SIEMENS

AUTOMOTIVE AND TRANSPORTATION

ANAND CY Myutec Automotive

Enhancing design change flexibility and communication while reducing design and production time by 40 percent

Product

NX

Business challenges

Improve siloed operations and limited collaboration

Reduce file format compatibility issues

Overcome inefficient change management

Eliminate manual data transfers between design and manufacturing

Reduce quality risks

Keys to success

Leverage NX CAD and CAM to streamline design to manufacturing processes

Enhance collaboration and tracking

Employ a user-friendly interface

Achieve efficient data handling with synchronous technology

Streamline toolpath programming

Achieve high-quality precision machining

Results

Enhanced design change flexibility

Reduced design and production time by 40 percent

ACYM uses NX CAD and CAM to streamline design to manufacturing processes and overcome information silos

Meeting the increasing demand for advanced transmission solutions

ANAND CY Mytec Automotive (ACYM) specializes in manufacturing a diverse range of synchronizer rings for the automotive industry. These rings are crucial in synchromesh gearboxes, an advanced transmission system essential in passenger cars and commercial vehicles. Synchromesh technology enables smooth gear changes by synchronizing gears rotating at the same speed, preventing the clattering or grinding noises caused by speed differences between input and output shafts.

Synchronizer rings, available in variations such as single-cone and multi-cone designs, are key to ensuring smooth and effortless gear shifting, which is a critical factor in a vehicle's performance and customer satisfaction. Automotive companies prioritize quality and on-time delivery when choosing suppliers, as these factors directly impact their product standards.

"With original equipment manufacturers focusing on high-performance vehicles and expanding electric vehicle offerings, the demand for advanced transmission solutions is increasing," says Pranav Rawal, general manager at ACYM. "The market for synchronizer rings has rapidly expanded, creating opportunities for innovation in materials and design to meet evolving automotive standards."

Results *(continued)*

Reduced associated production costs by 30 percent

Eliminated using multiple software solutions

Enhanced cross-team communication and knowledge sharing, breaking down information silos

The synchronizer rings market is undergoing major changes, driven by emerging technologies and evolving consumer demands. Innovations are improving performance and efficiency, while shifts in the industry are redefining traditional manufacturing processes, offering new potential for growth and transformation.

To keep up with these changes and demands, ACYM worked with DDSPLM, a Siemens Digital Industries Software partner, to leverage NX™ software. NX is part of the Siemens Xcelerator business platform of software, hardware and services.

Overcoming design and manufacturing challenges

In its manufacturing processes, ACYM uses forging, a method that transforms raw materials into components with exceptional strength and durability. However, the journey from concept to final product involves many intricate design considerations that influence quality, functionality and cost-effectiveness, which can extend cycle times. Before implementing NX, ACYM's design and production teams operated in silos, using computer-aided design (CAD) software that lacked collaborative features essential for internal and client interactions. The previous CAD system also fell short in generating the precise surfaces the company needed, leading to manual modifications that consumed significant time and effort.

The previous 3D CAD software's limitations also led to increased errors during manufacturing, as it could not support the essential aspects of forging design, such as material selection, part geometry, tolerances and undercuts. Further complicating the workflow, ACYM serves numerous major automotive clients who often send design files in various formats. Previously,

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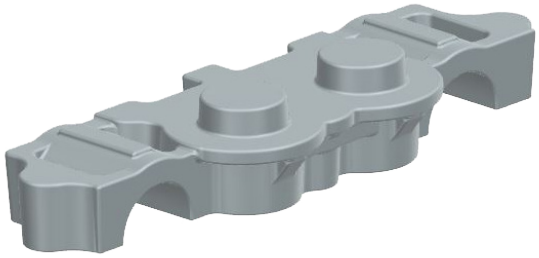
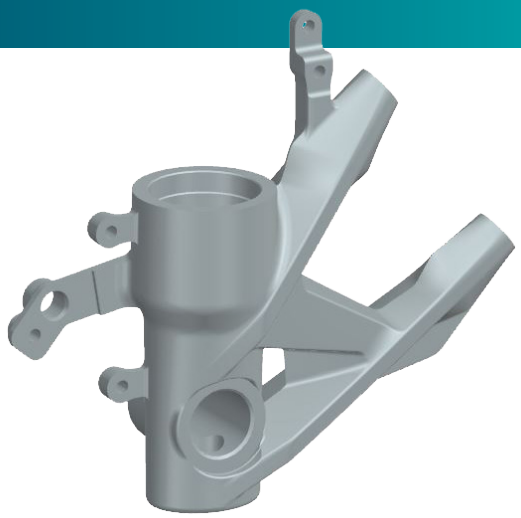
Pranav Rawal
General Manager
ANAND CY Myutex Automotive





the software was incompatible with many of these formats, causing delays and data loss issues when using neutral file types. Each customer's request for a minor change required the design team to jump between multiple software programs, each with various file requirements, resulting in a drawn-out, repetitive process for every adjustment and test.

This inefficiency not only posed quality risks from miscommunication between design and production teams but also jeopardized customer satisfaction due to delayed production times. The fragmented workflow also introduced a higher chance of costly errors, as mistakes could easily occur during the manual transfer between design and computer-aided manufacturing (CAM) programming phases, occasionally leading to serious equipment collisions. Repairing these complex, high-value machines is an extended process that can result in months of downtime.

ACYM's design and manufacturing teams realized they needed a more strategic approach to meet unique requirements with greater precision and efficiency. They sought automated tools with customizable features to boost productivity, particularly for toolpath creation. To modernize their legacy systems, ACYM integrated NX CAD and CAM. This solution impressed ACYM's design and manufacturing teams with its advanced capabilities, which DDSPLM demonstrated. An additional factor in their decision was the subscription-based licensing model, which offered a cost-effective option for upgrading.

Leveraging NX CAD and CAM to evolve exponentially

Using the extensive toolpath and automation features of NX, ACYM significantly streamlined their toolpath programming, saving time and enhancing their precision. With NX software, the company can access a robust suite of 2D and 3D solutions, supporting their CAD and CAM needs and maximizing efficiency from design through production. Using NX CAM, ACYM gained comprehensive tools for high-quality precision machining at optimal speeds, allowing them to manage their entire production process, from forging and machining design to advanced numerical control (NC) and verification.

ACYM adopted NX CAD and CAM for several strategic reasons. First, NX includes user-friendly capabilities that cater to experts and nonexperts, enhancing overall efficiency. Seamless integration within NX products ensures a single source of truth; for example, updates to CAD models automatically cascade through downstream deliverables. This CAD and CAM integration not only saves time but also reduces errors by recalculating toolpaths as they make modifications.

Leveraging NX also delivers advanced NC process planning with customizable automation tools, including NC and tool

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design, enabling ACYM to create repeatable processes without redundant steps. This reduces time spent on corrections and minimizes miscommunication. Additionally, using NX improves tracking and version control, enabling faster access to drawings, parts and files across teams, which allows for precise planning and easy access to previous versions.

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Additionally, the NX CAD and CAM multi-axis includes a postprocessor library and tools for customizing postprocessors for computer NC (CNC) machines, and

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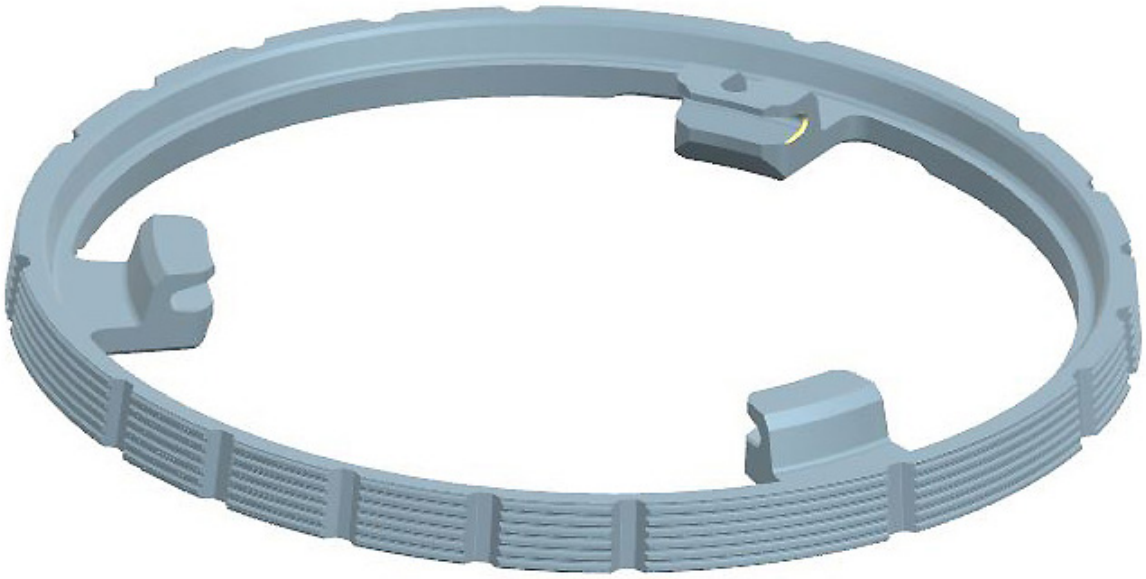


Solutions/Services

NX CAD and CAM
siemens.com/nx

Customer's primary business

ANAND CY Myutec Automotive Private Limited, a joint venture between India's ANAND Group and Japan's CY Myutec, specializes in high-quality synchronizer rings for the automotive industry. Focused on innovation and precision, ACYM provides advanced transmission solutions that boost vehicle performance and efficiency for top automotive original equipment manufacturers (OEMs).
www.anandgroupindia.com/acymautomotive/

Customer location

Gurugram
India

Solution partner

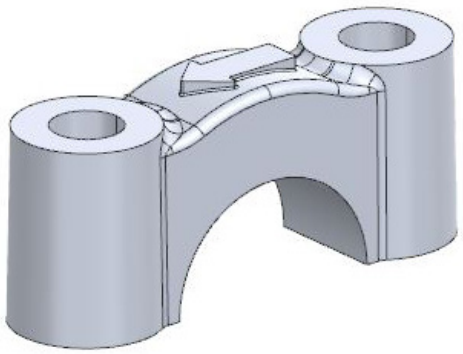
DDSPLM
www.ddsplm.com

integrated G-code simulation verifies NC programs without risking damage to equipment. Using NX is invaluable for correcting data issues during conversions, and its 3-axis machining module offers powerful functionalities that improve machining accuracy and material efficiency. For ACYM, leveraging NX capabilities has reduced material costs and enhanced machining efficiency, helping them achieve higher precision with greater control over machining processes.

Transforming manufacturing processes and saving time and costs

With NX, ACYM is equipped with advanced tools to create custom applications that enhance design and manufacturing efficiency, particularly for automotive synchronizer rings. Engineers can precisely control tool engagement when creating toolpaths, allowing them to shape the final part with accuracy in mind. Beyond creating efficient toolpaths, leveraging NX CAM enables users to capture and store design and manufacturing knowledge, making it easy to replicate successful processes and allowing teams to build on design and production specialist expertise.

As emerging technologies reshape the manufacturing landscape, using NX to integrate and streamline processes proves to be a crucial advantage. This integration



enabled ACYM to reduce design and production times by 40 percent, eliminating the need for multiple software solutions. Additionally, they reduced time from concept to delivery by 40 percent, alongside a cost savings of 30 percent.

"The same way our synchronizer rings deliver a smooth gearbox experience, using NX synchronous technology provides us the flexibility to quickly adjust parameters and implement design changes as needed," says Rawal. "Leveraging NX CAD and CAM has streamlined collaboration across our design and production teams, reducing our overall cycle time. Siemens design tools have consistently evolved with industry needs, continuously broadening our improvement opportunities."

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