



CASE STUDY · DIGITAL TWIN · FLOAT GLASS LINE

Validating a Line-Wide Retrofit Before a Single Component Changed

ECKLEBE built a digital twin of a legacy float glass production line before a full brownfield retrofit, giving the project team a way to validate a complex, line-wide migration before committing it to the physical line.

The Challenge

The retrofit required a complete renewal of the line's control cabinets and automation technology. This included migrating existing automation functions to a new generation platform, redesigning material tracking and data handling, and building a new object-oriented control architecture. With a fixed downtime window for the physical changeover, there was little room to discover integration issues after the line was offline.

The Solution

ECKLEBE built a combined physics-based and behavioral digital twin of the line, modeling drives, positioning, safety logic, and communication behavior against the actual PLC program before it affected physical equipment. The model let the team test the new control architecture's behavior under realistic conditions, including edge cases like supply voltage failures, before the live changeover.

The Results

The retrofit was delivered on time, with zero critical software issues discovered during commissioning. The digital twin gave the project team full transparency into how the new control architecture would behave before it went live, along with early detection of PLC errors that would otherwise have surfaced during the actual changeover.