Ansys Twin Builder

Create and deploy simulation-based digital twin models with Hybrid Analytics for predictive maintenance, performance optimization, and lifecycle management.

https://www.ansys.com/products/digital-twin

Overview

Ansys Twin Builder is a multi-technology platform that allows engineers to create, validate, and deploy high-fidelity, simulation-based digital twins—connected, virtual replicas of in-service physical assets. The platform is an open solution that supports Hybrid Digital Twins, combining physics-based Reduced Order Models (ROMs) derived from detailed 3D simulations (from Ansys Fluent, Mechanical, etc.) with data-driven analytics (like machine learning) to provide unparalleled accuracy and predictive insights.

Key Capabilities and Benefits:

Hybrid Analytics: Combines the power of physics-based models with real-world sensor data and machine learning to improve prediction accuracy and asset management.
Multidomain System Modeling: Allows engineers to create hierarchical schematics of complex systems using built-in libraries (e.g., Modelica, Fluid Power) and standard languages (VHDL-AMS, C/C++, Python, SPICE).
Reduced Order Models (ROMs): Compiles complex 3D physics simulations into compact, high-performing ROMs that can run in a fraction of the time, enabling real-time or near-real-time performance.
IIoT Deployment: The Twin Deployer exports the digital twin model as an executable (FMU, C/C++ code) that can be deployed to the cloud, the edge, or offline, and easily integrates with major Industrial IoT (IIoT) platforms.
Predictive Maintenance: Improves predictive maintenance outcomes, leading to maintenance cost savings of up to 20% and a potential 25% increase in product performance over the asset's lifetime.
Target Users and Use Cases:

Target users are typically engineers, R&D professionals, and asset managers in large industrial and technology companies. While widely used in aerospace, automotive, and energy, it has specific

applications in the biotech/healthcare sector:

Pharma/Biopharma Manufacturing: Optimizing drug production processes, managing complexities of scaling, and using in-line checks to monitor critical quality attributes.
Personalized Medicine: Designing and optimizing custom bioreactors using digital twins to grow and modify cells for therapeutic purposes.
Clinical Trials: Tracking patients in real-time to predict clinical trajectories, which can help reduce the scope and cost of trials.
Medical Devices: Simulating medical equipment for real-time monitoring and performance optimization.

Key Features

- Hybrid Analytics (Physics + Data)
- Reduced Order Modeling (ROM) Generation
- Multidomain Systems Modeler
- IIoT Platform Agnostic Deployment (Twin Deployer)
- FMI/FMU Standard Support
- Embedded Software (XIL) Integration
- Rapid HMI Prototyping
- Python API for Automation

Pricing

Model: enterprise

Quote-based licensing model, typical of high-end engineering simulation software. Free 30-day trial is available upon request. Reviewers note a high initial investment.

Target Company Size: small, medium, enterprise

Integrations

Microsoft Azure IoT, Microsoft Azure Digital Twins, PTC ThingWorx, SAP Predictive Asset Insights, Rockwell Automation Emulate 3D, Ansys Fluent, Ansys Mechanical, MathWorks Simulink

Compliance & Certifications

ISO 9001, ISO 27001, SOC2 Type II