

Concurrent Engineering with T-Splines

ID: 2014-004

Executive Statement:

A groundbreaking method for multidisciplinary concurrent engineering utilizing T-splines for enhanced collaboration and efficiency.

Technology Overview:

This technology represents a novel approach in engineering design and development, enabling multiple engineering disciplines to work concurrently on a shared model using T-splines as the common geometry representation. By replacing traditional Boundary Representation (BREP) with T-splines, the method offers a seamless, watertight parametric model that supports both design and analysis tasks without the need for translation between disciplines. This fosters a more integrated and parallel product development process, significantly reducing development time and enhancing the overall quality of the design.

Key Advantages:

- Enables real-time collaboration across different engineering disciplines
- Eliminates the need for translation between design and analysis, ensuring a more efficient workflow
- Provides a watertight, parametric model that is both flexible and robust
- Supports a parallel product development process, reducing time to market
- Improves design quality through enhanced communication and shared understanding

Problems Addressed:

- Communication barriers between different engineering disciplines
- Time-consuming translation processes between design and analysis phases
- Lack of a shared, flexible model for concurrent design and analysis
- Extended product development cycles due to sequential workflows
- Compromised design quality due to isolated working environments

Market Applications:

- Product design and development across various industries, including automotive, aerospace, and consumer electronics
- Engineering consulting services, offering more efficient project management and execution

- Educational tools for universities and technical schools, teaching advanced design and engineering principles
- Software development for CAD/CAM/CAE systems, integrating T-splines for enhanced modeling capabilities
- Research and development in fields requiring complex, multidisciplinary design and analysis