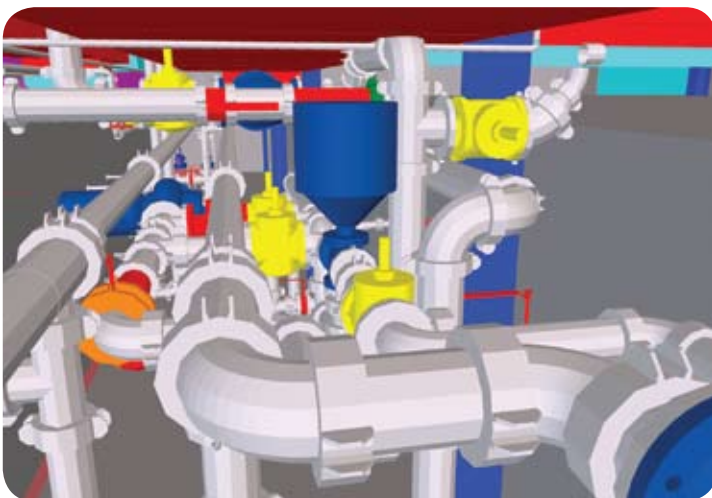
> Tekla's model-based software products make customers' core processes more effective in building and construction and infrastructure management. Tekla Corporation has area offices and partner organizations worldwide. International operations account for more than 80% of net sales. Founded in 1966, Tekla is one of the longest operating software companies in Finland.

> Tekla's technology creates new opportunities for the disciplines in the construction industry: Tekla Structures is the most advanced BIM (Building Information Modeling) software on the market that provides an accurate, dynamic, and data-rich 3D environment



for structural engineers, steel detailers and fabricators, concrete detailers and manufacturers, and construction companies to share.

The highly detailed as-built structural models created in Tekla Structures enable effective visualization and management of any project from sales and bidding to follow-up. Openly integrating model and non-model-based data into the model allows collaborative workflows to streamline the design, fabrication, and construction stages for the highest level of constructability and integration in project delivery. Centralizing project management into the model not only increases productivity in each stage, but also enhances the value of structural modeling throughout the value chain of building.



CONTACT INFORMATION

Tekla, Inc.

114 Town Park Drive - Suite 500
Kennesaw, GA 30144
Tel. 770.426.5105
Toll-free 1.877.835.5265
Fax 770.919.0574

www.tekla.com