

Customer reference

Tekla was the main player for Team Telge in the prestigious Everton FC Stadium project





Overview

Telge Projects Pvt. Ltd. is an ISO (TUV-SUD) 9001-2015 certified structural engineering services & solutions company headquartered at Pune, Maharashtra, India. Their team strength is 100+ engineers with offices in Virginia, U.S.A., Pune and Latur.



Telge Projects is a structural engineering company that offers civil & structural engineering & detailing services to the Architecture, Engineering and Construction (AEC) industry, in the domestic and international market (India, Europe, UAE, Australia, Singapore, USA, Canada, Thailand, UK, etc.). They focus on leveraging the latest & best in BIM technology to deliver their structural detailing services to building contractors, structural consultants, fabricators, & manufacturers across Steel, Concrete and MEP verticals. They have completed 1000+ projects of different sizes & complexities across the globe using Tekla Structures and are well known amongst their customers for delivering quality and on time projects.

Modeling precast elements for Everton Football Club's new stadium

The new Everton Football Club stadium will be situated at Bramley-Moore dock on the banks of the river Mersey – on Liverpool's world-famous waterfront! The football-first sporting arena boasts of a capacity of 52,888 and an eye-catching design which brilliantly blends the modern with the traditional. This will serve as the next home for Everton Football Club and is one of the most eagerly anticipated stadium development projects on the planet.

The £500m stadium at Bramley-Moore Dock is also setting the standard for sustainability, as one of the most environmentally-friendly football stadia ever built.

As the 52,888-seater stadium takes shape, the Club and Laing O'Rourke – the contract partner – are also improving the health and safety of the workforce, and cutting waste, with a pioneering system of design for manufacture and assembly (DFMA).

This entails precast concrete terrace units and external brickwork panels being manufactured under factory conditions, and slotted into place on site, dramatically minimising wastage, improving safety and saving valuable time.

Team Telge's scope of work included different precast elements such as wall panels with different shapes i.e., L walls and Parapet walls. There were different L walls on the North Upper and Lower stands as well as the South Upper and Lower stands.

The scope also included modeling 140 stairs as well as rebar modeling of some of the stairs. These stairs had some critical invisible connections at end supports.

"The scope of the Everton Football Club stadium was huge with several different units of a very wide variety, and only Tekla's constructible 3D BIM model could have made visualizing this structure even possible! Mistakes can be avoided when we can see & plan in 3D and collaborate seamlessly on the same model. Tekla gives us this power to visualize in 3D especially while working on such huge, unique and prestigious projects. At certain end supports in staircases that had critical invisible connections, it was easier to see and visualize the structure because we were using Tekla, and that saved a lot of our time."

- Shraddha Telge, Managing Director, Telge Projects



Tackling some of the key challenges in the football stadium

- Given the nature and massive size of this stadium, the volume of work was huge and the accuracy needed at each step was even greater. The project was highly complex and had very tight deadlines to add to the challenges.Easily define the key sections of your bridge
- Given the nature and massive size of this stadium, the volume of work was huge and the accuracy needed at each step was even greater. The project was highly complex and had very tight deadlines to add to the challenges.
- There were a very large number and wide variety of units included in the projectEasily customize with content from our library
- The stairs had some critical connections and it was difficult to place a rebar at connection area without clashingVisualize and communicate with the model
- Some stairs had difficult geometries at connection areas and it was not possible to maintain the shape codes as given in the inputsUse the model data for asset management
- > The rebar modeling at connection areas was one of the most challenging parts
- The parapet was of a very unique shape due to which different shape codes had to be used



Tekla – Team Telge's 'Star Player' in the Everton FC Stadium project

The project execution team at Telge Projects chose Tekla as the preferred platform to work on this mega project for a number of reasons,

• 3D Visualization:

The stadium structure was very unique given the complexity of the design, the sheer size and the number of different units involved. Tekla's constructible 3D model was the only way to clearly and accurately visualize the structure and this helped the team members to understand the units or geometry properly. In Tekla software, the team could easily show a realistic situation for planning the construction and erection of the structure. The 3D units also helped the team to deliver the rebar work more easily even though there were irregular shape codes.

Due to the 3D visualization, Team Telge could make connections at an accurate position to avoid any errors on-site. For example, the stairs and landings had some critical invisible connections at end supports which was easier to see and visualize due to Tekla and saved a lot of time.

There were many elements with curvature in their geometries throughout the stadium and due to Tekla's 3D visualization the team's work was faster and easier as they could easily see the feasibility of adjacent elements.

Tekla's clash checking capabilities helped the team deliver clash-free model and drawings *(clash-free reinforcements and connections).*



• Time & Effort Savings with Cloning:

One of the most crucial tasks in any project is to deliver the project on time, Tekla helped ensure this!

There were a huge number of elements that needed to be delivered in very short timelines and this included a number of repetitive elements. With Tekla, the team was able to cover a huge quantum of work much faster by utilizing the powerful cloning feature for different inserts, rebars and other elements.

The cloning feature also helped in reinforcement included in the walls which had similar shape codes. The team could



easily copy from one object to another and they only needed to adjust the range of bars which would fit in overall length.

The parapet was of a very unique shape due to which different shape codes had to be used but Tekla provided a single shape code to be applied everywhere, which made the work easier and faster and saved a lot of time, otherwise the team would need to keep doing a lot of calculations manually for the same.

Automated, Updated & Hyper Accurate Drawings:

Due to the realistic and accurate information filled inside the 3D model, it was easy to extract all the drawings readily from the model.

Combined with the cloning feature in Tekla, the project team were able to generate drawings a lot faster. The cloning made sure that the drawing views were already being generated which saved a lot of time in taking new section, etc. and the drawings could be delivered on time. This also helped in controlling the cost of running the project.

And with any revisions/changes being applied across all affected elements in the Tekla model, the drawings were automatically updated and the team could easily access the most up to date drawings at any time.



Since all the different shape codes *(more than 99)* were included in Tekla, the pull-outs were clearly showcased in the drawings of rebars which helped the labour on-site to understand the elements more quickly.

With the CSV files, the team were able to do BBS work faster.

An added bonus was the printing system in Tekla which helped a lot in time saving as the team could conveniently select all the drawings at a time and print to any size of sheet, and they could even save the print style and use it further for every new printing requirement.



Truly Seamless Collaboration:

With a project of this size, there will always be a large number of stakeholders and several team members working together to ensure timely completion. This makes collaboration an extremely critical component of the project delivery to avoid clashes with different disciplines or even within each team.

Using Tekla Model Sharing allowed Telge Projects to assign several employees to work collectively on one model, irrespective of their location. This made it easy for the drafters and modelers to work simultaneously thereby reducing the time taken.



The software also allowed different stakeholders who were involved in this huge project to coordinate well through the informative and real time information available within the constructible 3D model and collaborate with their data and check the status from time to time.

The team could easily share the model with the client by using IFC file format for quick viewing and understanding.

And since the model was on cloud, any changes from the client-side in geometry could be identified quickly by a single tick on 'read-in' and if the project team wanted to show anything to the client, they were able to do so with a single tick 'write-out'. This ensured that the conflicts were negligible and the project team were able to meet the client's expectations very well!

Summarizing their experience of working on this prestigious Everton FC Stadium project, **Mr. Jayesh Tatiya, Project Lead, Telge Projects said,**

"Our most favourite part of employing Tekla Structures for this esteemed project was the power that the software provides for change management. Every project comes with unexpected and unpredictable changes and revisions, and along with it comes a lot of mess and a lot of time consumption to make those changes within extremely tight timelines. Working with Tekla made managing these revisions extremely convenient as we could easily identify which related elements would get affected. With Tekla we could modify/update revisions across all the drawings at a single time. This was never possible using AutoCAD, but using Tekla made our work very easy and allowed our team to score the winning goal in delivering this football stadium project!"



Tekla software by Trimble

Transform the way you work with reliable, detailed, datarich structural workflows for outstanding performance. Build your legacy with truly constructible BIM, and feel the power of Tekla at your fingertips.

Why Tekla

Make the sky your limit and empower yourself to make real change with truly constructible BIM software. It drives more detail and data into structural BIM workflows for a deeper understanding of your designs at every phase. You have the expertise; we have reliable technology. Let's meet the changing demands of your industry, your customers, and the planet together. No matter your role or project size, Tekla can help you transform the construction industry, overcome challenges and achieve outstanding results.

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