

NORD Drivesystems Product Configurator Enhancement

Epic & User Stories for Agent Testing

Source	NORD Drivesystems Product Configurator Analysis
URL	https://portal.nord.com/en-us/configurator/
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Domain	B2B Industrial Manufacturing - Drive Systems
Total Epics	1
Total User Stories	6

Epic: NORD-E001

Intelligent Drivetrain Configuration Assistant

Transform the NORD product configurator from a passive selection interface into an intelligent configuration assistant that guides engineers through complex drivetrain specifications. Currently, users must navigate through product series (NORDBLOC, UNICASE, UNIVERSAL) and manually understand compatibility between gear units, motors, and drive electronics. This epic introduces application-driven configuration, real-time validation, and AI-powered recommendations to reduce configuration errors and accelerate the quote-to-order cycle.

Business Context

Pain Points:

- Engineers spend 20-40 minutes on complex configurations that could be reduced to 5-10 minutes
- High rate of configuration errors requiring sales engineering intervention
- Lost opportunities when prospects abandon complex configurations
- No guidance on optimal product selection for specific applications (conveyors, pumps, mixers, etc.)
- Explosion-proof drive requirements add compliance complexity

Success Metrics:

- Configuration completion rate increased from 45% to 75%
- Average configuration time reduced by 50%
- Sales engineering escalations reduced by 30%
- Quote-to-order conversion improved by 15%

Competitive Context: SEW-EURODRIVE and Siemens offer similar configurators; NORD can differentiate through superior UX and intelligent guidance

Dependencies:

Product compatibility matrix API, Application-to-product mapping database, Real-time pricing engine integration, CAD model generation service

User Stories Overview

ID	Title	Points	Priority	Sprint
US01	Application-First Configuration Entry	13	Must Have	1
US02	Real-Time Configuration Validation	8	Must Have	2
US03	Configuration Comparison View	8	Should Have	3
US04	3D CAD Model Preview and Download	13	Should Have	4
US05	Project Sharing and Collaboration	13	Could Have	5
US06	Saved Configuration Templates	8	Could Have	6

NORD-E001-US01: Application-First Configuration Entry

Points: 13 | Priority: Must Have | Sprint: 1

User Story:

As a mechanical engineer specifying a conveyor system, I want to start my configuration by describing my application requirements (load, speed, duty cycle, environment) rather than selecting product series, so that the configurator can recommend the optimal drivetrain solution.

Persona:

Thomas - Mechanical Engineer at Mid-size packaging machinery OEM. 8 years in machine design, familiar with gear ratios and motor sizing but not a drivetrain specialist. Goals: Specify correct drivetrain quickly, avoid over-engineering, get accurate quotes for customer proposals

Acceptance Criteria:

- GIVEN I am on the configurator start page WHEN I click 'Start New Configuration' THEN I see two entry paths: 'Configure by Application' and 'Configure by Product'
- GIVEN I select 'Configure by Application' WHEN the form loads THEN I see fields for: Application Type (dropdown: Conveyor, Pump, Mixer, Fan, Hoist, Other), Output Torque (Nm), Output Speed (RPM), Duty Cycle (%), Operating Hours/Day, Environment (Indoor/Outdoor/Washdown/ATEX zones)
- GIVEN I enter application parameters WHEN I click 'Find Solutions' THEN the system displays 2-4 recommended configurations ranked by: Best Match, Most Economical, Most Compact, Highest Efficiency
- GIVEN recommendations are displayed WHEN I hover over a recommendation THEN I see a summary: gear type, motor power, dimensions, efficiency class, indicative price range
- GIVEN I select a recommendation WHEN I proceed THEN the configurator pre-populates with the selected product series and my parameters carry forward
- GIVEN I enter invalid parameters (e.g., torque exceeds product range) WHEN I click 'Find Solutions' THEN I see a clear message explaining the limitation and suggesting alternatives

Technical Notes:

Components: ApplicationWizard.tsx, RecommendationEngine.ts

API: POST /api/v1/configure/recommend

Acceptance Tests:

NORD-E001-US01-AT01: Verify conveyor application returns helical gear recommendations

Expected: Returns 2-4 recommendations, top result is NORDBLOC or UNICASE helical gear unit with IE3 motor

NORD-E001-US01-AT02: Verify ATEX environment triggers explosion-proof recommendations only

Expected: All recommendations are from Explosion-Proof Drives series, ATEX certification visible on each card

NORD-E001-US02: Real-Time Configuration Validation

Points: 8 | Priority: Must Have | Sprint: 2

User Story:

As an engineer configuring a drive system, I want the configurator to validate my selections in real-time and alert me to compatibility issues before I submit, so that I don't waste time on invalid configurations that will be rejected later.

Persona:

Maria - Application Engineer at NORD distributor in Texas. 5 years selling and specifying NORD products, deep product knowledge. Goals: Configure complex systems quickly for customers, avoid back-and-forth with NORD engineering

Acceptance Criteria:

- GIVEN I am configuring a gear unit with motor WHEN I select a motor that exceeds the gear unit's input power rating THEN I see an inline error immediately: 'Motor power (X kW) exceeds maximum input for this gear unit (Y kW). Select a smaller motor or larger gear unit.'
- GIVEN I am configuring for ATEX Zone 1 WHEN I select a non-ATEX-certified motor THEN the motor option is either disabled or shows a warning icon with tooltip explaining ATEX requirement
- GIVEN I have selected a worm gear unit WHEN I enter a speed that would result in efficiency below 60% THEN I see a warning: 'Low efficiency warning: Worm gear at this ratio/speed achieves only X% efficiency. Consider helical-bevel for higher efficiency.'
- GIVEN I am configuring a mounting position WHEN I select a position incompatible with the selected gear lubrication type THEN I see an error with remediation: 'Position M5 requires synthetic oil for this gear unit. [Switch to synthetic] or [Change position]'
- GIVEN I have a validation error WHEN I correct the issue THEN the error clears immediately without page reload
- GIVEN I have completed all selections with no errors WHEN I view the configuration summary THEN I see a green checkmark: 'Configuration validated - ready for quote'

Technical Notes:

Components: ConfigurationValidator.ts, ValidationFeedback.tsx

API: POST /api/v1/configure/validate (called on each selection change)

Acceptance Tests:

NORD-E001-US02-AT01: Motor oversizing triggers immediate error

Expected: Red border on motor selection, inline error message displayed within 500ms, 'Continue' button disabled

NORD-E001-US02-AT02: ATEX motor filtering

Expected: Non-ATEX motors either hidden or shown as disabled with ATEX icon and tooltip

NORD-E001-US03: Configuration Comparison View

Points: 8 | Priority: Should Have | Sprint: 3

User Story:

As an engineer evaluating drivetrain options, I want to compare up to 4 configurations side-by-side with key specifications and pricing, so that I can make informed decisions and present options to my customer or management.

Persona:

Klaus - Senior Project Engineer at Large food processing equipment manufacturer. 15 years, makes final technical decisions, presents to procurement. Goals: Justify technical choices with data, optimize total cost of ownership, standardize on suppliers

Acceptance Criteria:

- GIVEN I have saved multiple configurations in my project WHEN I click 'Compare' THEN I can select 2-4 configurations to compare
- GIVEN I am viewing the comparison THEN I see a table with columns for each configuration and rows for: Product series, Gear type, Motor power, Gear ratio, Output torque, Output speed, Efficiency, Weight, Dimensions (LxWxH), Energy cost estimate (based on duty cycle input), Unit price, Delivery lead time
- GIVEN I am viewing the comparison WHEN differences exist between configurations THEN the differing cells are highlighted
- GIVEN I have compared configurations WHEN I click 'Export' THEN I can download the comparison as PDF or Excel for offline review/sharing
- GIVEN I am viewing the comparison WHEN I click 'Request Quotes' THEN I can select which configurations to request formal quotes for and submit to NORD sales in one action
- GIVEN one configuration is clearly unsuitable WHEN I click the X on its column THEN it is removed from the comparison without affecting my saved configurations

Technical Notes:

Components: ConfigurationComparison.tsx, ComparisonExport.ts

API: GET /api/v1/projects/{projectId}/configurations (list saved configs)

API: POST /api/v1/compare/export (generate PDF/Excel)

API: POST /api/v1/quotes/request (submit RFQ for multiple configs)

Acceptance Tests:

NORD-E001-US03-AT01: Comparison table renders correctly with highlighting

Expected: Motor power row shows all three values, cells are highlighted, efficiency row also highlighted (derived value)

NORD-E001-US03-AT02: PDF export includes all comparison data

Expected: PDF shows full comparison table, NORD branding, generation date, project reference, and QR code

NORD-E001-US04: 3D CAD Model Preview and Download

Points: 13 | Priority: Should Have | Sprint: 4

User Story:

As a machine designer, I want to preview a 3D model of my configured drivetrain and download it in common CAD formats, so that I can integrate it into my machine design without manual modeling.

Persona:

Annika - CAD Designer at Material handling systems integrator. 6 years SolidWorks, designs conveyor frames and integrates purchased components. Goals: Get accurate CAD models quickly, ensure mounting dimensions are correct, avoid rework

Acceptance Criteria:

- GIVEN I have completed a valid configuration WHEN I click '3D Preview' THEN I see an interactive 3D viewer showing the configured gear unit and motor assembly
- GIVEN I am viewing the 3D preview WHEN I use mouse/touch controls THEN I can rotate, pan, and zoom the model smoothly (60fps target)
- GIVEN I am viewing the 3D preview WHEN I click on a component (gear housing, motor, output shaft) THEN I see key dimensions highlighted and a dimension callout panel
- GIVEN I want to download the model WHEN I click 'Download CAD' THEN I see format options: STEP, IGES, SolidWorks (.sldprt), AutoCAD (.dwg), and select the one I need
- GIVEN I download a CAD model WHEN I import it into my CAD software THEN the model includes: accurate geometry, mounting hole positions, shaft dimensions, center of gravity marker, and configuration metadata in custom properties
- GIVEN my configuration includes options (brake, encoder, terminal box position) WHEN I view the 3D model THEN all selected options are reflected in the geometry

Technical Notes:

Components: CADViewer.tsx (Three.js based), CADExporter.ts

API: GET /api/v1/cad/preview/{configurationId} (returns glTF for web viewer)

API: POST /api/v1/cad/export/{configurationId} (generates requested format)

Acceptance Tests:

NORD-E001-US04-AT01: 3D viewer loads and is interactive

Expected: Model loads within 3 seconds, rotation/pan/zoom work smoothly, motor and gear unit both visible

NORD-E001-US04-AT02: STEP export contains correct geometry

Expected: Model imports successfully, brake is present in geometry, mounting holes match datasheet, custom properties populated

NORD-E001-US05: Project Sharing and Collaboration

Points: 13 | Priority: Could Have | Sprint: 5

User Story:

As a project engineer, I want to share my configuration project with colleagues and external partners (customers, consultants) so that they can review, comment, and contribute to the specification without duplicating work.

Persona:

Michael - Project Manager / Lead Engineer at Engineering consulting firm specializing in process automation. 12 years, manages teams of 3-5 engineers, works with multiple clients. Goals: Coordinate specifications across team members, get client approval on selections, maintain version history

Acceptance Criteria:

- GIVEN I have a project with configurations WHEN I click 'Share Project' THEN I can generate a share link with permission level: View Only, Comment, or Edit
- GIVEN I share with 'View Only' WHEN the recipient opens the link THEN they see all configurations and can export/download but cannot modify
- GIVEN I share with 'Comment' WHEN the recipient views a configuration THEN they can add comments on specific parameters (e.g., 'Client prefers IE4 efficiency class')
- GIVEN I share with 'Edit' WHEN the recipient makes changes THEN changes are tracked with their name/email and I can see modification history
- GIVEN multiple people are editing WHEN I open the project THEN I see who else is currently viewing/editing (presence indicators)
- GIVEN I want to revoke access WHEN I go to Share Settings THEN I can remove individual users or disable the share link entirely
- GIVEN the project has been modified since I shared it WHEN the recipient views it THEN they see the latest version (not a stale snapshot)

Technical Notes:

Components: ProjectSharing.tsx, CollaborationPresence.ts

API: POST /api/v1/projects/{projectId}/share (generate/update share settings)

API: GET /api/v1/projects/{projectId}/collaborators (list users with access)

API: DELETE /api/v1/projects/{projectId}/share/{userId} (revoke access)

API: WS /api/v1/projects/{projectId}/presence (WebSocket for real-time presence)

Acceptance Tests:

NORD-E001-US05-AT01: View-only share link works for external user

Expected: External user sees both configurations, can export PDF, edit buttons are not visible

NORD-E001-US05-AT02: Comments sync in real-time

Expected: Comment appears in owner's session within 2 seconds without page refresh

NORD-E001-US06: Saved Configuration Templates

Points: 8 | Priority: Could Have | Sprint: 6

User Story:

As a machine builder with recurring drivetrain needs, I want to save my common configurations as templates that I can quickly reuse and adapt for new projects, so that I don't have to re-enter the same specifications repeatedly.

Persona:

Frank - Sales Engineer at OEM building standardized packaging machines. 10 years, configures 50+ NORD drives per year, knows standard configurations by heart. Goals: Speed up quoting, ensure consistency across machine series, reduce configuration errors

Acceptance Criteria:

- GIVEN I have completed a configuration WHEN I click 'Save as Template' THEN I can name the template and add tags (e.g., 'Packaging Line', 'Conveyor Drive', '3kW')
- GIVEN I have saved templates WHEN I start a new project THEN I see 'Start from Template' option alongside 'Start from Scratch'
- GIVEN I select 'Start from Template' WHEN I choose a template THEN a new configuration is created with all parameters pre-populated from the template
- GIVEN I created a configuration from a template WHEN I modify parameters THEN the original template is not affected (template is copied, not linked)
- GIVEN I have many templates WHEN I search or filter THEN I can find templates by name, tag, product series, or date created
- GIVEN I want to update a template WHEN I edit a configuration and click 'Update Template' THEN I can choose to update the source template or save as a new template
- GIVEN I work for a company with multiple users WHEN templates are marked 'Company-wide' by admin THEN all company users can access them

Technical Notes:

Components: TemplateManager.tsx, TemplateGallery.tsx

API: POST /api/v1/templates (create template from configuration)

API: GET /api/v1/templates (list user's templates + company templates)

API: POST /api/v1/templates/{templateId}/instantiate (create configuration from template)

API: PUT /api/v1/templates/{templateId} (update template)

API: DELETE /api/v1/templates/{templateId}

Acceptance Tests:

NORD-E001-US06-AT01: Create and reuse template

Expected: New configuration created with all parameters matching original, template use_count incremented

NORD-E001-US06-AT02: Template search and filtering

Expected: Search returns matching templates, filter narrows results correctly, results sorted by relevance/recency