

Digital Continuity in the Automotive Industry

PLM Road Map & PDT Europe 2023

PLM Road Map™ & PDT Europe 2023

The Digital Thread in a Heterogeneous, Extended Enterprise Reality
A call for PLM Professionals to share their knowledge & experience

CIMdata

November 15 & 16

euostep

Digital Continuity in the Automotive Industry

Dipl. Ing. (FH) Tobias Bauer

LEONI

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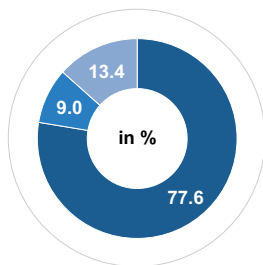
LEONI in figures

Financial year 2022

Wiring Systems Division (WSD)

 **Employees**
approx. 90,940

 **Sales**
€ 3,629 million



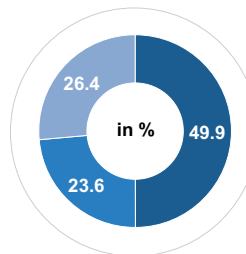
Sales by region

■ EMEA: € 2,816 million
■ Asia: € 326 million
■ Americas: € 487 million

Automotive Cable Solutions Division (ACS)

 **Employees**
rd. 3,935

 **Sales**
€ 1,464 million



Sales by region

■ EMEA: € 731 million
■ Asia: € 346 million
■ Americas: € 387 million

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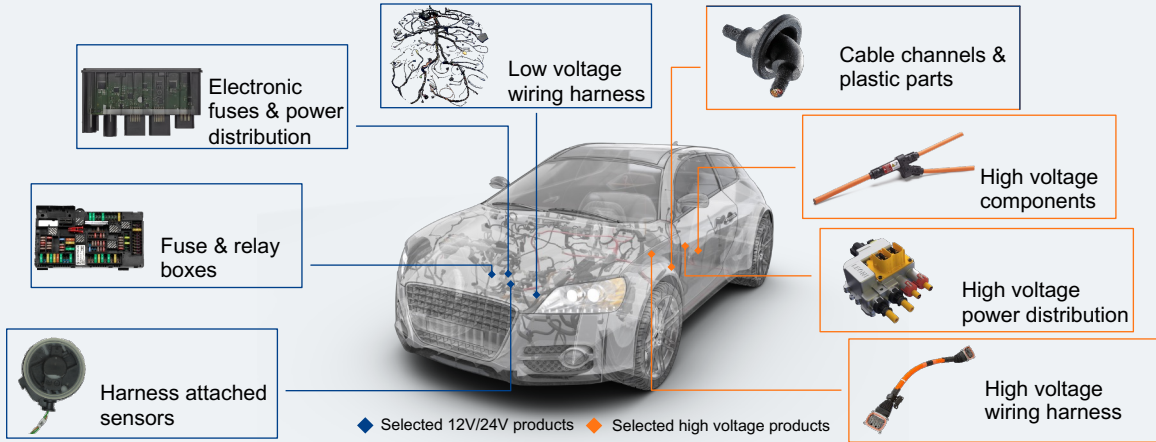
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Wiring Systems Division

Product and service portfolio: Low and high voltage solutions



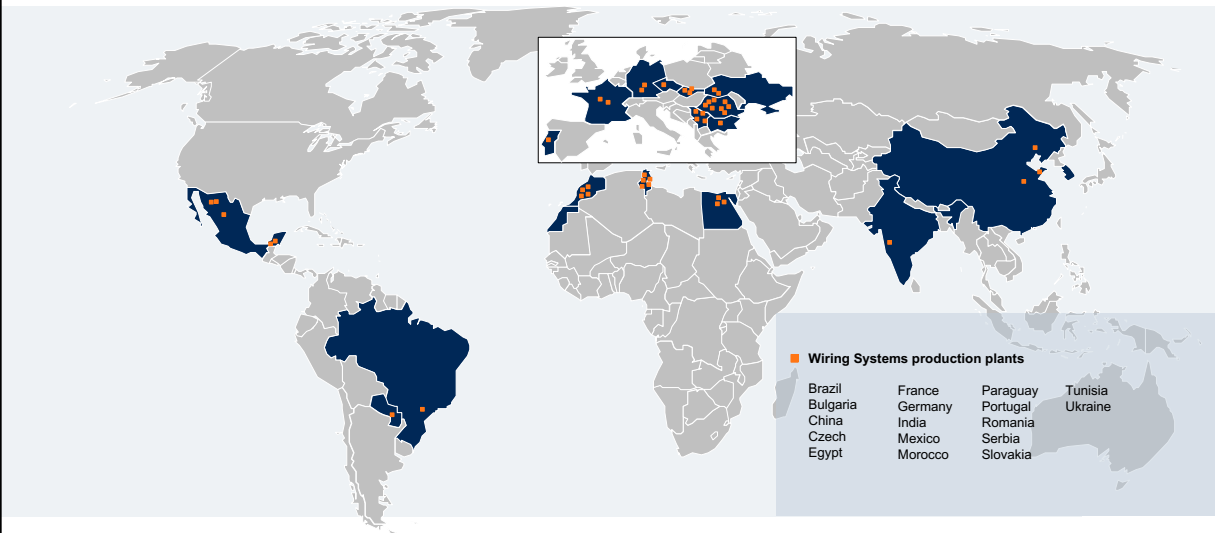
Additional: Development services for low and high voltage solutions

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Wiring Systems Division

Global manufacturing footprint – 46 plants in 17 countries



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About FLOW

FLOW is NOT a software



FUTURE LEONI OPERATING WORLD

FLOW is a business transformation program with focus on harmonizing and standardizing processes based on an SAP S/4HANA platform and improving financial steering and reporting.

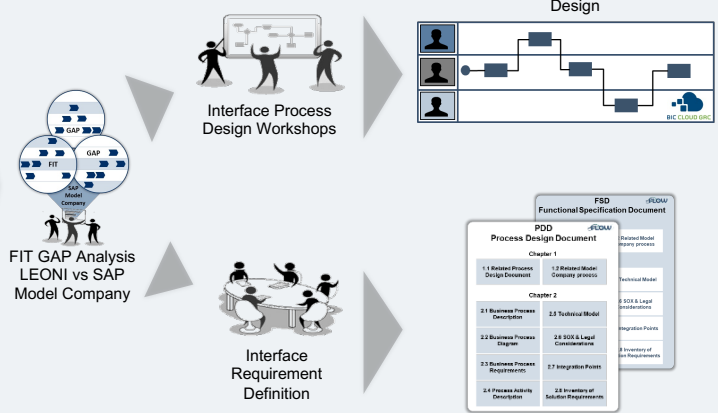
With FLOW LEONI will enhance and digitalize the way of working, mitigate operational risks due to old systems and set the basis for data transparency and real time reporting.

LEONI BPML to PDD/FSD

FLOW relevant processes

INPUT: BPML Business Process Master List

Process ID	Process Name	Business Unit	Process Type	Process Status	Process Owner	Process Description
001	001 - Design process	Design	Design	Active	Design	Design process
002	002 - Design process	Design	Design	Active	Design	Design process and development
003	003 - Design process	Design	Design	Active	Design	Design process
004	004 - Design process	Design	Design	Active	Design	Design process
005	005 - Design process	Design	Design	Active	Design	Design process
006	006 - Design process	Design	Design	Active	Design	Design process
007	007 - Design process	Design	Design	Active	Design	Design process
008	008 - Design process	Design	Design	Active	Design	Design process
009	009 - Design process	Design	Design	Active	Design	Design process
010	010 - Design process	Design	Design	Active	Design	Design process



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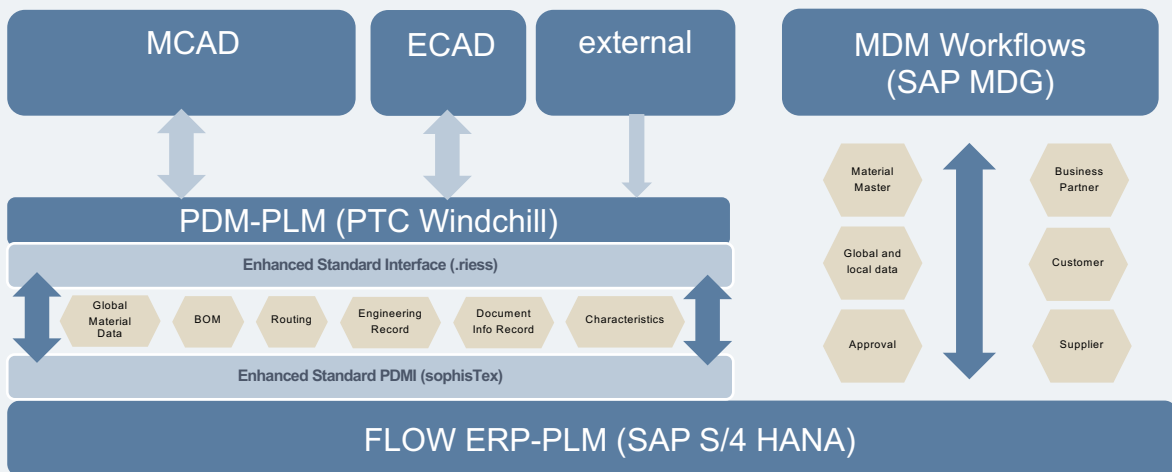
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Interface Landscape Focus CAD / PLM / ERP

Simplification



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Technical Key Facts Summary

.riess adapter

- › Standard Windchill adapter from .riess enhanced to:
 - collect and transmit MPM Objects.
 - collect and transmit SUMA Objects.
 - create and receive Problem Report and Change Request.
- › Transfer is fully integrated in existing release and change workflows.



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Technical Key Facts Summary

SAP PDMI

- › Standard SAP PDMI enhanced to:
 - create fully operational BOMs, PP-Routing including operations and production versions from received Windchill MPM data.
 - create PLM7 Engineering Record.
 - sync back to Windchill from SAP PDMI based on PLM7 Engineering Record Status.
 - store SUMA information to material master.
 - interact with the backbone change management process in Windchill.



Technical Key Facts Summary

Key Achievements

- › Creation and change of BOM & Routing ~10x faster than before*
- › Data consistency kept due to removal of manual and excel steps
- › Traceability across all involved systems due to PLM change management backbone



*Change of BOM & Routing for one Harness using the current toolchain 2-3 con days to around 0,25 con days with new toolchain. Validated on test environment.

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Soft-Skill & Key Facts Summary

Implementation Project

- › Complete remote work environment.
- › Short reaction times for Q&A need to be established and claimed.
- › Many new or revised requirements appeared on the way.
- › Agile development approach was crucial to success
- › Highly skilled and motivated team from .riess and sophisTex.
- › Internal Windchill knowledge very valuable and time saving.
- › Some of the enhancements should have been in the standard, e.g., attribute selection was a dropdown.
- › Enhancements triggered standard functionality improvements (co-innovation feedback loop).



Agenda



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Windchill Interface - Demo

Windchill BOM with SAP Attributes

Object Type	Number	Name	Quantity	Unit	Default ...	S4 CAO ...	SAP S4 Part Number	S4 Material Group	Material Version	S4 Production Version
LEONI Part	PC				ea		001	M100100	001	0001
Semifinished good	S10000306	Cut -	1	ea	ea		S10000306	M110300		0001
Semifinished good	S10000305	Cut -	1	ea	ea		S10000305	M110300		0001
Semifinished good	S10000299	Shri - SUB1.1.1.15.1	1	ea	ea		S10000299	M110200		0001
Semifinished good	S10000300	USW	1	ea	ea		S10000300	M110200		0001
Semifinished good	S10000304	Cut -	1	ea	ea		S10000304	M110300		0001
LEONI Part	P00106044	TERMINAL_F_U CU...	1	ea	ea	1	P00106044	M040500	001	
LEONI Part	P00025008	1 0.35 BN-YE 7X0...	875	mm	m	1	P00025008	M030200	001	
Semifinished good	S10000303	Cut -	1	ea	ea		S10000303	M110300		0001
Semifinished good	S10000302	Cut -	1	ea	ea		S10000302	M110300		0001
LEONI Part	P00163130	WIRE SEAL OG 1.70MM	1	ea	ea	2	P00163130	M010200	001	
LEONI Part	P00025008	0.35 BN-YE 7X0...	480	mm	m	1	P00025008	M030200	001	
LEONI Part	P00009988	-22140492050 TERML...	1	ea	ea	2	P00009988	M040500	001	
Semifinished good	S10000301	Cut -	1	ea	ea		S10000301	M110300		0001

Windchill Interface - Demo

Windchill Routing with SAP Attributes

Identity	Part Tags	S4 Backflush	S4 Control Key	S4 Operation Activity Number	S4 Resulting Number	Processing Time	S4 Work Center
Process Plan for P...							
0400, Pack Harness, A.2 (WEGBA), 1000000647		Yes	PP01	0100	001	68.52 s	
0390, Perform Electrical test, A.3 (WEGBA), 1000000648		Yes	PP01	0050	001	113. s	
0380, Final Assembly, A.37 (WEGBA), 1000000649		Yes	PP01	0010	001	847.98 s	
0370, Cut Single Wire_2T1S, A.5 (WEGBA), 1000000650		No	PP01	0010	S10000280	1.4 s	CA000001
0360, Cut Single Wire_2T1S, A.5 (WEGBA), 1000000659		No	PP01	0010	S10000289	1.4 s	CA000001
0350, Cut Single Wire_2T1S, A.5 (WEGBA), 1000000660		No	PP01	0010	S10000290	1.4 s	CA000001
P0 TERMINAL_F_S CUSN-SN, AA.70 (Design)							
P0 TERMINAL_F_U CUNISI-SN, AA.65 (Design)							
P0 79-FLRY-A 0.35 QMM GRWS, AA.43 (Design)							
P0 WIRE SEAL ROUND YE, AA.64 (Design)							
0340, Shrink Sleeve, A.2 (WEGBA), 1000000661		Yes	PP01	0010	S10000291	23.6 s	PA001501
S10000292, USW - AA.AA.2 (WEGBA)							
0310, USW Splice, A.5 (WEGBA), 1000000662		Yes	PP01	0010	S10000292	10.9 s	PA001301
S10000294, AA.AA.2 (WEGBA)							
S10000293, AA.AA.2 (WEGBA)							

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Windchill Interface - Demo

Change Request

PTC Windchill

Access > Change Request - Internal - CR00001013, A

Details | Process | History | Routing/Process | Related Documents

Attributes | More Attributes | Attachments | Annotations | Affected Objects | V

WIP: No

Reason for Rejection:

Business Attributes

Estimated Implementation Date:
Agreed Implementation Date:
Remarks:
Total Estimated Costs: 18.0000
Material scrap costs: 3.0000
Whole FG scrap costs: 3.0000
Rework costs: 3.0000
Equipment costs: 3.0000
Transportation costs: 3.0000
Other costs: 3.0000
Expected Benefits: 3.0000

System

Team Name: Change Request 2 Team
Location: FLOW TEST DATA/change requests
State: Open - Under Review - Impact Analysis - Pending Approval CCR - Pending
Created By: Bauer, Tobias
Created On: 2021-11-11 08:45 CET

S4 Interface

Affected View: WIAST
S4 Benefits Cost Saving: 3,00 EUR
S4 Cost For Equipment Change: 3,00 EUR
S4 Estimated Total Hours: 48 h
S4 Material Scrapping: 3,00 EUR
S4 Other Costs: 3,00 EUR
S4 Required Duration For Implementation: 09:00:00
S4 Rework Cost: 3,00 EUR
S4 Scrapping Whole KSK: 3,00 EUR
S4 Technically Feasible: YES
S4 Transport Cost: 3,00 EUR

SAP S/4HANA

Record Number: CR00001013 Description: BATOTEST_31 Engineering Record Type: ZWCR Status: Feedback Sent

Header Data

Engineering Record Description: BATOTEST_31 [Long Text]
Reason for Change: 0005 Documentation Issue
Priority: []
Lead Change Number: []
Change Number Status: 00
Change Rating: 5
Content: 2762176579
Content Name: FLOW TEST DATA

Engineering Record Status: 40-Feedback Sent
Target Run-In Date: []
Customer Reference Number: []
Change Coordinator: []
Actual Impl. Date: []
Plant: 1041

Items Process Route Team Definition Notes Documents Administrative Data Classes **Characteristic Values**

Class Type: 046 - Engineering Record Header
Class: ER_CM_010 - Change Request Summary

Characteristic Values

CR Technically feasible: YES
CR Material scrapping: 3,00 EUR
CR Scrapping whole KSK: 3,00 EUR
CR Rework cost: 3,00 EUR
CR Cost for equipment change: 3,00 EUR
CR Other costs: 3,00 EUR
CR Transport cost: 3,00 EUR
CR Benefits / cost saving: 3,00 EUR
CR Estimated total hours: 40 h Hour
CR Required duration for impl.: 00:00:00

Status: Released

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Windchill Interface - Demo

Integration Cockpit

PDMI Integration Cockpit

Messages hierarchy

- WT
 - khv1pdmwbt01
 - EXTERNAL MESSAGE. 07.02.2022 17:40:20
 - EXTERNAL MESSAGE. 07.02.2022 17:38:27
 - EXTERNAL MESSAGE. 07.02.2022 17:37:01
 - EXTERNAL MESSAGE. 07.02.2022 15:55:35
 - EXTERNAL MESSAGE. 07.02.2022 15:40:03
 - EXTERNAL MESSAGE.CUSTOM (WProcess template: SAP Tran)
 - QAO WT Part Scenario
 - Windchill Initial Check
 - Windchill Materials
 - Windchill Documents
 - Windchill Bill of Materials
 - Windchill Material Document Links
 - Windchill Bill of Documents
 - Windchill Change Number
 - Windchill Routings
 - EXTERNAL MESSAGE.CUSTOM (WProcess template: SAP Tran)
 - EXTERNAL MESSAGE. 07.02.2022 10:40:27
 - EXTERNAL MESSAGE.MANUAL (WProcess template: SAP Tran)

PLM Messages | PLM Data | Draw | Overview

Status Messages

- Missing property MPM_Attr_MPMOperationOverlapTime
- Missing property WaitingTime
- Missing property MoveTime
- Missing property QueueTime
- Started loading task list header and its subobjects
- Task list header (type N, group 50000080, counter 01) and subobjects loaded
- Changing of task list header: type N, group 50000080, counter 01
- Changing of material assignment: S00011612, plant 1041
- Changing of operation 0700 of sequence 000000
- Changing of comp. assgt: operation 0700, seq. 000000, BOM no. 00001308, item no. 0030
- Changing of comp. assgt: operation 0700, seq. 000000, BOM no. 00001308, item no. 0010
- Changing of comp. assgt: operation 0700, seq. 000000, BOM no. 00001308, item no. 0040
- Changing of comp. assgt: operation 0700, seq. 000000, BOM no. 00001308, item no. 0020
- Task list (type N, group 50000080, counter 01) successfully changed
- Routing maintained
- Production version created successfully
- Missing property description
- Started loading task list header and its subobjects

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Q&A

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Contact



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