

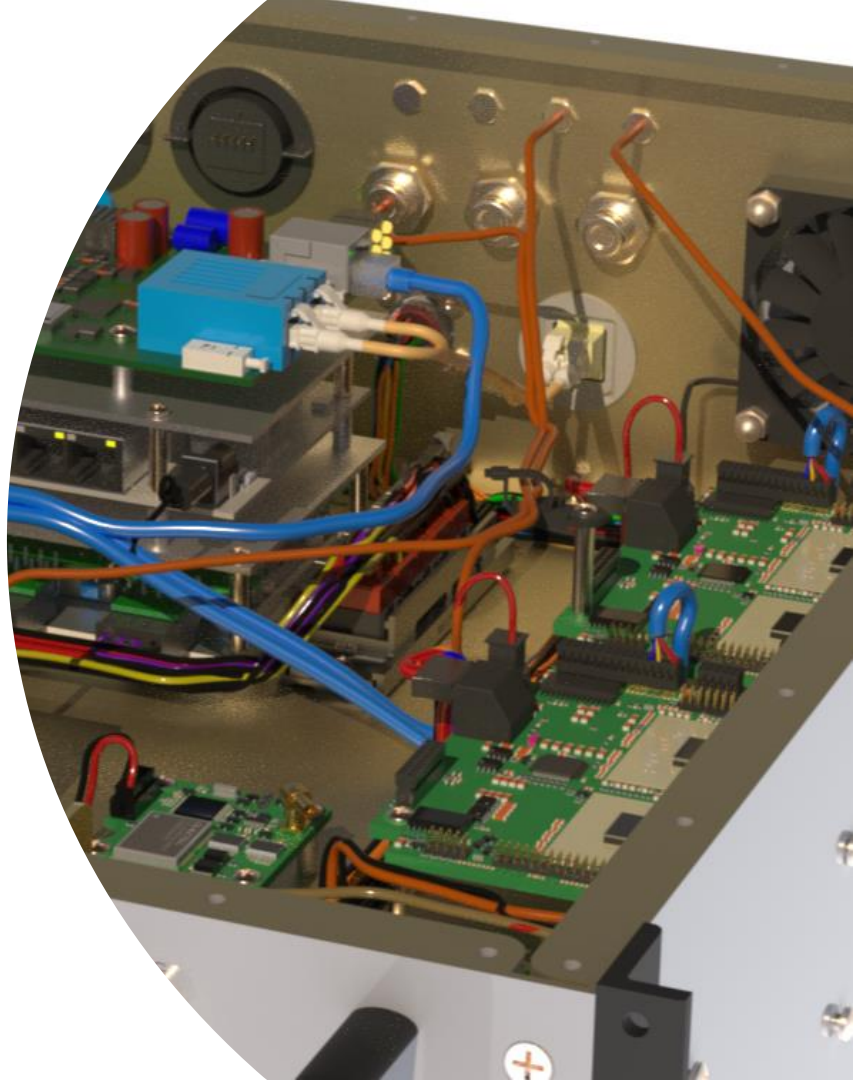


3DEXPERIENCE®

# SOLIDWORKS ELECTRICAL

Bring Your Wire & Harness Design into the 2020s

**DS** DASSAULT SYSTEMES | The 3DEXPERIENCE® Company



# Who is EMA Design Automation?

## ELECTRONICS EXPERTS

Cadence & Dassault  
High Tech Partner

Semiconductor, Electronics,  
and Electrical (E2E)

EDA IP, Training, Services

## LARGE WW CUSTOMER BASE

4000+ Customers WW

Multi-Geo Account  
Deployments

## EXAMPLE CUSTOMERS

Google GARMIN Medtronic

amazon GoPro Be a HERO. COVIDIEN

Meta BOEING FLUKE

TEXAS INSTRUMENTS stryker intel

Microsoft BOSE CREE

RIVIAN Whirlpool SONOS  
THE WIRELESS HI-FI SYSTEM

Skydio DEPARTMENT OF DEFENSE UNITED STATES SPACE FORCE

## E2E IS IN OUR DNA

30+ Years of Design & Systems  
Integration Experience

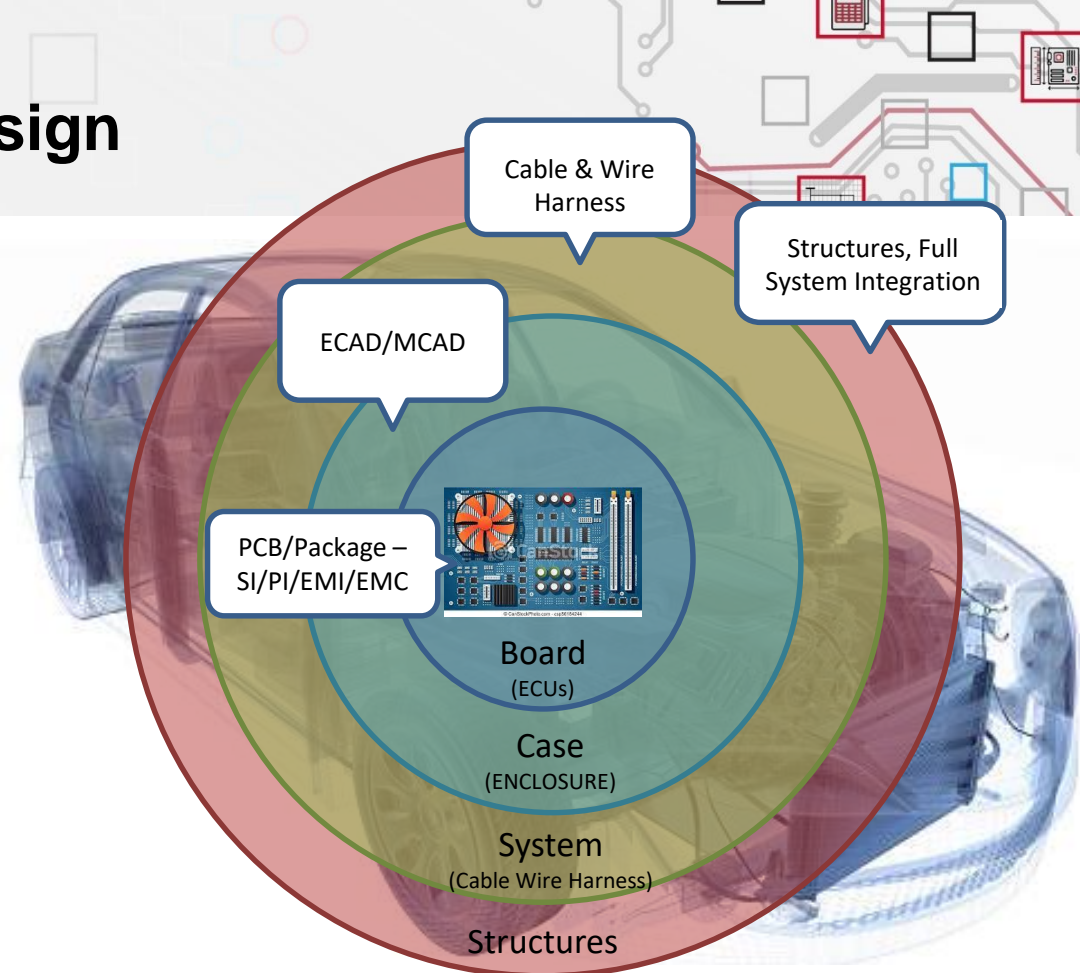
Regular Speakers on  
Electronic / High-Tech Design  
Topics

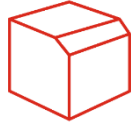
## ENGINEERING FOCUS

Staffed with experts in  
Electrical Engineering, PCB  
Design, Simulation, and Data  
Management

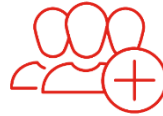
# Electronics System Design

- Focus on Electronics & Electronic System Design
- Support Customers at all Phases and Enable Seamless Integration
- Cable & Wire Harness is a Key Piece of the Process

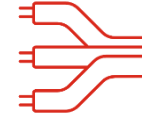




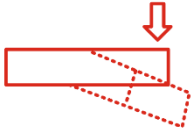
3D CAD



COLLABORATION



ELECTRICAL DESIGN



SIMULATION SOLUTIONS



VISUALIZATION



DATA MANAGEMENT



CAM



2D CAD

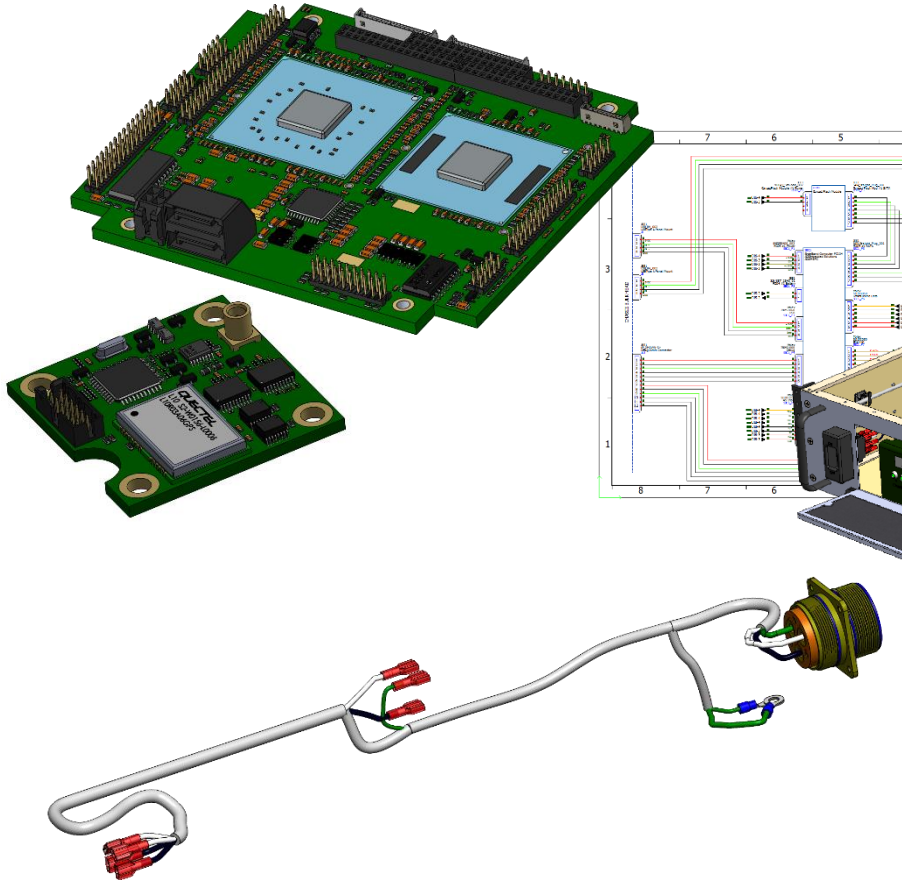


TECHNICAL  
COMMUNICATION



PRODUCT  
CONFIGURATOR

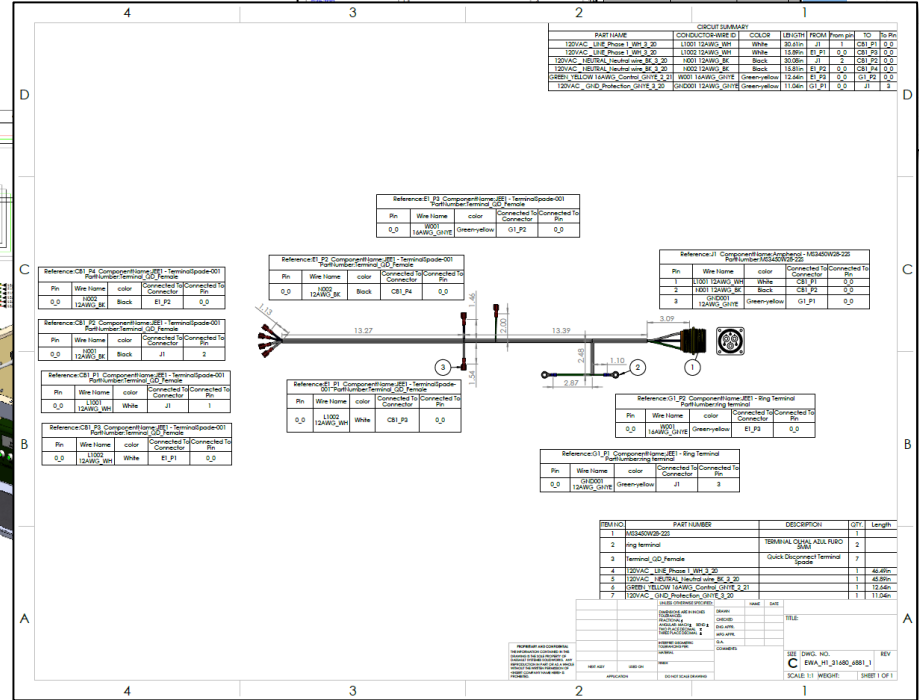
# EXPANDING INTO SYSTEMS DESIGN



Reference	Mark	Quantity	Description	Mark	Quantity
3GAA 1B1 102-BRC	M43A, M43DA, M43TA	3	Motor 3-phases, type M3AA 180	L1-413-A	2
				L1-413-B	2
				L1-413-C	2
				L1-427-B	2
				L1-427-C	2
				L2-405-A	2
				L2-405-B	2

Reference	Mark	Quantity	Origin	Destination	Wire number	Mark	Quantity
03M4B6	L1	4	36			L1-427-C	2

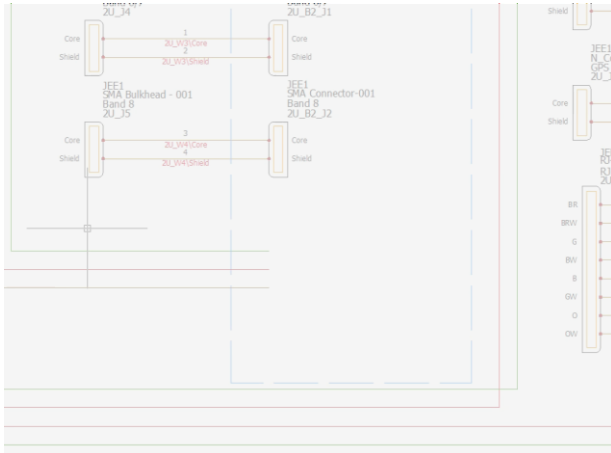


REF ID	PART NUMBER	DESCRIPTION	QTY	Length
1	M3AA180-220	Motor 3-phases, type M3AA 180	1	
2	Ring Terminal	TERMINAL QUICK ASSEMBLY	2	
3	Terminal_OD_Female	Quick Disconnect Terminal Female	7	
4	120VAC_12E Phase 1_W3_20		1	46.000
5	120VAC_12E Phase 2_W3_20		1	46.000
6	120VAC_12E Phase 3_W3_20		1	46.000
7	120VAC_12E Phase 4_W3_20		1	46.000

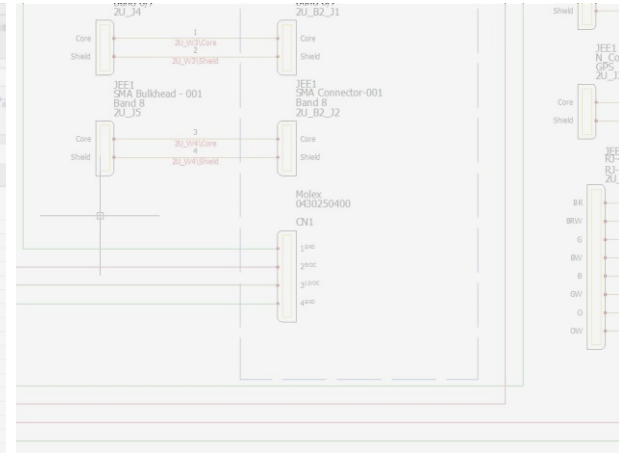
REF ID	PART NUMBER	DESCRIPTION	QTY	Length
1	M3AA180-220	Motor 3-phases, type M3AA 180	1	
2	Ring Terminal	TERMINAL QUICK ASSEMBLY	2	
3	Terminal_OD_Female	Quick Disconnect Terminal Female	7	
4	120VAC_12E Phase 1_W3_20		1	46.000
5	120VAC_12E Phase 2_W3_20		1	46.000
6	120VAC_12E Phase 3_W3_20		1	46.000
7	120VAC_12E Phase 4_W3_20		1	46.000

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6	120VAC_12E Phase 3_W3_20		1	46.000
7	120VAC_12E Phase 4_W3_20		1	46.000

# THE TYPICAL DESIGN PROCESS



	A	B	C	D	E	F
	Origin	Destination	Wire number	Section	Length (inches)	Reference
1						
2	2U_EM1_J1	2U_J1.L	3	16	5.82	
3	2U_EM1_J2	2U_J1.N	5	16	2.69	
4	2U_EM1_J3.1	2U_GS_J2	5	16	10.07	
5	2U_GS_J3	2U_J1.G	1	16	2.44	
6	PS1.C	TB3.A	6	20	9.96	
7	PS1.C	TB3.C	9	20	9.97	
8	2U_B3_J2.5	2U_J10.5	26	20	13.59	
9	2U_B3_J2.6	2U_J10.6	27	20	13.6	
10	F1.C	TB3.J	10	20	18.74	
11	TB2.M	F1+12	4 12VDC 20AWG	20	19.21	
12	PS1+12	TB2.A	1 12VDC 20AWG	20	10.89	
13	2U_B3_J2.3	2U_J10.3	6 12VDC 20AWG	20	13.49	
14	2U_B3_J2.2	2U_J10.2	5 12VDC 20AWG	20	13.49	
15	PS1+5	TB1.A	1 5VDC 20AWGRed	20	11.3	
16	2U_B3_J2.4	2U_J10.4	9 5VDC 20AWGRed	20	13.55	
17	2U_B3_J2.1	2U_J10.1	8 5VDC 20AWGRed	20	13.55	
18					180.37	

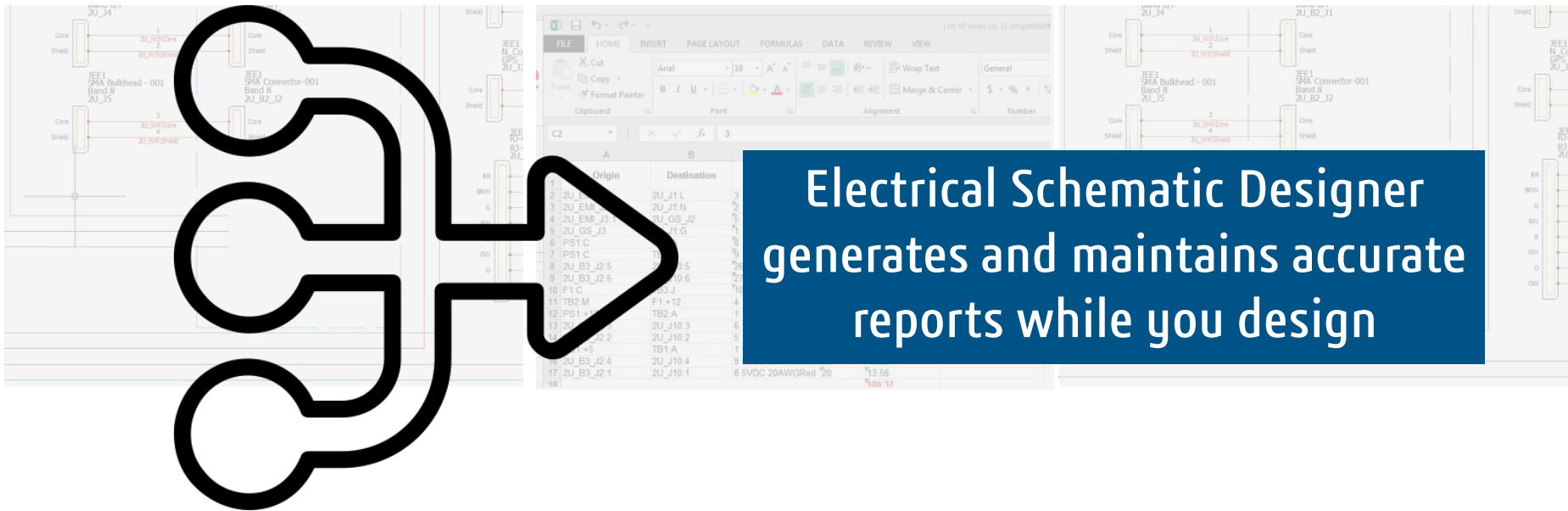


Logical Definitions  
Part Selections  
Cable Drawings

Create BOMs  
From-To Wire Lists  
Cable Detail Reports

Audit Drawings  
Audit BOMs  
Verify Connection Points

# DIFFERENTIATOR



# LIBRARY ORGANIZATION

Within the **Manufacturer Part Library**, each part can include any necessary metadata AND establish a link to varying graphical representations.



Manufacturer part properties Glenaire : MIL 38999 12-22 F

Properties Circuits, terminals

Reference:	MIL 38999 12-22 F
Manufacturer:	Glenaire
Class:	Connectors
Library:	USER
Type:	Base
Article number:	8675309
Series:	
Mark root:	J
Description (English):	AR 12-22 SC22M SRM Series II
Commercial reference (English):	
<b>Supplier</b>	
Supplier name:	
Stock number:	
<b>Information</b>	
Creator:	User
Creation date:	11/20/2014
Modification date:	5/16/2016
Number of circuits:	22
Number of terminals:	22
<b>Illustration</b>	
Line diagram:	MIL 38999 F
Scheme:	EW_RCON6P
3D part:	_D38999_20MC35S.SLDPRT
2D footprint:	771032
Connection label:	SW3DPS-Fischer
Printed circuit board file:	
<b>Size</b>	
Width (mm):	12
Height (mm):	12
Depth (mm):	22
<b>Use</b>	
Voltage:	
Frequency:	
<b>Control</b>	
Voltage:	
Frequency:	

Three blue arrows point from the 'Illustration' section of the properties window to three graphical representations on the right:

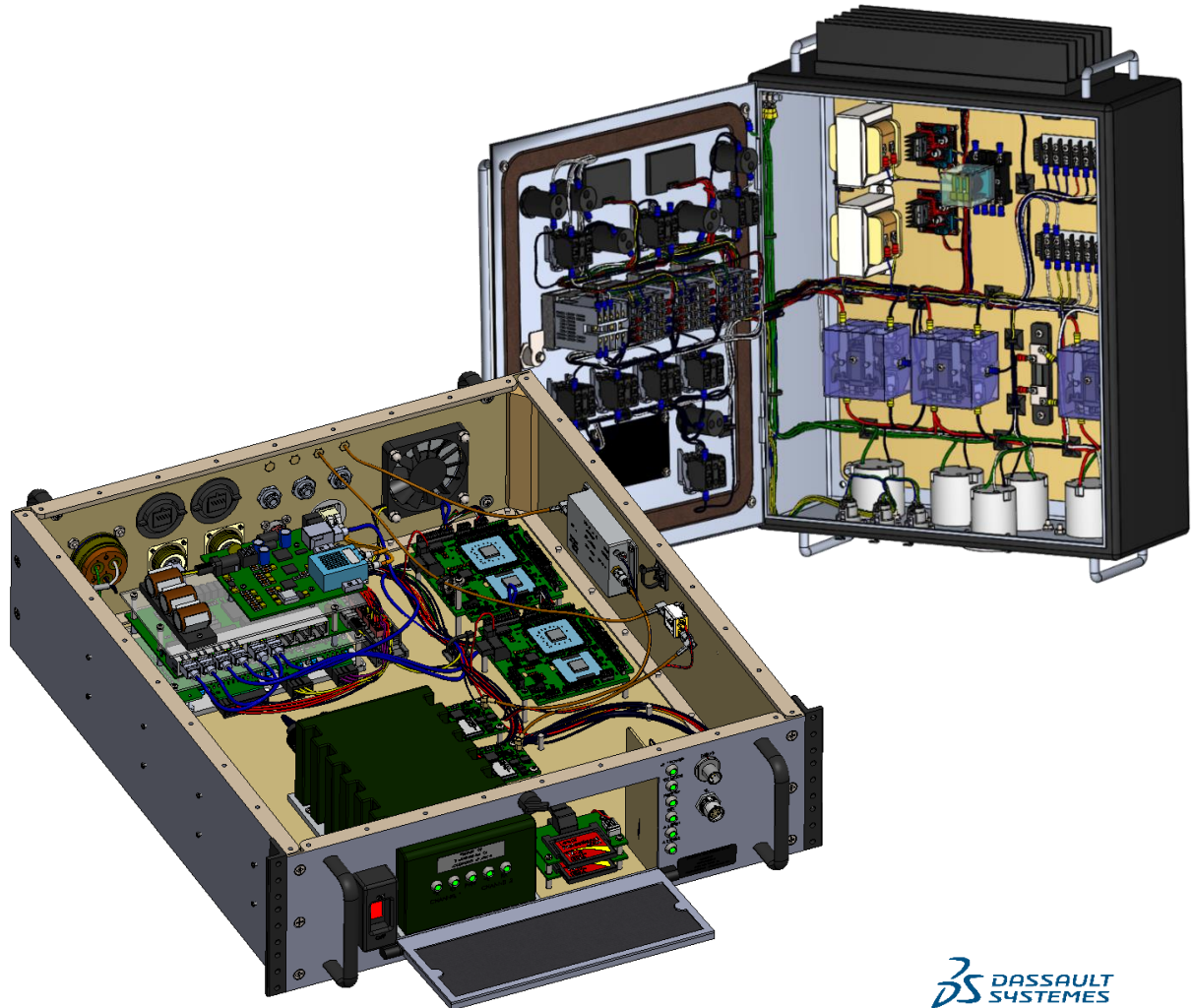
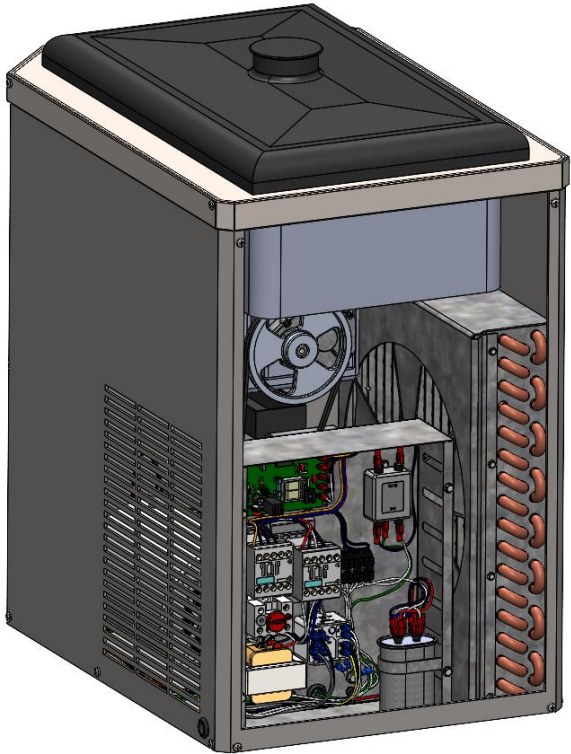
- Top: A 3D perspective view of the connector with a red and blue ring, labeled with metadata: #CROSS\_REF, #TAG, #REF\_DES\_2, #COM\_TX\_0, #REF\_TZ\_0\_L1.
- Middle: A schematic diagram showing a vertical array of 22 pins labeled N:0:C:0 through N:3:C:3, with associated metadata: #REF\_DES\_1, #REF\_DES\_2, #COM\_TZ\_0\_L1, #TAG, #P\_MNE\_0 through #P\_MNE\_3, #REF\_USE\_VOLT, #REF\_USE\_FREQ, #REF\_USE\_FREQ.
- Bottom: A 3D perspective view of the connector from a different angle, showing the internal pins.

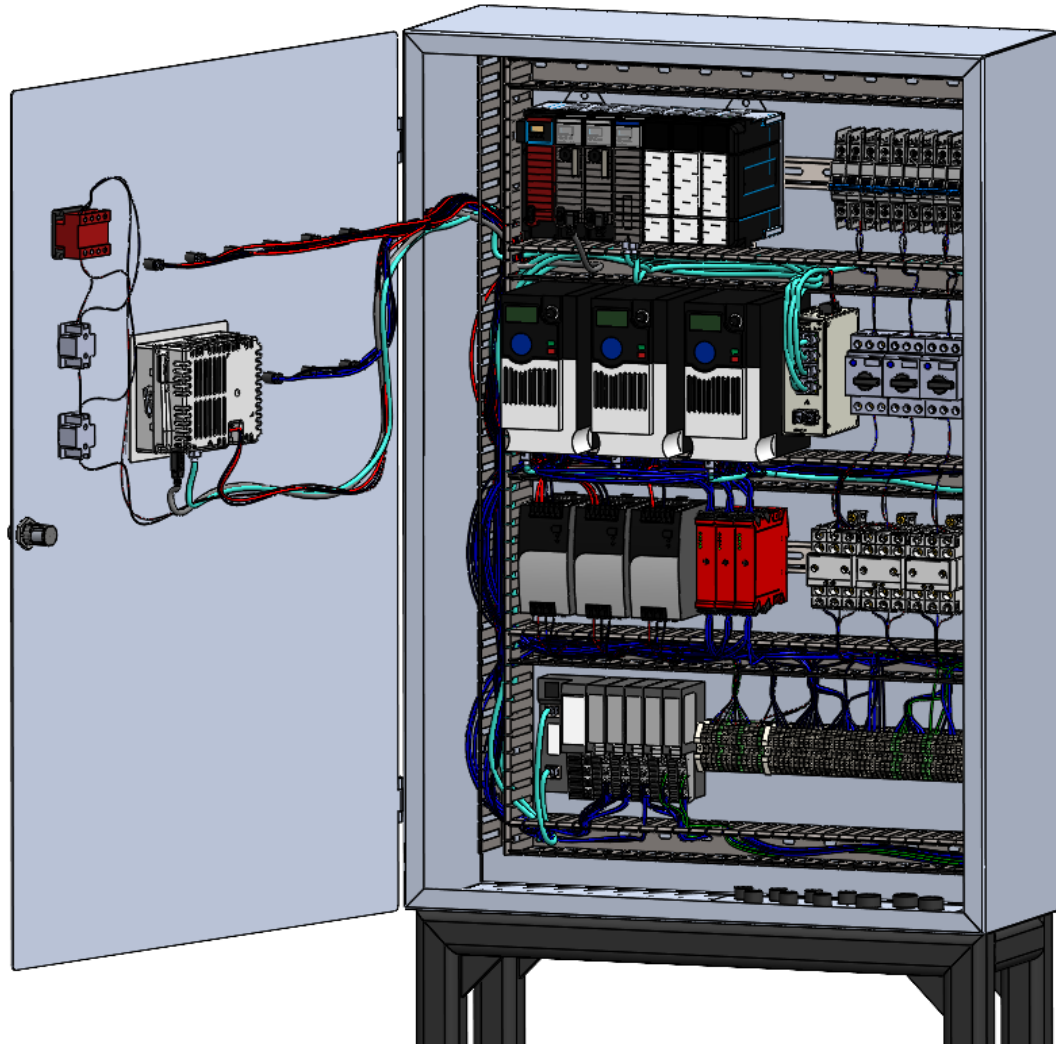
Below these are two more graphical representations:

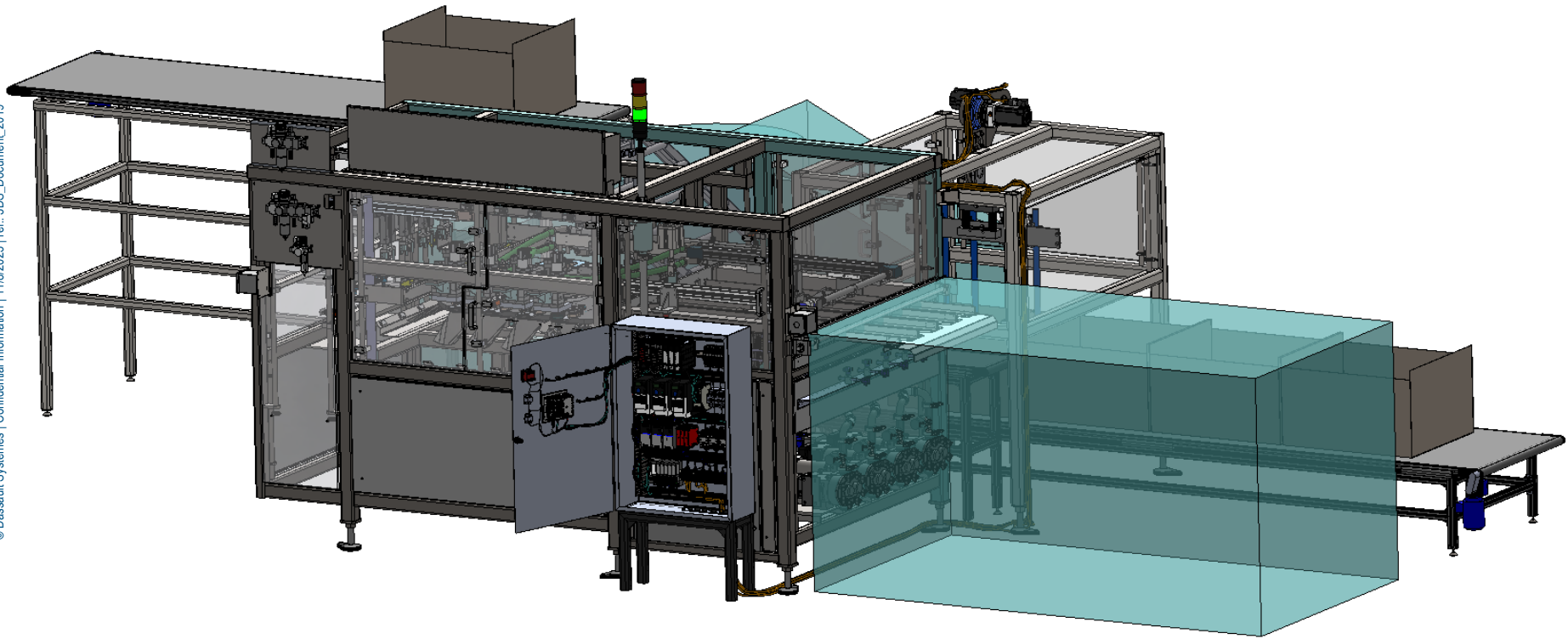
- A 2D footprint diagram showing the layout of the connector on a PCB, labeled with metadata: #TAG, #REF\_DES\_1, #REF\_DES\_2.
- A schematic diagram showing the electrical connections and pin configurations, labeled with metadata: #TAG, #REF\_DES\_1, #REF\_DES\_2.















LET'S GO LIVE...





# OVERALL BENEFITS

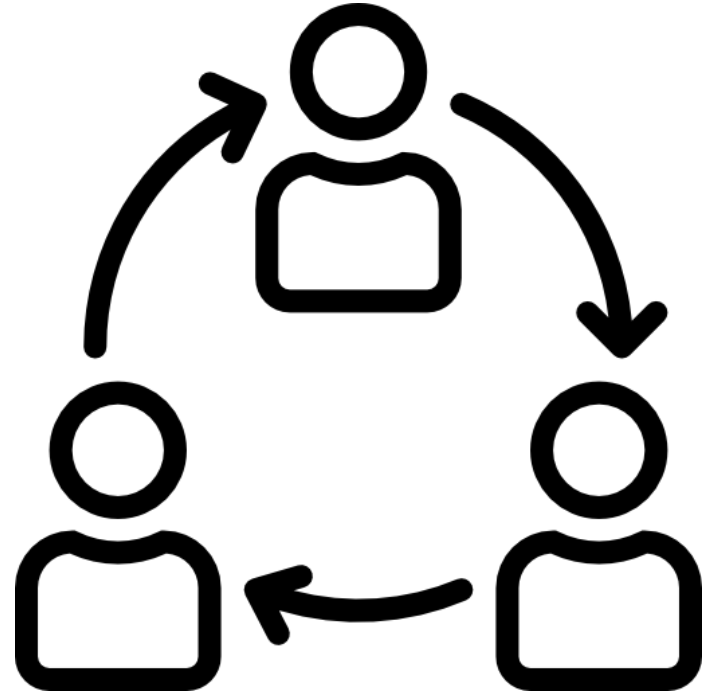
- ✓ Increase Communication and Collaboration Between the Electrical and Mechanical Design Teams
- ✓ Increase in Productivity
- ✓ Improve Time to Market
- ✓ Eliminate Hidden Costs
- ✓ Ensure Consistent Manufacturing and Assembly
- ✓ Reduce Manufacturing Defects and Scrap
- ✓ Streamline Development



# COMMUNICATE SUCCESSFULLY

Who else can I share my data with?

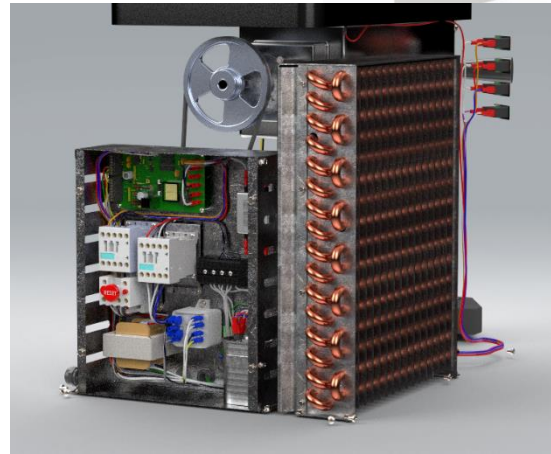
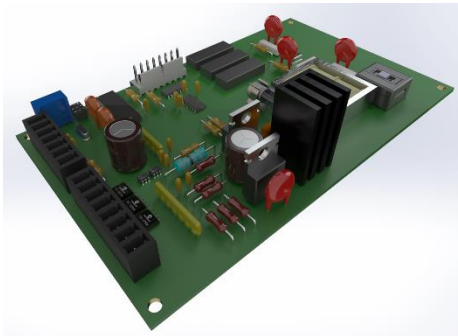
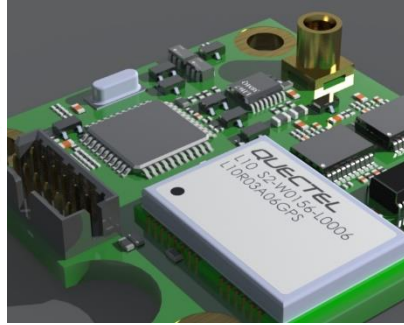
- Management Team
- Design Teams
  - Electrical
  - Mechanical
  - Analysts
- Assembly Team / Shop Floor
- Network/CAD Admin Team
- Marketing
- Logistics
- Field Services
- External Services





# COLLABORATION IN MIND...

Renderings / Marketing Material



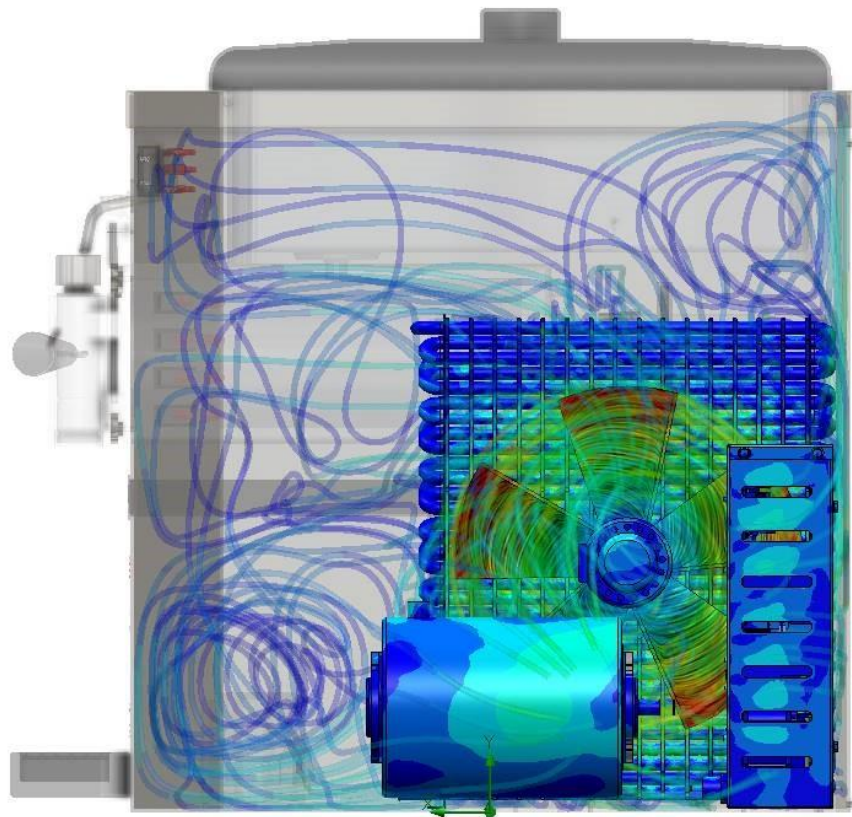
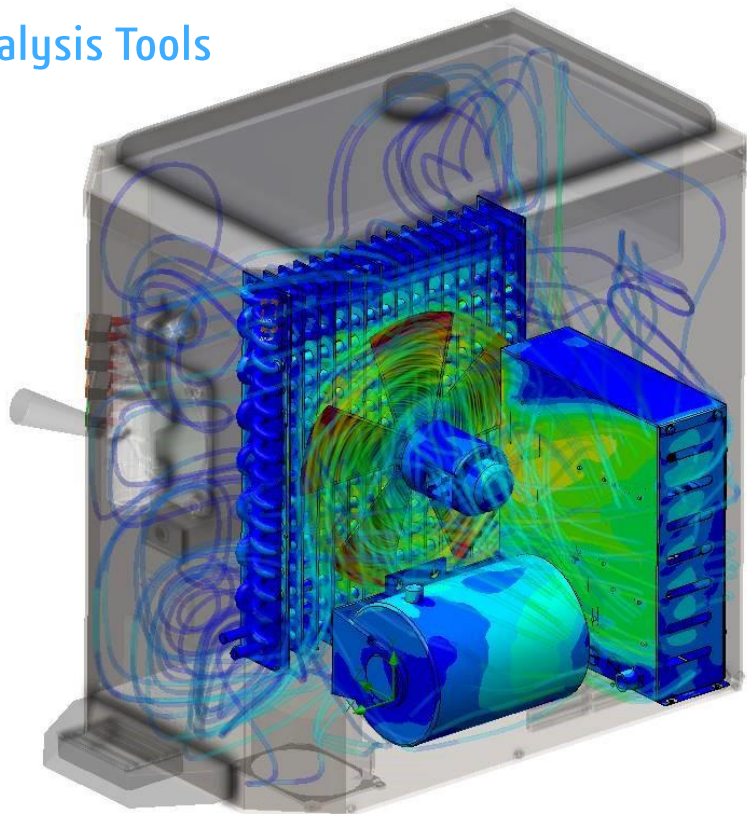
# COLLABORATION IN MIND...





# COLLABORATION IN MIND...

## Analysis Tools

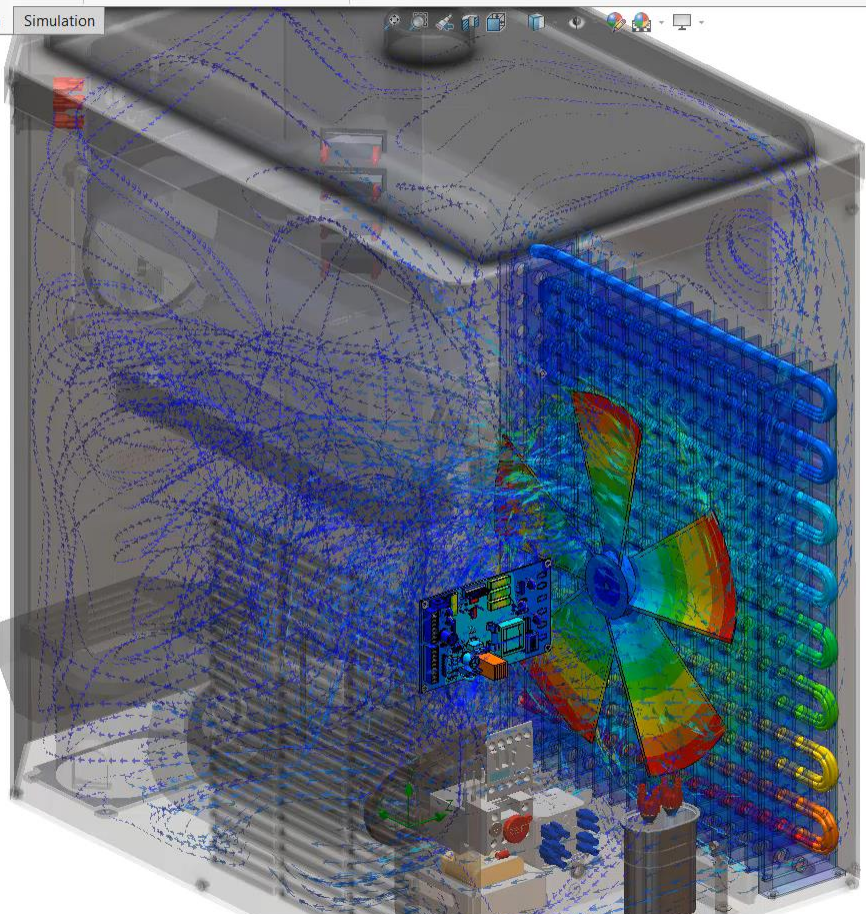


Wizard  
New  
Clone Project  
Component Control  
General  
Computational Domain  
Project  
Conditions  
Goals  
Global Mesh  
Mesh ...  
Run  
Batch Run  
Solve  
Results  
Insert  
Display  
Probes  
Screen...  
Check Geometry  
Engineering Database  
Tools

Assembly Layout Sketch Markup Evaluate SOLIDWORKS Add-Ins Flow Simulation Simulation

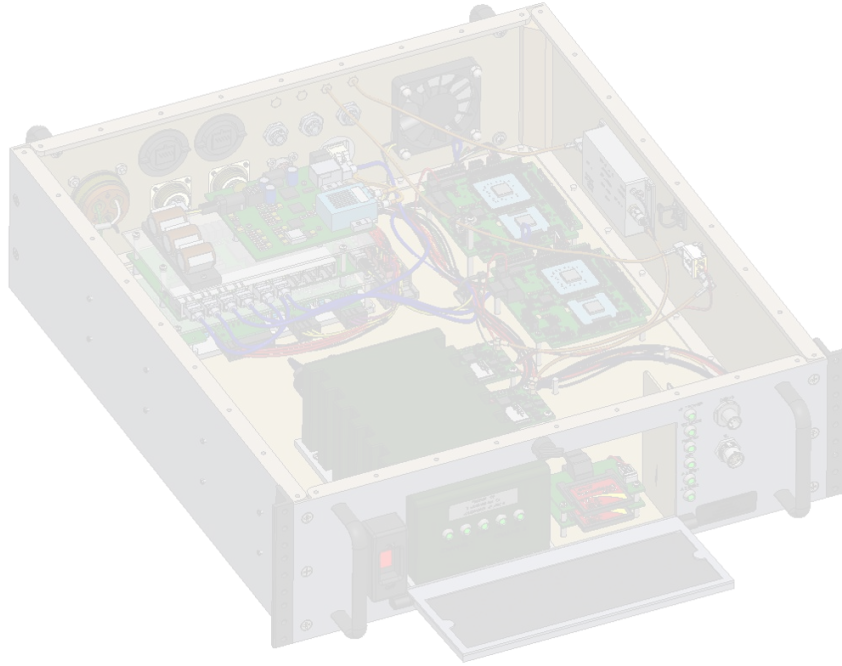
- VG Average Temperature (Solid) 48
- VG Average Temperature (Solid) 49
- VG Average Temperature (Solid) 50
- VG Average Temperature (Solid) 51
- VG Average Temperature (Solid) 52
- VG Average Temperature (Solid) 53
- VG Average Temperature (Solid) 54
- VG Average Temperature (Solid) 55
- VG Average Temperature (Solid) 56
- VG Average Temperature (Solid) 57
- VG Average Temperature (Solid) 58
- VG Average Temperature (Solid) 59
- VG Average Temperature (Solid) 60
- VG Average Temperature (Solid) 61
- VG Average Temperature (Solid) 62
- VG Average Temperature (Solid) 63
- Mesh
  - Global Mesh
  - Local Mesh 1
  - Local Mesh 2
- Results (5.fld)
  - Mesh
  - Cut Plots
  - Surface Plots
    - Surface Plot 1
    - Surface Plot 2
    - Surface Plot 3
    - Surface Plot 4
  - Isosurfaces
  - Flow Trajectories
    - Flow Trajectories 1
    - Flow Trajectories 2
    - Flow Trajectories 3
  - Particle Studies
  - Point Parameters
  - Surface Parameters
  - Volume Parameters

Iteration = 864





# QUESTIONS?



EMA | [Design Automation Website](#)

Thank You for Attending!

