



PLM 361 — Product Lifecycle and Decision Backbone

See the impact of a design change on production, the CE file, cost and the machine in the field — in one record

General Manager · R&D Director · Quality and CE Lead · After-Sales Service · IT Architect · 2026-09-15
17 providers · 52 tools · 8 channel families/44 adapters · 200+ modules



84

business objects
(EntityType)

11

ready-made decision
screens

7

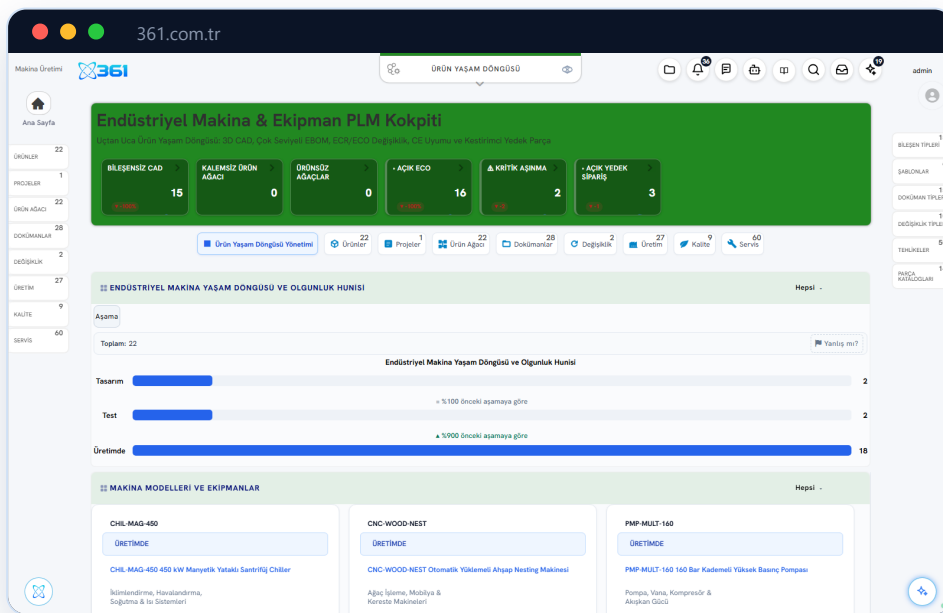
specialist PLM AI agents

10

PLM automations

8 sub-modules: Products · Projects · Bill of Materials · Documents · Change · Manufacturing Preparation · Quality and Compliance · Service and Spare Parts

PLM 361 is the decision backbone that keeps the bill of materials, engineering changes, the CE technical file, cost and after-sales service **in the same database** for machine and equipment manufacturers. Which bill of materials, routing, technical file and serial machine in the field a change touches is not collected from separate files; it is read from the same record. Every number in this document was measured by live query in the makina demo tenant on 9/15/2026 and is listed with its limit in the evidence table on the last page.



What should I act on today? Main PLM cockpit: CAD without components, open change order, critical wear and open spare-part order on the first screen; one click to each sub-module.

CONTENTS

1. PART 1 — BUSINESS DECISION
 2. 1.1 Anatomy of loss: costs that raise no error
 3. 1.2 Silent leaks and where they show on screen
 4. 1.3 Before / after
 5. 1.4 Return framework — with your numbers
 6. 1.5 Comparison with alternatives
 7. 1.6 Objections and honest answers
 8. 1.7 Who asks which question
9. PART 2 — PRODUCT TOUR
 10. 2.1 Bill of materials and cost
 11. 2.2 Engineering change
 12. 2.3 3D CAD in the browser and the document vault
 13. 2.4 CE technical file and ISO 12100
 14. 2.5 Manufacturing preparation and serial machines
 15. 2.6 Service and spare parts
 16. 2.7 Substance compliance, CBAM and the Digital Product Passport
17. PART 3 — ARTIFICIAL INTELLIGENCE
 18. 3.1 Three-layer architecture
 19. 3.2 Anatomy of an automation
 20. 3.3 Real dialogs
 21. 3.4 What an agent relies on
 22. 3.5 Run status: running / awaiting trigger
23. PART 4 — ARCHITECTURE, LIMITS, ROLL-OUT
 24. 4.1 Data model and sub-modules
 25. 4.2 Limits and roadmap
 26. 4.3 Roll-out
 27. 4.4 Evidence table

PART 1 — BUSINESS DECISION

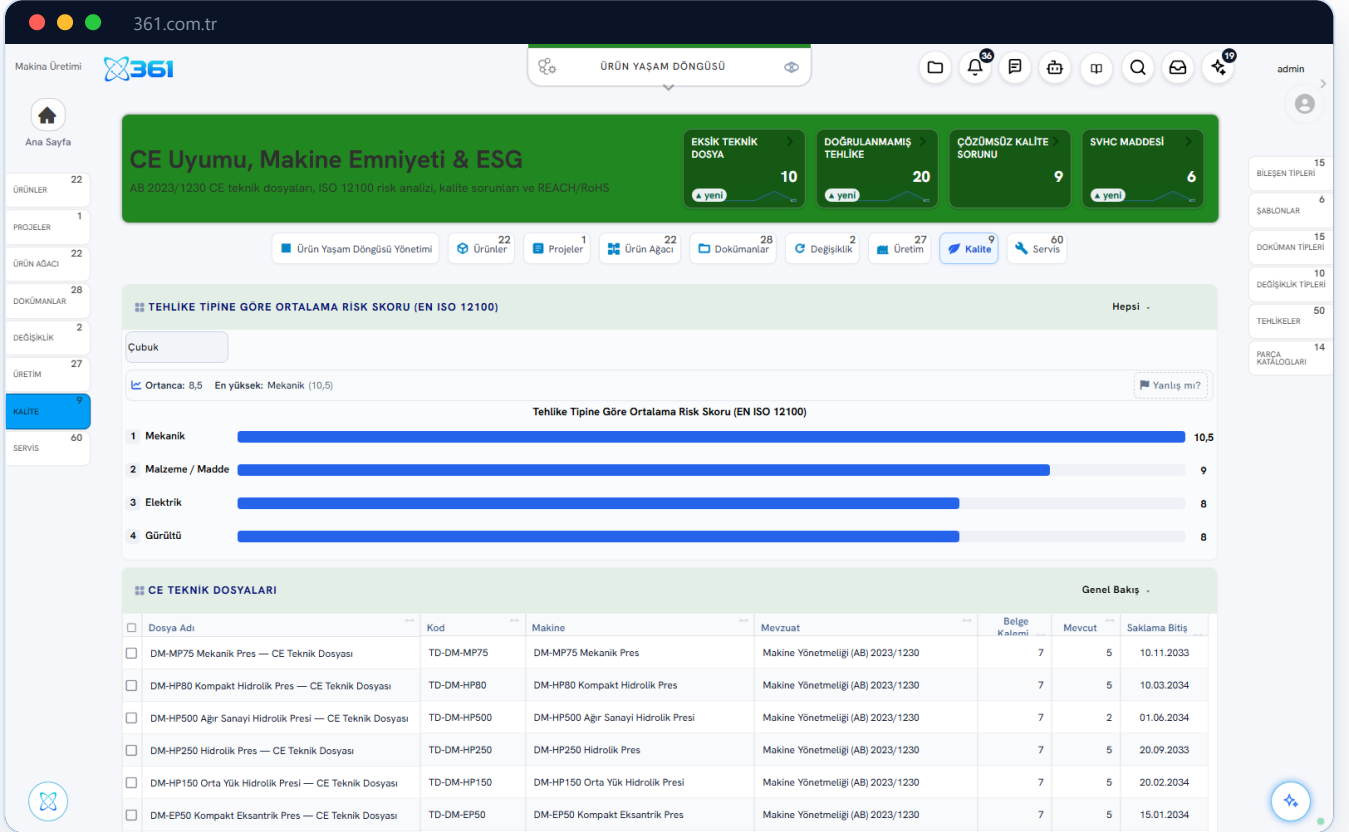
1.1 Anatomy of loss: costs that raise no error

For a machine manufacturer, the cost of an engineering change is not revising the drawing. The cost arises where the change **touches but nobody sees**: a work order still open on the old revision, a technical file document found missing on shipping day, a single-source part with no alternative, a cost that ends up higher than the quote assumed, and a spare part wearing out in the field with no order placed. None of these losses raises an error in the system; at month end they show up as margin, shipping schedule or warranty cost.

Principle

A change **can be approved without being closed**. PLM 361 keeps the bills of materials, routings and items affected by a change order separately; the order does not count as closed until the completion counter reaches the number of affected items. In the demo tenant, 19 of 22 change orders are not yet released and 34 affected items are tracked one by one.

1.2 Silent leaks and where they show on screen



Which machine cannot ship today? Quality and Compliance cockpit: incomplete technical file, unverified hazard, unresolved quality issue and SVHC substance; below, the EN ISO 12100 risk score and CE technical files.



Shipping with an incomplete technical file

The machine is ready, a document required for conformity is missing. The Quality and Compliance cockpit counts files with missing items on the first screen: in the demo tenant, 10 of 10 technical files are missing a mandatory item.



Serial machine without a linked file

If no technical file is linked to a machine leaving production, the shipping risk stays invisible. The Manufacturing Preparation cockpit counts it: 36 of 60 serial machines have no technical file linked.



Change that never closes

Approved but unimplemented change orders are tracked in the Change cockpit with a status funnel; a reminder automation runs every morning for those awaiting approval.



Single-source critical part

The component–supplier–alternative link lives in the record; the Supply Risk agent ranks critical components without an alternative by lead time (see 3.3).



Cost drifting from the quote

20 costings with material, labour, overhead, packaging, freight and customs items and 10 quote-versus-actual comparisons are linked to the same product record.



Critical wear without an order

The Service cockpit counts parts whose remaining life has fallen below the threshold (demo: 2 critical wear); a critical wear record automatically opens a draft spare-part order.

1.3 Before / after

BEFORE

- Revision lives in the file name, change approval in e-mail
- Which work order a change touches is searched for in meetings
- The missing item in the technical file is noticed on shipping day
- BOM cost lives in a spreadsheet, the quote rests on estimates
- The part of a machine in the field is asked about during the service call
- A recurring failure reaches the design team as a story

AFTER WITH 361

- Revision and status in the record; change request and order in a workflow
- Affected BOMs, routings and items are the order's own child records
- Files with missing items are counted in the cockpit, a check runs every morning
- Cost and weight totals are calculated across the multi-level BOM
- Serial machine and as-built parts are recorded, wear is tracked
- The quality–design agent lists recurring defects with reasons

1.4 Return framework — with your numbers

This document does not promise a savings percentage. The framework below shows **from which inputs** the return is calculated; the numbers come from your last 12 months, and this measurement is the pilot's first output.

Item	Input from you	Calculation	Where PLM 361 acts
Shipping delay	Number of shipments waiting because of an incomplete technical file × average waiting days × daily financing cost	Annual waiting cost	Cockpit counter of files with missing items and the morning check

Item	Input from you	Calculation	Where PLM 361 acts
Production on an old revision	Scrap/rework quantity after a change × unit cost	Annual scrap cost	Affected work order, routing and item records
Quote deviation	Quoted cost – actual cost (per product class)	Margin erosion	Quote-versus-actual comparison and the cost agent
Single-source risk	Number of critical parts without an alternative × lead time	Days at risk of standstill	Component–supplier–alternative matrix
Service leakage	Parts ordered late at critical wear × downtime days	Customer downtime cost	Wear tracking and automatic draft order

Honesty note

We write no percentage into this table. The number can only be calculated with your historical data; the record counts in the demo tenant show what the product can measure, not what you will gain.

1.5 Comparison with alternatives

Criterion	Spreadsheet + folder + e-mail	Separate PDM/PLM software	General ERP	361 PLM
Impact of a change on production	Searched by hand	Inside PLM; production data in a separate system	Production present, engineering change weak	BOM, routing and items are child records of the order
CE technical file	Folder	Mostly a document archive	Usually absent	Mandatory items, retention period, missing-item counter
3D review	Requires a CAD licence	Viewer mostly a separate licence	None	STEP/IGES/BREP in the browser, no CAD licence required
After-sales service	Separate spreadsheet	Mostly out of scope	Separate service module	Serial machine, as-built, wear, spare-part order in the same record
Artificial intelligence	None	Varies	Varies	7 specialist agents reading the live record + 10 automations

Criterion	Spreadsheet + folder + e-mail	Separate PDM/PLM software	General ERP	361 PLM
Not available today	—	—	—	In-CAD add-in, ECAD BOM, CAE/CAM, IoT telemetry (see 4.2)

1.6 Objections and honest answers

Objection	Answer
"We already have an ERP."	PLM 361 does not require replacing your accounting and inventory records; it keeps the engineering change, technical file and service layer on the same platform. If production, purchasing and quality modules are in use, they share the same data layer.
"Our drawings are well organised in folders."	A folder stores the file; when a flange changes, it does not tell you which open work order, which technical file and which machine in the field are affected. PLM 361 keeps this in the change order's child records.
"We want to work inside SolidWorks."	Today there is no add-in running inside SolidWorks, NX, Inventor or Creo. Check-out, check-in and version history run in the platform's document vault (see 2.3); STEP/IGES/BREP opens in 3D in the browser and the server generates a thumbnail and preview derivative. Desktop tools can call the vault with a time-limited access token; the add-in inside the CAD program is on the roadmap.
"What if the AI makes things up?"	Agents produce the answer by reading the live record with tools and give the record code (e.g. technical file and change order number). Even so, the answer is a decision proposal; approval and signature stay with the authorised person. Agents depend on provider quota; uninterrupted operation is not claimed.
"Does the system prepare the CE certificate?"	No. PLM 361 tracks the completeness and missing items of the technical file and calculates the ISO 12100 risk and the EN ISO 13849-1 performance level; it does not replace the notified body or the signed declaration of conformity.
"Data cannot leave the factory."	The platform can be installed on your own server; a local model option exists for AI. If a cloud model is used, consumption is measured and capped separately.
"The project will take months."	The pilot starts with one real bill of materials and open changes; the first output is the measurement in the return framework. Duration and effort are written per module in the quotation.

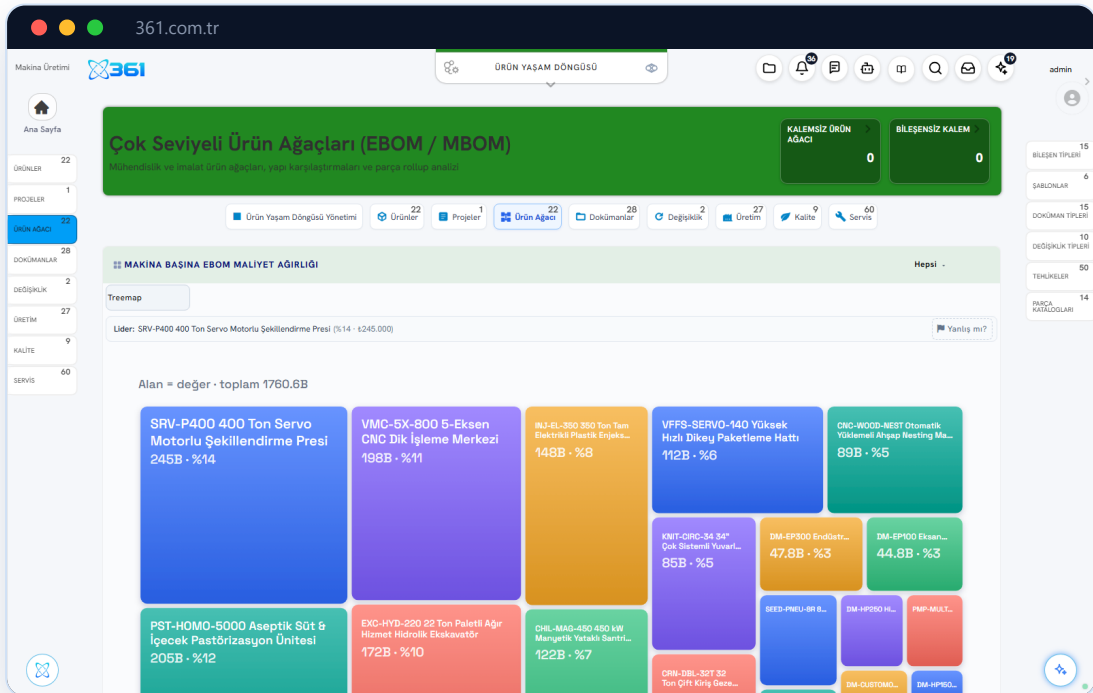
1.7 Who asks which question

Role	Question	Section
General Manager	What is eroding my margin and shipping schedule?	1.4 · 2.1 · 3.3
R&D Director	What does this change touch, and when will it close?	2.2 · 2.3
Quality and CE Lead	Which machine cannot ship today, and why?	2.4 · 3.3
Service Manager	Which machine has critical wear, and has the order been placed?	2.6 · 3.3
IT Architect	Where is the data, what is in the product and what is not?	4.1 · 4.2
Role-based use	Engineer, Product Manager and Quality Assurance see the same PLM with their own menus	4.1

PART 2 — PRODUCT TOUR

2.1 Bill of materials and cost

The demo tenant holds 22 machine models, 22 bills of materials and 90 BOM line items. The BOM form carries the **Calculate Cost and Weight Rollup**, **Compare Revisions** and **3D BOM Explorer** actions; the product card carries the **Create MES Recipe** action. The Bill of Materials cockpit shows the BOM cost weight per machine in a treemap whose area is proportional to value.



Which machine carries the largest share of BOM cost? Bill of Materials cockpit: counters for BOMs without line items and line items without components, cost weight per machine.

361.com.tr

Makina Üretimi

361

ÜRÜN YAŞAM DÖNGÜSÜ

admin

BOM-EP100-001

REVİZYON: R-1.2

KÜMÜLATİF MALİYET: 44.775

TASLAK

MÜHENDİS: Zeki Altunbaş

AĞIRLIK (KG): 0

DM-EP100 Ana Ürün Ağacı

YÜRÜRLÜK: 15.06.2023

Üretimde

DM-EP100 Eksantrik Pres

TASLAK

İNCELEMEDE

ÜRÜN AĞACI BAŞLIK VE MODEL BİLGİLERİ

Ürün Ağacı Adı	Ürün Ağacı Kodu	Ürün	Revizyon Numarası	Durum	Sorumlu	Onaylayan	Geçerlilik Tarihi	Geçersizlik Tarihi
DM-EP100 Ana Ürün Ağacı	BOM-EP100-001	DM-EP100 Eksantrik Pres	R-1.2	Üretimde	Zeki Altunbaş	Ülkü Arslan	15.06.2023	15.06.2023

Açıklama: 100 ton eksantrik pres ana ürün ağacı malzeme listesi

Son Güncelleme Nedeni: Hidrolik silindir tedarikçi değişikliği

MALİYET VE AĞIRLIK DAĞILIMI

Toplam Maliyet	Toplam Rollup Maliyeti	Toplam Ağırlık (g)	Toplam Rollup Ağırlığı (kg)	Konfigürasyon	Varyant	Versiyon	DURUM
0	44.775	0	2.688	EP100 Standart Konfigürasyon	DM-EP100 Standart Varyant	1.2	TASLAK

Oluşturan: 23.05.2025 20:19

Değiştiren: 13.09.2026 13:15

EBOM Ürün Ağacı Masası 12

Maliyet ve Ağırlık Rollup Hesapla

EBOM Ürün Ağacı Masası +4

Kapat

Kaydet Kapat

BOM record: revision, engineer, effective date; cost and weight rollup total, configuration and variant link on a single form.

361.com.tr

Makina Üretimi

361

ÜRÜN YAŞAM DÖNGÜSÜ

admin

MLY-2026-018

HAZIRLAYAN: Kemal Öztürk

TOPLAM MALİYET: 5.372.000

İNCELEMEDE

TARİH: 12.08.2026

Final

İNCELEMEDE

ONAYLA

ARŞİVE

FINANSAL

Maliyet No	Malzeme Maliyeti	İşçilik Maliyeti	Genel Gider	Ambalaj Maliyeti	Nakliye Maliyeti	Gümrük / Vergi	Toplam Maliyet	Hedef Fiyat	Kar Marjı %
MLY-2026-018	2.915.377	1.289.097	1.023.020	43.582	100.926	0	5.372.000	6.200.000	15

SÜREÇ VE SORUMLULUK

Hazırlayan	Tarih
Kemal Öztürk	12.08.2026

SINIFLANDIRMA

Durum: Final

GENEL

Ürün	Versiyon	Para Birimi
DM-CUSTOM01 Özel Tasarım Multi Pres	1	Türk Lirası

Oluşturan: 14.09.2026 17:59

Değiştiren: 14.09.2026 19:18

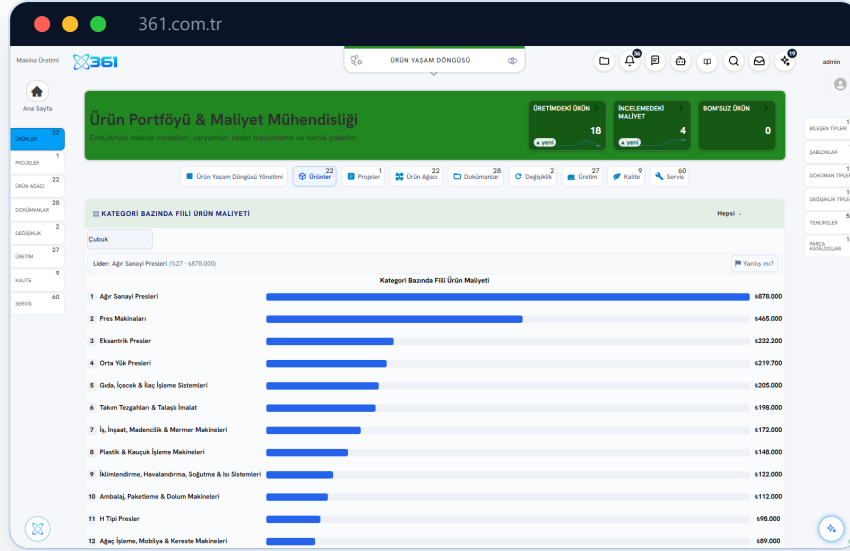
PLM Ürün Maliyetleri 8

Maliyet Karşılaştırmaları

Kapat

Kaydet Kapat

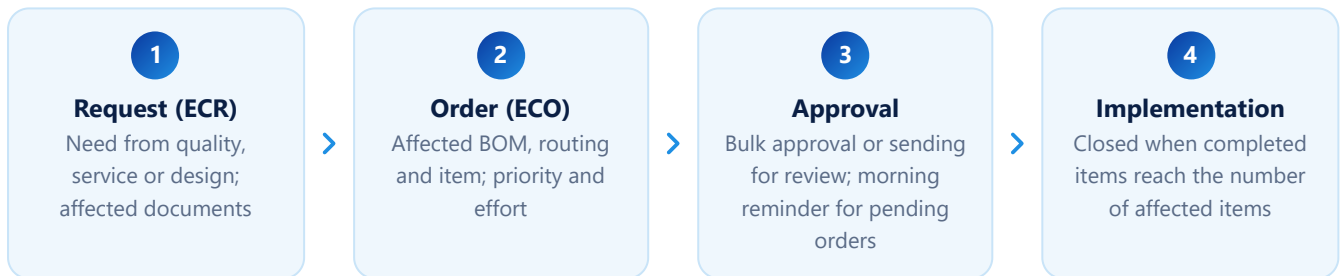
Where does the quoted cost drift? Costing record: material, labour, overhead, packaging, freight and customs items; total cost, target price and profit margin; Under review → Approve → Archive flow.



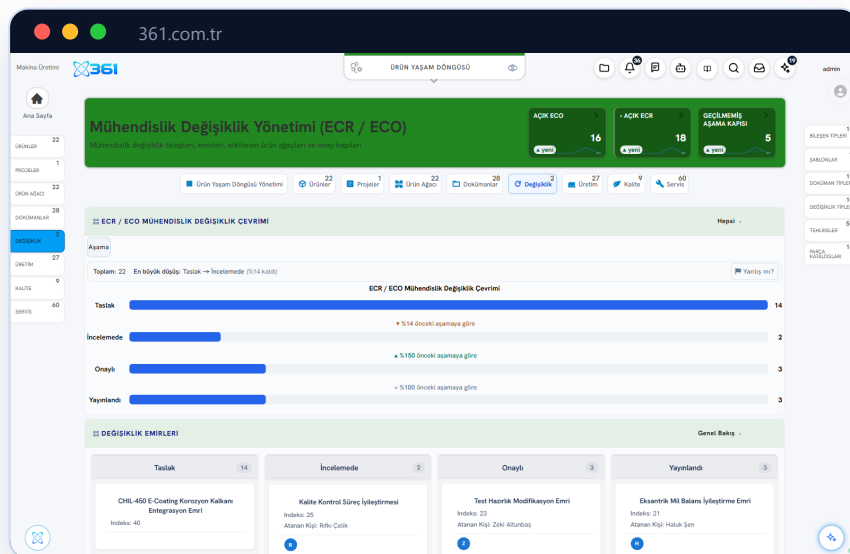
Which product category carries the most actual cost? Products cockpit: products in production, costs under review, products without a linked BOM.

2.2 Engineering change

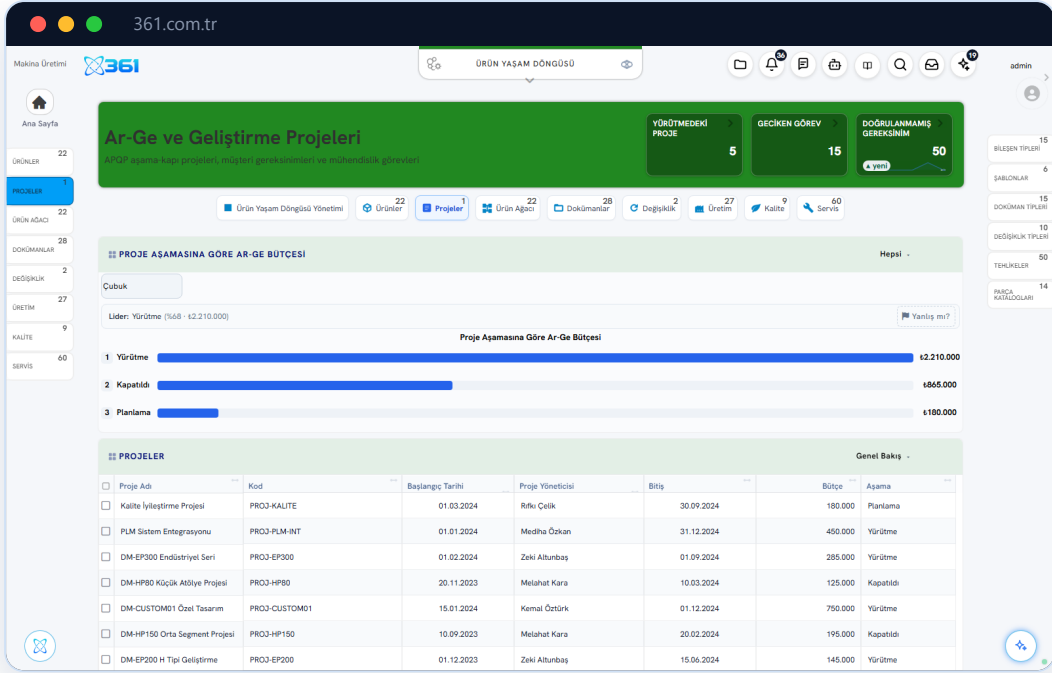
Engineering change requests (ECR) and engineering change orders (ECO) run through separate life cycles. The demo tenant holds 22 requests and 22 orders. The order's child records are the affected BOMs, affected routings and affected items; the **Check Open Work Orders**, **Approve Selected** and **Send for Review** actions work in the order list.



Change flow: every step has its own record, closure is measured by a counter



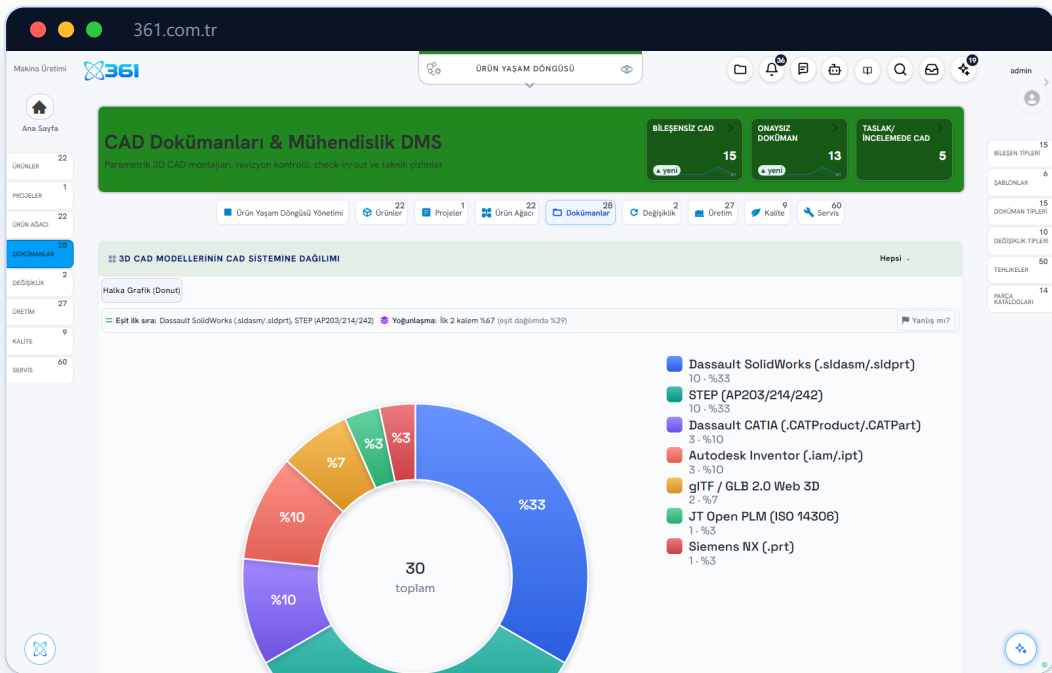
Which change is stuck? Change cockpit: open ECOs and ECRs, stage gates not passed; status funnel from draft to release and a kanban.



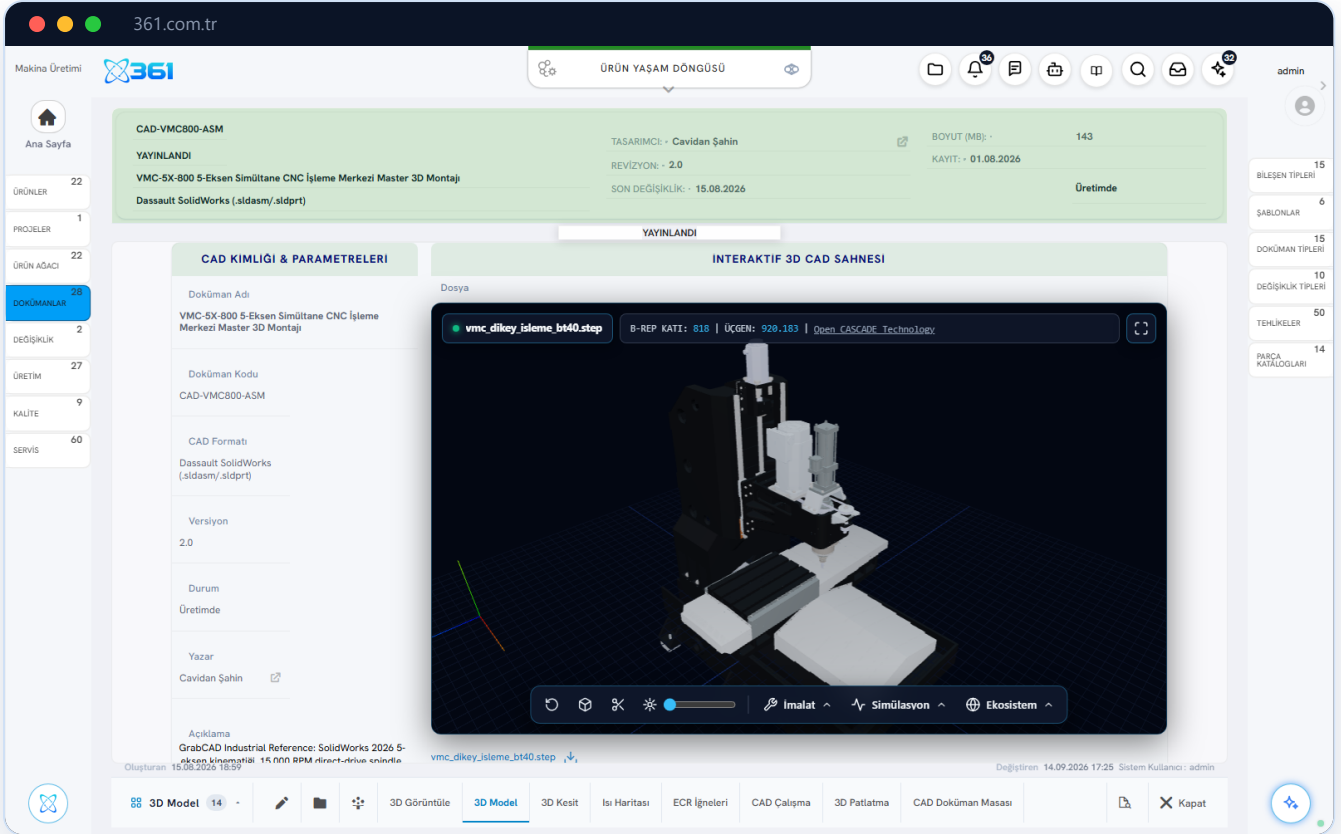
Which phase is the R&D budget in? Projects cockpit: projects in execution, overdue tasks, unverified requirements; R&D budget by phase and the project list.

2.3 3D CAD in the browser and the document vault

STEP, IGES and BREP files are parsed directly in the browser with the **Open CASCADE** engine; no CAD licence is required. In the browser measurement of 15 September 2026, the engine's top band showed **818 solid bodies / 920,183 triangles** for the STEP assembly of a 5-axis CNC machining centre; the number is the engine's output and changes when the file changes. The form carries the 3D Section, Heat Map, ECR Pins, 3D Explode and CAD Workspace actions. The demo tenant holds 30 CAD documents with 7 different format labels; parsing in the browser applies to STEP/IGES/BREP only.



How many models come from which CAD system? Documents cockpit: counters for CAD without components, unapproved documents and CAD under review; distribution of CAD models by CAD system.



CAD document form: CAD identity and parameters on the left, interactive 3D scene on the right; the top band shows the B-Rep solid and triangle counts measured by the engine.

Scene control in natural language

A free-form sentence goes to 361's own AI engine and is applied to the scene (e.g. "open the model halfway" → section 50%). When a request is not understood, the system does not say "applied"; it lists what it can do.

Document vault: lock, version and rule inside the platform

The vault needs no separate desktop gateway program; it works on the CAD document record itself. **Check-out** locks the document: the lock is a database record, survives a server restart, and a second user's check-out is rejected. **Check-in** writes a new version and keeps an immutable copy of every version, recording the SHA-256 hash, file size, the person checking in and a revision record. A check-out can be undone, and the version list is read on the document. The vault band on the record form shows the status and the Check-out, Check-in, Undo, Versions and Download buttons; on mobile the band is read-only and check-out and check-in are done on the desktop.

- ✓ The rule is XML configuration, not per-customer code: check-in is rejected while an open engineering change order (ECO) exists on the document's part or design. At measurement time 6 documents in the demo tenant are blocked for this reason.
- ✓ For STEP, IGES and BREP the server generates a thumbnail (PNG), a web preview file (GLB) and the solid and triangle counts and writes them to the document record; for the same assembly 818 solid bodies / 920,183 triangles, identical to the browser measurement.
- ✓ The "Expired Lock" indicator in the Documents cockpit counts check-outs past their time limit.

- ✓ Desktop tools call the vault without storing a password, using a personal access token limited to the vault methods, time-limited and revocable (there is no screen for creating tokens yet).
- ✓ Proprietary formats (SLDPRT, CATPart, PRT, IPT) are not converted; the browser viewer uses the STEP file today, not the generated GLB.

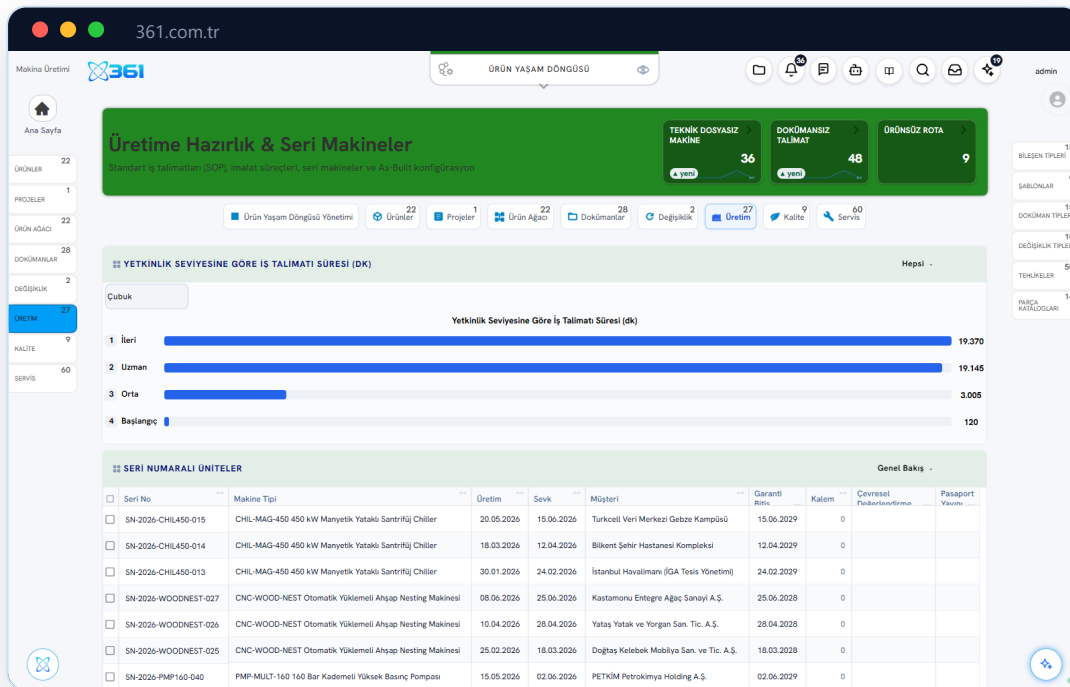
2.4 CE technical file and ISO 12100

Under the EU Machinery Regulation (EU) 2023/1230, the technical file is kept with its mandatory document items, conformity route and retention period; the **Export PDF** action compiles the file. The demo tenant holds 10 technical files, 70 document items, 50 ISO 12100 hazard records and 46 conformity/certificate records. Initial and residual risk are derived fields (severity × probability); the EN ISO 13849-1:2023 required performance level is calculated from the Annex A risk graph.

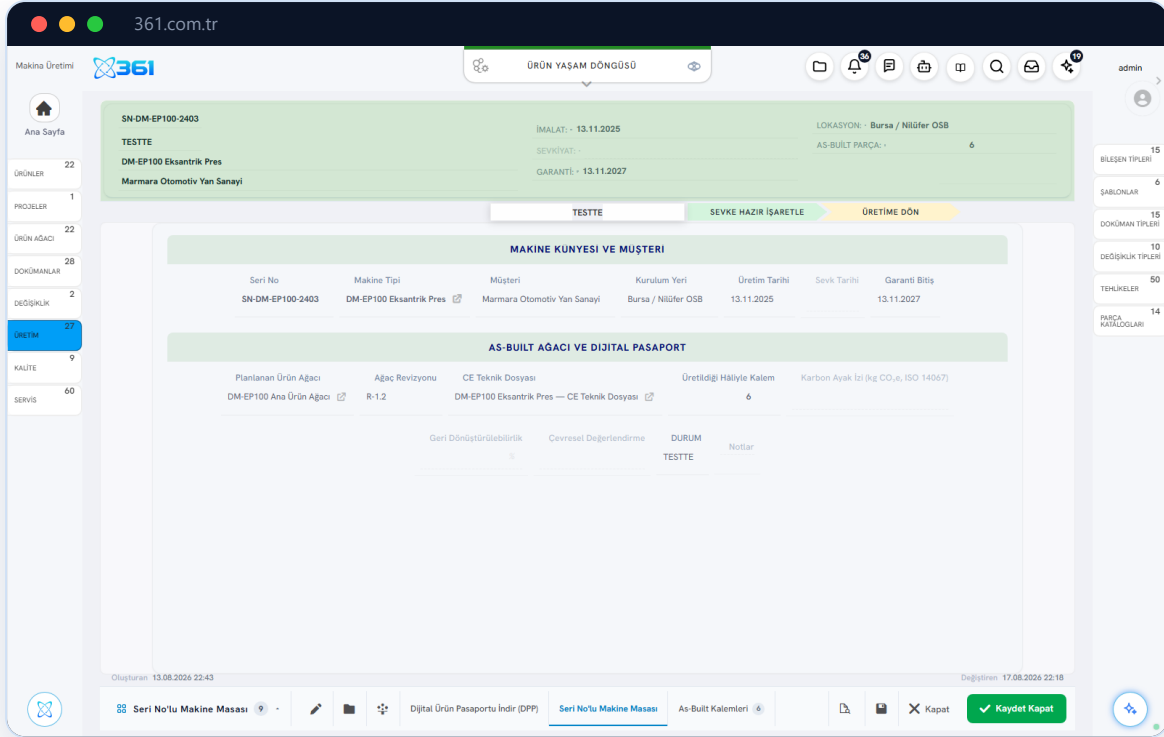
- ✓ If the technical file of a ready-to-ship machine is not linked, a check runs every morning and notifies
- ✓ Expired conformity records are scanned every morning
- ✓ Unverified hazards are counted from the state machine; in the demo tenant the verification signature field has not yet been filled in (open gap)
- ✓ It does not replace the notified body or the signed declaration of conformity

2.5 Manufacturing preparation and serial machines

63 standard work instructions and manufacturing processes, serial-numbered machines and as-built parts live in the Manufacturing Preparation area. The cockpit counts machines without a linked technical file, instructions without documents and routings without a product separately.



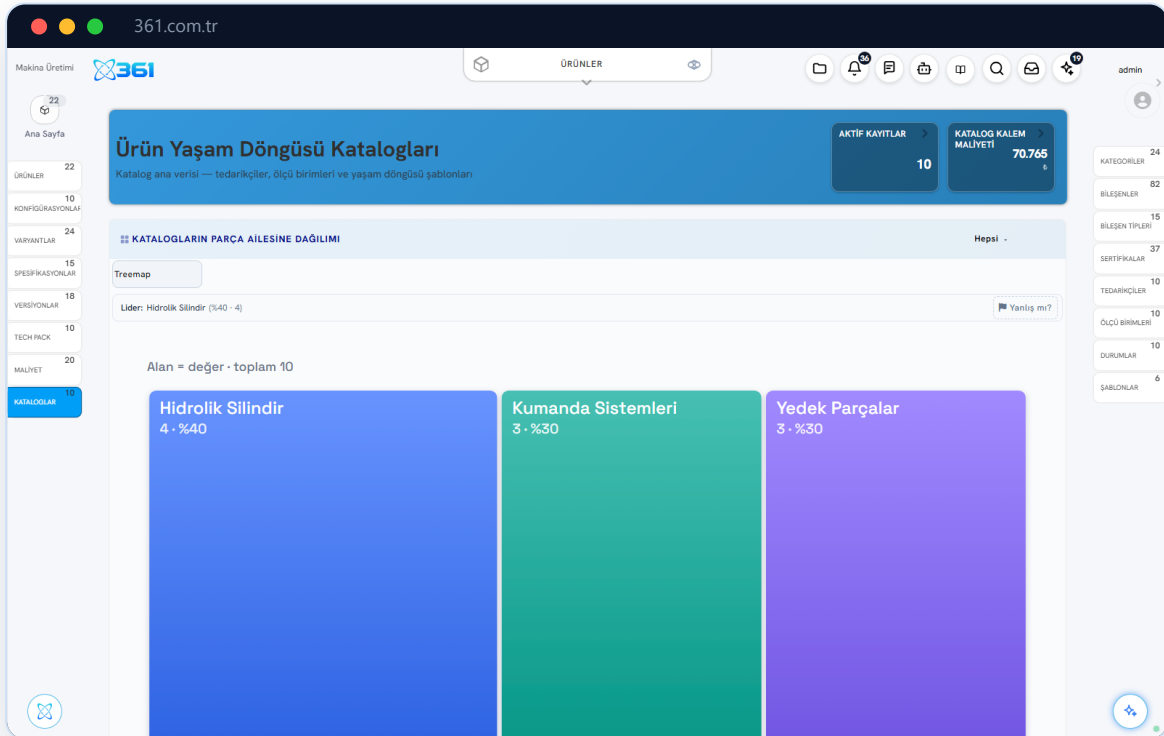
Which machine has no file? Manufacturing Preparation cockpit: machines without a technical file, instructions without documents, routings without a product; work instruction duration by skill level and the serial machine list.



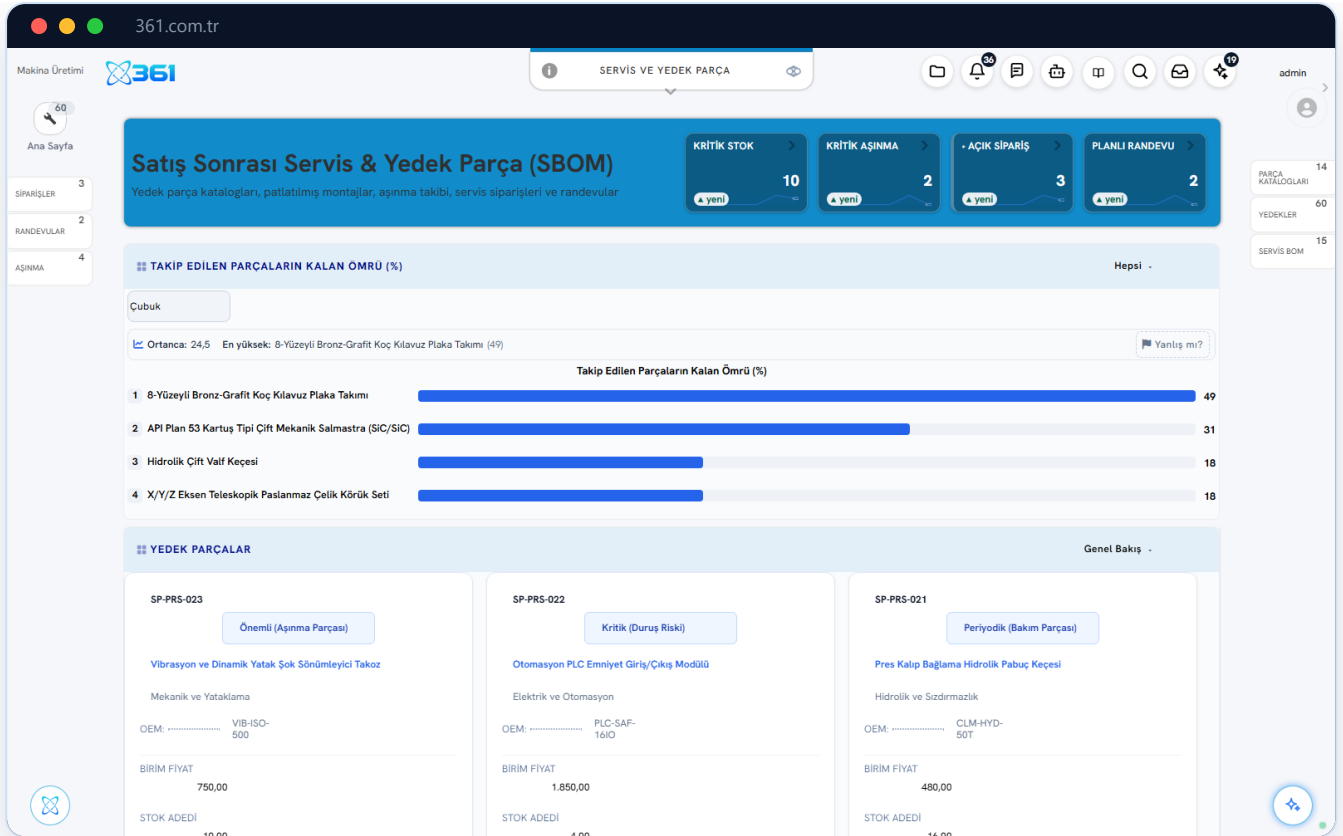
Serial machine record: identification and customer, planned BOM and its revision, linked CE technical file, as-built item count; Download Digital Product Passport action.

2.6 Service and spare parts

Spare-part catalogues, 60 spare parts, wear tracking (remaining life percentage), 3 spare-part orders and service appointments live in the Service and Spare Parts area. A critical wear record automatically opens a draft spare-part order; a notification runs when the order is placed.



Which families does the spare-part catalogue group into? Catalogue cockpit: active catalogues and catalogue item cost; distribution of catalogue parts by part family.



Which machine has critical wear? Service cockpit: critical stock, critical wear, open orders, planned appointments; remaining life of tracked parts.

2.7 Substance compliance, CBAM and the Digital Product Passport



REACH / RoHS / SVHC

15 substances are recorded with CAS/EC number and REACH status; a data model exists for SCIP. It does not submit notifications to ECHA.



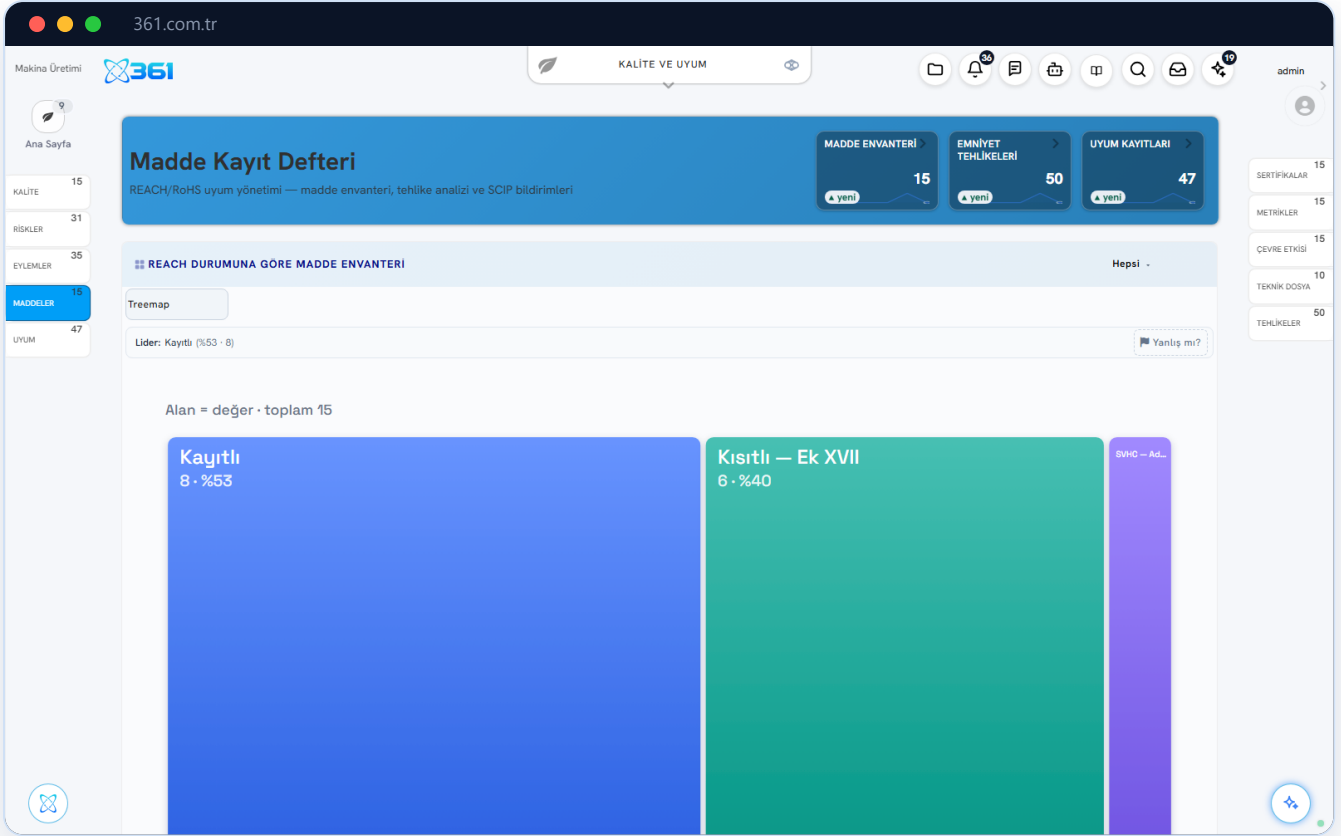
CBAM data model

Goods category, CN code, origin, net mass, direct emissions, carbon price paid in the country of origin and declaration deadline. It does not calculate the levy and does not optimise.



Digital Product Passport

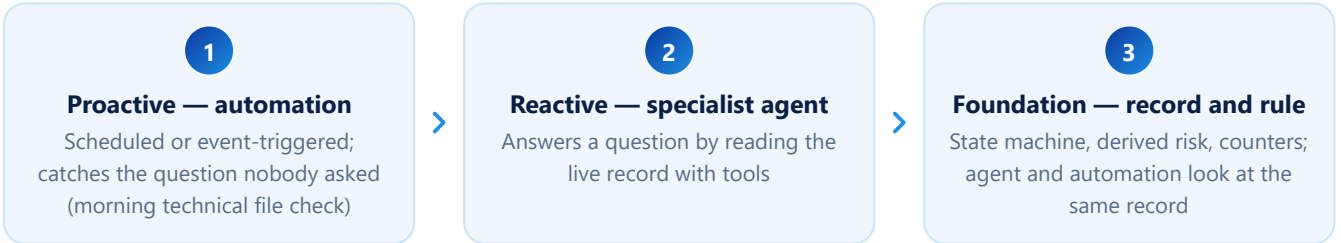
A QR code per serial machine from the platform's own generator; fields for carbon footprint, recyclability and environmental assessment exist. In the demo tenant no carbon data has been entered in the serial passports.



Which substance has which REACH status? Substance Register: substance inventory, safety hazards, compliance records; distribution by REACH status.

PART 3 — ARTIFICIAL INTELLIGENCE

3.1 Three-layer architecture



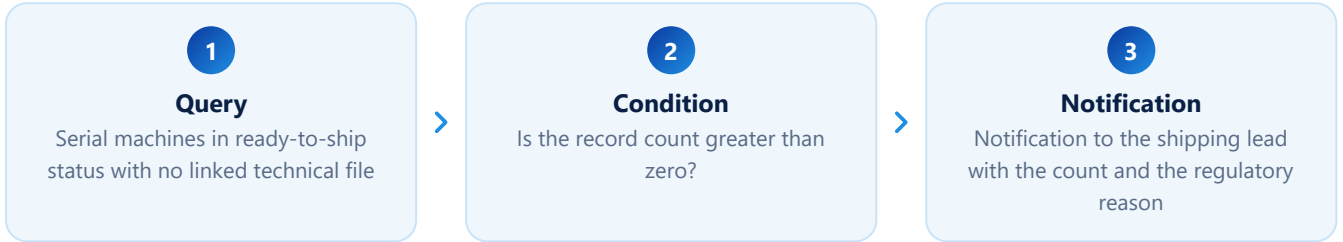
Only the proactive layer catches the question nobody asked

Agent	Question it answers
CE Technical File Auditor	Can this machine ship today, and if not, which document is missing?
Engineering Change Impact Analyst	What does this change order do to production, the field and cost?
Supply Risk and Single-Source Analyst	Which component depends on a single supplier, is there an alternative?
Quality-Design Feedback Analyst	Which defect requires a design change?
Quote Cost Deviation Estimator	How much uncertainty margin should this quote carry?

Agent	Question it answers
REACH/RoHS Export Compliance Scanner	Which market can this machine go to without issues?
Spare Parts and Wear Planner	Which machine has critical wear, are order and appointment in place?

3.2 Anatomy of an automation

The live definition of the automation "Ready-to-Ship Machine — Missing Technical File Check" (record name: "Sevke Hazır Makine — Teknik Dosya Eksik Kontrolü") has three steps and is triggered every day at 8:30 a.m.:



The definition was read from the live automation store

3.3 Real dialogs

The answers below are shortened, unaltered quotes of questions put to the agents in the live demo tenant on 9/15/2026. The agents answered in Turkish; the Turkish original is printed as evidence and a translation follows it. Machines, codes and numbers in the answers are **demo data**; they are not a customer result.

Question (Turkish original): Sevke hazır durumdaki makinelerden hangileri CE Teknik Dosyası açısından bugün sevk edilemez? Her biri için eksik belge ya da geçersiz sertifikayı yaz.

Bugün (15.09.2026) sevk edilemez makineler: DM-EP300 Endüstriyel Eksantrik Pres, DM-CUSTOM01 Özel Tasarım Multi Pres, DM-MP75 Mekanik Pres, DM-HP250 Hidrolik Pres, DM-EP100 Eksantrik Pres. Gerekçe: 2006/42/AT uygunluk beyanı COM değil (DM-EP300, DM-CUSTOM01), mevzuat dışı açık değişiklik emri var (DM-HP250, DM-MP75, DM-EP100), geçersiz/eskimiş sertifika var (DM-EP100) veya teknik dosya henüz RLS değil (DM-EP300, DM-CUSTOM01). ...

Translation: Q: Which of the ready-to-ship machines cannot be shipped today with respect to the CE technical file? For each one, state the missing document or invalid certificate. A: Machines that cannot be shipped today (15.09.2026): DM-EP300 Industrial Eccentric Press, DM-CUSTOM01 Custom-Design Multi Press, DM-MP75 Mechanical Press, DM-HP250 Hydraulic Press, DM-EP100 Eccentric Press. Reason: the 2006/42/EC declaration of conformity is not COM (DM-EP300, DM-CUSTOM01), there is an open change order outside the regulatory scope (DM-HP250, DM-MP75, DM-EP100), there is an invalid/outdated certificate (DM-EP100) or the technical file is not yet RLS (DM-EP300, DM-CUSTOM01). ...

— CE Teknik Dosya Denetçisi (CE Technical File Auditor) · 9/15/2026

Question (Turkish original): Tek tedarikçiye bağlı ve alternatifi olmayan kritik bileşenler hangileri? Temin süresi en uzun olanlardan başlayarak sırala.

Özet: 15 pres/saç işleme bileşeninden 2 adet KRİTİK kalem var — tek tedarikçiye bağlı ve onaylı alternatifi yok. En uzun temin süresi 75 gün. Mekanik Eksantrik Mili (CMP011) — tek tedarikçi Çelik Profil Sanayi Ltd., temin 75 gün, DM-MP75 Mekanik Pres. Güvenlik Işık Perdesi (CMP009) — tek tedarikçi Güvenlik Sistemleri Ltd., temin 45 gün, DM-EP100 Eksantrik Pres.

Translation: Q: Which critical components depend on a single supplier and have no alternative? List them starting with the longest lead time. A: Summary: of 15 press/sheet-metal processing components, 2 are CRITICAL items — tied to a single supplier with no approved alternative. The longest lead time is 75 days. Mechanical eccentric shaft (CMP011) — single supplier Çelik Profil Sanayi Ltd., lead time 75 days, DM-MP75 Mechanical Press. Safety light curtain (CMP009) — single supplier Güvenlik Sistemleri Ltd., lead time 45 days, DM-EP100 Eccentric Press.

— Tedarik Riski ve Tek Kaynak Analisti (Supply Risk and Single-Source Analyst) · 9/15/2026

Question (Turkish original): Bugün hangi seri makinelerde kritik aşınma var ve bunlardan hangisinin açık yedek parça siparişi yok? Önceliğe göre sırala.

Özet: Kritik aşınma: 2 makine | Uyarı: 2 makine | Açık sipariş: 3 | Stok riski (≤ 3): 0 | Randevu eksik sipariş: 1. Öncelik 1 — SN-2026-VMC800-019: X/Y/Z Eksen Teleskopik Paslanmaz Çelik Körük Seti, kritik, kalan ömür %18. Sipariş var (YP-OTO-3-0 / Sipariş Verildi) ama servis randevusu YOK — otomasyon kaçırmış olabilir. Öncelik 2 — SN-DM-EP100-2401: Hidrolik Çift Valf Keçesi, kritik, kalan ömür %18. Sipariş var (YP-2026-0412 / Sipariş Verildi, MachineDown), randevu 16.08.2026 var; stok 6 adet yeterli. Öncelik 3 — SN-2026-PMP160-038: API Plan 53 Kartuş Tipi Çift Mekanik Salmastra (SiC/SiC), uyarı, kalan ömür %31. Açık yedek parça siparişi yok (otomasyon 'PLM - Kritik Aşınma -> Taslak Yedek Parça Siparişi' atlanmış); kurşun 10 gün, stok 8.

...

Translation: Q: Which serial machines have critical wear today, and which of them has no open spare-part order? Sort by priority. A: Summary: Critical wear: 2 machines | Warning: 2 machines | Open orders: 3 | Stock risk (≤ 3): 0 | Orders without a service appointment: 1. Priority 1 — SN-2026-VMC800-019: X/Y/Z axis telescopic stainless steel bellows set, critical, remaining life 18%. An order exists (YP-OTO-3-0 / Ordered) but there is NO service appointment — the automation may have missed it. Priority 2 — SN-DM-EP100-2401: hydraulic double valve seal, critical, remaining life 18%. An order exists (YP-2026-0412 / Ordered, MachineDown), appointment on 16.08.2026; stock of 6 is sufficient. Priority 3 — SN-2026-PMP160-038: API Plan 53 cartridge-type double mechanical seal (SiC/SiC), warning, remaining life 31%. No open spare-part order (automation 'PLM - Critical Wear -> Draft Spare Part Order' skipped); lead time 10 days, stock 8. ...

— Yedek Parça ve Aşınma Planlayıcısı (Spare Parts and Wear Planner) · 9/15/2026

Question (Turkish original): Pres ürün sınıfında yeni bir teklif hazırlıyoruz. Geçmiş teklif ve gerçekleşen maliyet sapmalarına göre kaç puan belirsizlik payı koymalıyız ve hangi maliyet kalemi marjı en çok eritiyor?

Pres ürün sınıfı için geçmiş 10 maliyet karşılaştırması okundu. Pozitif sapmalı 7 kaydın ortalaması %10,71; yukarı yuvarlandığında önerilen belirsizlik payı %11'dir. Özel tasarım (DM-CUSTOM01) için taban pay %15 zaten daha yüksek, bu nedenle özel tasarım projelerinde %15 uygulanmalı. Hidrolik preslerdeki en büyük marj eritici: pompa kapasitesi artırımı (DM-HP250, CHO002) tek başına 218.000 ₺; müşteriye yansıtılamadığı için marj 8,9 puan düştü. ...

Translation: Q: We are preparing a new quotation in the press product class. Based on past quote-versus-actual cost deviations, how many points of uncertainty margin should we add, and which cost item erodes the margin the most? A: 10 past cost comparisons for the press product class were read. The average of the 7 records with a positive deviation is 10.71%; rounded up, the recommended uncertainty margin is 11%. For custom design (DM-CUSTOM01) the base margin of 15% is already higher, so 15% should be applied to custom-design projects. Largest margin eroder in hydraulic presses: the pump capacity increase (DM-HP250, CHO002) alone 218,000 ₺; because it could not be passed on to the customer, the margin fell by 8.9 points. ...

— Teklif Maliyet Sapma Tahmincisi (Quote Cost Deviation Estimator) · 9/15/2026

Question (Turkish original): Kapanmamış değişiklik emirlerinden hangisi üretime en çok dokunuyor? Etkilenen ürün ağacı, rota ve öge sayılarıyla sırala.

Kapanmamış değişiklik emirlerini etkilenen ürün ağacı, rota ve öge sayılarına göre sıraladım. Üretime en çok dokunan CHO001 — Hidrolik Silindir Flanş Güncelleme Emri (3 ürün ağacı, 2 rota, 4 öge). ...

Translation: Q: Which of the open change orders touches production the most? Sort by the number of affected BOMs, routings and items. A: I sorted the open change orders by the number of affected BOMs, routings and items. The one touching production the most is CHO001 — Hydraulic Cylinder Flange Update Order (3 BOMs, 2 routings, 4 items). ...

— Mühendislik Değişikliği Etki Analisti (Engineering Change Impact Analyst) · 9/15/2026

Question (Turkish original): Tekrarlayan kalite kusurlarından tasarım değişikliği gerektiren en önemli 3 tanesi hangisi? Kısa cevap ver.

Veride aynı kalite probleminin birden fazla üründe tekrarladığı görülüyor; her kusur yalnızca tek üründe kayıtlı. Tasarım değişikliği gerektiren en önemli 3 başlık: 1. Işık perdesi güvenlik sensörü gecikmesi (QI005) — DM-EP50, güvenlikle ilgili, öncelik en yüksek. 2. Güvenlik çit sensör arızası (QI012) — DM-EP50, güvenlikle ilgili, INP durumunda. ...

Translation: Q: Which 3 recurring quality defects most urgently require a design change? Answer briefly. A: The data does not show the same quality problem recurring across more than one product; each defect is recorded for a single product only. The 3 most important items requiring a design change: 1. Light curtain

safety sensor delay (QI005) — DM-EP50, safety-related, highest priority. 2. Safety fence sensor failure (QI012) — DM-EP50, safety-related, in INP status. ...

— Kalite-Tasarım Geri Besleme Analisti (Quality-Design Feedback Analyst) · 9/15/2026

Question (Turkish original): DM-EP100 Eksantrik Pres AB pazarına REACH ve RoHS açısından sorunsuz gidebilir mi? Kısa cevap ver.

Kısa cevap: AB pazarına bildirimle gidebilir, ama sorunsuz değil. DM-EP100 için RoHS ve REACH uygunluk kaydı kutükte görünmüyor; üründe DEHP (SVHC) ve kurşun (RoHS muafiyet 6(c)) var. 1. PLMProductRegulation'a RoHS 2011/65/AB ve REACH 1907/2006 kayıtları ekleyin; şu an sadece makine emniyeti/EMC standartları var. ...

Translation: Q: Can the DM-EP100 Eccentric Press go to the EU market without issues with respect to REACH and RoHS? Answer briefly. A: Short answer: it can go to the EU market with notification, but not without issues. No RoHS or REACH compliance record for DM-EP100 appears in the registry; the product contains DEHP (SVHC) and lead (RoHS exemption 6(c)). 1. Add RoHS 2011/65/EU and REACH 1907/2006 records to PLMProductRegulation; at present only machine safety/EMC standards are recorded. ...

— REACH RoHS İhracat Uyum Tarayıcısı (REACH/RoHS Export Compliance Scanner) · 9/15/2026

3.4 What an agent relies on



Live record

The agent produces its answer from the current record with entity query, count and aggregation tools; it does not produce numbers from training data.



Shows its source

The answer contains record codes (technical file, change order, component code); the user opens the record and verifies.



Authorisation

The agent reads records within the user's permissions; role-based menus and entity permissions follow the same rule.



Limit

The answer is a proposal, not an approval. On provider quota exhaustion or a timeout the agent may produce no answer; the rule "an empty job is not a success" is written to the run record.

3.5 Run status: running / awaiting trigger

Of the 10 PLM automations, 5 have a live run trace; 5 are defined and enabled but have no run trace because the triggering event (approval, rejection, cancellation) has not yet occurred. The same tenant holds 27,919 automation run records in total; the number of silently dead automations is 0.

Automation with run trace	Runs	Last run	Last status
PLM — Spare Part Order Placed Notification PLM — Yedek Parça Siparişi Verildi Bildirimi	1	9/14/2026	completed
PLM — Critical Wear → Draft Spare Part Order PLM — Kritik Aşınma → Taslak Yedek Parça Siparişi	2	9/14/2026	completed
Reminder: Change Order Pending Approval Onayda Bekleyen Değişiklik Emri Hatırlatması	7	9/9/2026	completed
Ready-to-Ship Machine — Missing Technical File Check Sevke Hazır Makine — Teknik Dosya Eksik Kontrolü	6	8/31/2026	completed
CE Conformity Certificate Expired Alert CE Uygunluk Belgesi Süresi Doldu Uyarısı	4	8/23/2026	completed

- ✓ Awaiting trigger: ECR Approved · ECO Approved · ECO Rejected · Document Approved · Spare Part Order Cancelled notifications
- ✓ "Runs every day" is written only for automations that are scheduled and have a run trace

PART 4 — ARCHITECTURE, LIMITS, ROLL-OUT

4.1 Data model and sub-modules

Sub-module	Scope
Products	Product, variant, configuration, specification, component, certificate, alternative, supplier, material, market, version, test result, quality issue, costing and comparison, catalogue and product type
Projects	Project, task, project team, requirement
Bill of Materials	Bill of materials, multi-level line item, service BOM line item
Documents	Document, design, CAD document, revision, folder, check-out, access, CAD bridge configuration and sync event
Change	Change request and type, change order, affected document, BOM, routing and item, stage gate
Manufacturing Preparation	Work instruction, manufacturing process, serial machine, as-built item
Quality and Compliance	Metric, quality issue, environmental impact, risk and measure, certificate, conformity and attachment, hazardous substance link, technical file and item, hazard, substance

Sub-module	Scope
Service and Spare Parts	Spare-part catalogue, spare part, wear tracking, order and order line, service appointment

In total 84 business objects; in the demo tenant each of 84 tables holds real records (2,082 records in total). PLM shares the same data layer with the production, purchasing, quality and service modules. Menu permissions are derived from the role: Engineer, Product Manager and Quality Assurance see the same PLM with only the areas they are authorised for.

4.2 Limits and roadmap

Live today — measured	Roadmap — not in the product, not claimed
STEP/IGES/BREP B-Rep in the browser (Open CASCADE); server-side thumbnail, GLB and solid/triangle counts	Add-in running inside SolidWorks/NX/Inventor/Creo; automatic EBOM import from the CAD tree
Document vault: check-out lock, immutable version with SHA-256, check-in rejection on an open ECO	Conversion of proprietary formats (SLDPRT, CATPart, PRT, IPT); 3D diff between two revisions
CAD bridge data model; time-limited personal access token scoped to vault methods	EPLAN/Altium combined electrical–mechanical BOM
ISO 12100 derived risk, EN ISO 13849-1 PLr calculation	CAE/FEA result management, generative topology, Monte Carlo tolerance stack-up
Technical file completeness and retention period	CMM/laser scan deviation map, automatic 2D technical drawings
REACH/RoHS substance inventory, SCIP data model	Automatic SCIP notification to ECHA
CBAM data model and declaration deadline	CBAM levy optimisation
Serial machine QR code and passport fields	IoT/OPC UA telemetry and automatic change request
3D scene control in natural language	WebXR/AR field guide, voice CAD
7 specialist agents, 10 automations	Uninterrupted AI service commitment (depends on provider quota)

4.3 Roll-out

1

Discovery

One real bill of materials, open changes and the technical file of one machine are selected; the inputs of the return framework are collected.

2

Pilot

The bill of materials and changes are transferred; cockpit counters and agent answers are measured with your own data.

3

Expansion

Quality and Compliance, Manufacturing Preparation and Service areas are opened; automations are set up with your own thresholds.

4

Measurement

The return framework is recalculated with the first month's data; quotation items are finalised according to this measurement.

4.4 Evidence table

Every number in this document comes from the live query below. Measurement: makina demo tenant, 9/15/2026. The limit column states what the number does NOT measure. Claim and limit texts are translated from the Turkish evidence records; the Turkish record is authoritative.

ID	Claim (with measured value)	Limit
K-PLM-AJAN	7 specialist AI agents for PLM are live.	Enabled agents present in the tenant store; the proof of capability is the dialog, not the definition (plm-diyaloglar.json).
K-PLM-ALTMODUL	PLM consists of 8 sub-modules: Products, Projects, Bill of Materials, Documents, Change, Manufacturing Preparation, Quality and Compliance, Service and Spare Parts.	This is the module count; whether a module is enabled in a tenant is determined by apps.xml EnableEntities, which this query does not measure.
K-PLM-ASINMA-KRITIK	Today 2 parts are at the critical wear threshold.	Among parts with wear tracking; untracked parts are out of scope.
K-PLM-BOM	22 bills of materials (BOMs) are recorded.	Demo tenant; revisions are counted as separate records.
K-PLM-BOMKALEM	The bills of materials contain 90 line items.	Demo tenant; all levels included.
K-PLM-CAD	30 CAD documents are managed under revision and status control.	Demo tenant; does not measure the validity of file contents.
K-PLM-CAD-FORMAT	The CAD documents come from 7 different CAD formats.	The format label on the record is counted; it does not measure whether every format opens in 3D (3D measurement: K-PLM-CAD3D-*).
K-PLM-CAD3D-KATI	The 5-axis CNC machining centre STEP assembly parsed in the browser with Open CASCADE is drawn as 818 solid bodies.	A single file (the VMC-5X-800 assembly) and a single browser measurement; the number changes with another file. Render speed (FPS) is not measured and not claimed.

ID	Claim (with measured value)	Limit
K-PLM-CAD3D-SUNUCU-KATI	When the same STEP assembly is processed on the server by the platform's own converter, 818 solid bodies are counted; identical to the browser measurement.	A single file (the VMC-5X-800 assembly), generated with VaultDerive after the MSI installation; the thumbnail (PNG) and GLB were written to the record. Only STEP/IGES/BREP are converted; proprietary formats are not.
K-PLM-CAD3D-SUNUCU-UCGEN	The same assembly yields 920,183 triangles in the server conversion.	A single file (the VMC-5X-800 assembly); conversion time and display speed are not claimed.
K-PLM-CAD3D-UCGEN	The same assembly is drawn in the browser with 920,183 triangles.	A single file (the VMC-5X-800 assembly) and a single browser measurement; the number changes with another file. Render speed (FPS) is not measured and not claimed.
K-PLM-ECO	22 engineering change orders (ECO) are tracked.	Demo tenant.
K-PLM-ECO-ACIK	Today 19 change orders are not closed (draft, under review or approved).	Orders below status code 40 (Released); the cockpit's "Open ECO" indicator may count with a different definition.
K-PLM-ECR	22 engineering change requests (ECR) are tracked.	Demo tenant.
K-PLM-ET	The industrial PLM solution comprises 84 business objects (EntityTypes).	Textile PLM (PLMTextile, a separate vertical solution and a module that is born disabled) is not counted; the number of fields is not measured.
K-PLM-ETKI-KALEM	34 affected items are tracked one by one in change orders.	Demo tenant.
K-PLM-ISTALIMATI	63 standard work instructions (SOP) are kept in manufacturing preparation.	Demo tenant.
K-PLM-KASA-ECO	Check-in is rejected on a CAD document whose part or design has an open engineering change order (ECO); at measurement time 6 documents are blocked for this reason.	The rule is the VaultCheckInBlockIf XML attribute of PLMCADDocument; the number changes with open ECOs. Live rejection test: CAD001 check-in returned 409 (15.09.2026). Demo tenant data.
K-PLM-KAYIT	The PLM tables in the demo tenant hold 2,082 records in total.	Demo data; rows with deleted status are included.
K-PLM-KOKPIT	Together with the main PLM cockpit and the area cockpits, 11 decision screens come ready to use.	Count of cockpits (Content); record forms and lists are not counted separately.
K-PLM-KOSU-PLATFORM	27,919 automation run records have accumulated in the same tenant.	ALL automations of the tenant (including non-PLM ones).

ID	Claim (with measured value)	Limit
K-PLM-MADDE	15 substances are recorded with CAS/EC numbers in the REACH/RoHS substance inventory.	Demo tenant; no official SCIP submission is made.
K-PLM-MALIYET	20 product costings are kept with material, labour, overhead, packaging, freight and customs items.	Demo tenant.
K-PLM-MALIYET-KIYAS	10 quote-versus-actual cost comparisons are recorded with a deviation percentage.	Demo tenant.
K-PLM-OTO	10 automations are defined for PLM processes.	Count of definitions; the run buckets K-PLM-OTO-KOSAN and K-PLM-OTO-BEKLEYEN are measured separately.
K-PLM-OTO-BEKLEYEN	5 automations are defined and enabled; they have no run trace because the triggering event (approval, rejection, cancellation) has not yet occurred.	SCHEDULED/AWAITING TRIGGER bucket; never written as "runs every day".
K-PLM-OTO-KOSAN	Of these, 5 automations have a live run trace.	RUNNING bucket: at least one record in the run store. Last run dates are in olculenDetay.
K-PLM-SERI	60 serial-numbered machines are tracked with an as-built record.	Demo tenant; units with no as-built items entered are also counted.
K-PLM-SERI-TFSIZ	Today 36 serial machines have no technical file linked — the cockpit shows this openly.	This is a gap indicator, not a success claim.
K-PLM-SESSIZ-OLU	The number of silently dead automations is 0.	Automations whose trigger is enabled but which do not run and cannot be explained by condition filtering; the tool's own predicate.
K-PLM-SIPARIS	3 spare-part orders are linked to the service chain.	Demo tenant.
K-PLM-TABLO-DOLU	In the demo tenant, each of 84 PLM tables holds real records.	Row counts are read from sys.partitions (rows with deleted status _State=99 included); this is demo tenant data, not customer data.
K-PLM-TEHLIKE	50 hazards are recorded in the ISO 12100 risk assessment.	Demo tenant.
K-PLM-TF	A CE technical file is kept for 10 machines.	Counts the completeness of the file; does not replace a notified body assessment.
K-PLM-TF-EKSIK	Today 10 technical files are missing a mandatory document item.	Files with PresentCount < ItemCount; does not inspect document content.
K-PLM-TFKALEM	70 mandatory document items are tracked in the technical files.	Demo tenant.

ID	Claim (with measured value)	Limit
K-PLM-URUN	22 machine models are defined with a product card.	Demo tenant; deleted status excluded.
K-PLM-UYUM	46 conformity/certificate records are tracked with their validity dates.	Demo tenant.
K-PLM-YEDEK	On the service side, 60 spare parts are defined with a catalogue link.	Demo tenant.

Live demo with your own bill of materials

Bring one real bill of materials and your open changes: in the same cockpit we measure together which work order, technical file and machine in the field are affected. A 45-minute tour in the makina.360bir.com demo environment.

NEXT STEP

Live demo with your own bill of materials and open changes

Let us start with one real bill of materials, your open changes and the technical file of one machine; in the first meeting we measure the inputs of the return framework together.

Get started

17 providers · 52 tools · 8 channel families/44 adapters · 200+ modules



361.com.tr · info@361.com.tr