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NARIME PROFILE ABOUT AUTOMOTIVE WELDING LINES

1. DESIGNING ACTIVITIES:

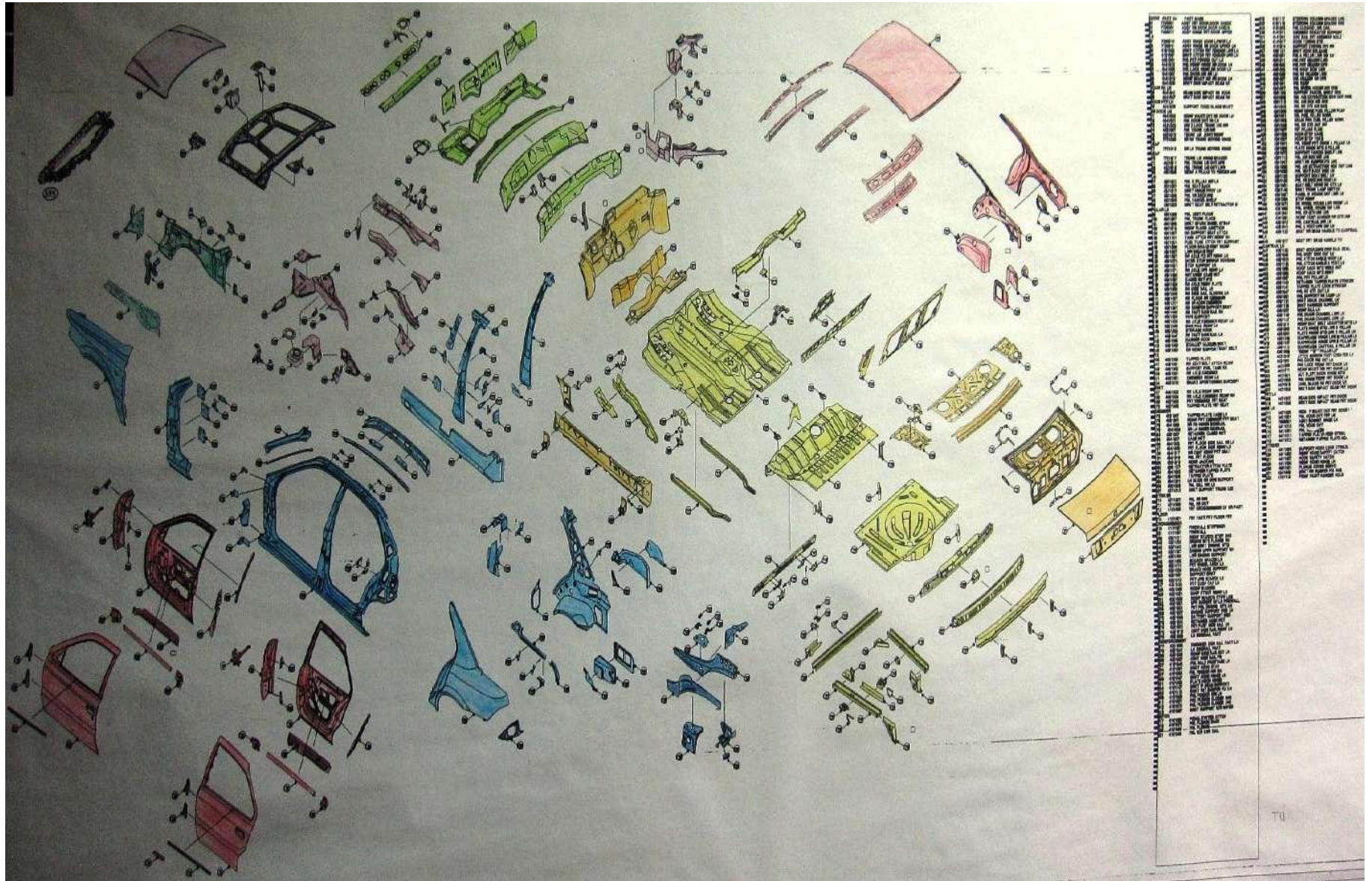
1.1. HUMAN RESOURCE IN JIG (1): DESIGNING TEAMS (Start 2012)

NARIME has more 500 staffs including over 80 staffs specialized in jigs: 30 staffs over 5 experiential years and 30 staffs over 3 experiential years



No.	1	2	3	4	5	6	Total
Experiential	Over 20 years	Over 10 years	Over 6 years	Over 3 years	Over 2 years	Over 1 years	
Staffs Q'ty	6	14	10	30	10	10	80

1.2. SOME MAIN PARTS FOR AUTO JIG DESIGNING (1):



1.3. SOME SOFTWARE LICENSES FOR DESIGNING:

TT	Tên phần mềm	Năm được trang bị	Xuất xứ phần mềm	Đơn vị quản lý, sử dụng
1	Phần mềm Thiết kế AutoCAD® 2012 Commercial New SLM	2011	Nhiệm vụ tăng cường trang thiết bị cho các tổ chức KH&CN	TMT
2	SolidWorks Simulation Premium 2011 and SolidWorks Simulation Premium Service Initial - 1 Year	2011	Nhiệm vụ tăng cường trang thiết bị cho các tổ chức KH&CN	TMT
3	Creo Parametric	2012	Nhiệm vụ tăng cường trang thiết bị cho các tổ chức KH&CN	TMT
4	SAP Advanced	2012	Nhiệm vụ tăng cường trang thiết bị cho các tổ chức KH&CN	TMT
5	Inventor Profesional	2012	Nhiệm vụ tăng cường trang thiết bị cho các tổ chức KH&CN	TMT
6	Nâng cấp phần mềm SolidWorks Premium lên SolidWorks Premium with SolidWorks Simulation Premium	2013	Nhiệm vụ tăng cường trang thiết bị cho các tổ chức KH&CN	TMT
7	Helix delta-T6 Conveyor Design Program	2014	Nhiệm vụ tăng cường trang thiết bị cho các tổ chức KH&CN	MDL
8	Smart marine 3D	2011	Đề tài cấp Nhà nước: “Nghiên cứu thiết kế chi tiết, công nghệ chế tạo và lắp đặt hệ thống bơm sục bùn trên giàn khoan tự nâng 90 m nước”	KT-KHCN
9	CATIA MD2	2019	Chương trình đổi mới công nghệ quốc gia	CKN
10	CATIA 3DEXPERIENCE	2022	Nhiệm vụ tăng cường năng lực dự án	CKN

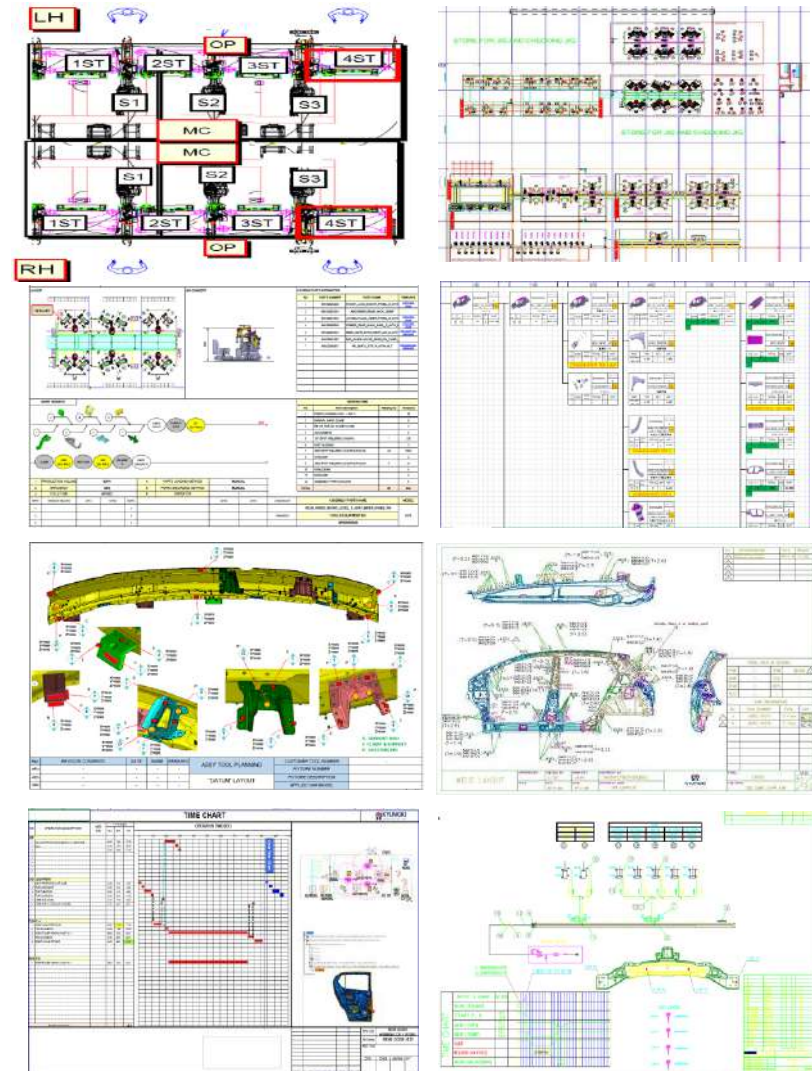
1.4. PROCESSES:

1.4.1. Process Engineering:

◆ Process Engineering

We perform overall process design and engineering for a BIW Project

- Layout design
- Process Planning Sheet
- Process Flow Chart
- Operation sheet (Weld Plan)
- Cycle time chart
- MCP and MCS (RPS)
- GD&T, Inspection Standard
- Weld Gun Design, Weld parameter
- Logistics Plan
- 3D Simulation (Weld gun, Robot, Buffer)
- Equipment Specification
- Ergonomics, Safety and Environment
- Checking Fixture Planning



1.4.2. Design & Manufacturing:

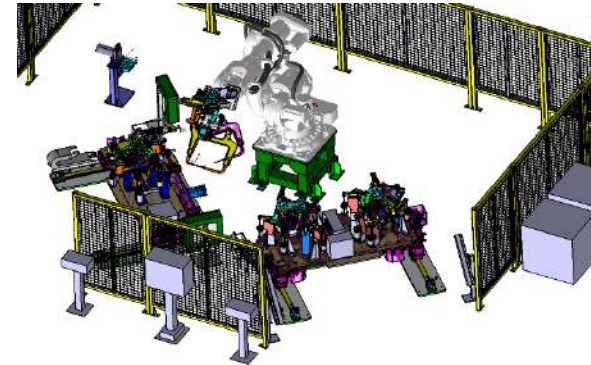
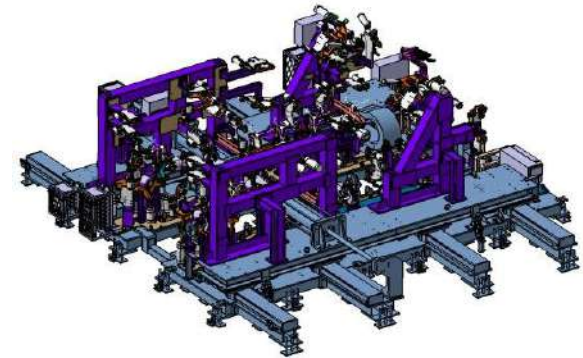
- Using highly experienced experts and resources, we design and manufacture high-end equipment and assembly system

2D & 3D Design

- Design Software : CATIA V5, Solid Edge, AutoCAD, ..
- Simulation : ROBCAD & DELMIA for Gun Accessibility and Robot Operation
- Design Standard is incorporated to Customer's standard

Manufacturing

- Jig Locator Machining by CNC Wire cutting
- Accuracy Inspection by 3D CMM
- Line up and Verification before Shipment
- OLP Application



1.4.3. Installation & Tryout :

Integration & Installation

- According to customer's specification, we specify, purchasing and integrate parts into line equipment
- Installation & Line-up trial in customer factory is done for all equipment such as Robot, Jig & Fixture, Automation system, Quality tools...etc.

Tryout and calibration

- Complete equipment & line trial is done with Faro Arm meter at Customer factory
- Approx. ~ 1 month (According to project schedule)
- Main activities are Jig verification, repeatability check, Gun accessibility, BIW build, Dry run.
- Customer Participation and inspection.



1.4.4. Commissioning & Launch Support :

We conduct to install and commissioning all system & equipment and provide full support for production & quality improvement till SOP

- Installation and Commissioning at customer site
- Pilot production & SOP support
- Support for Ramp-Up & Stabilization
- Support to achieve Quality, Cycle time, System Reliability, Process Capability
- Support for Quality Improvement Activities for Geometry, Aspect & Welding
- All rule and procedure of quality shall be in accordance with Customer's standard



2. PRODUCTION ACTIVITIES:

2.1. CAPACITY OF WORKSHOP TO MAKE JIGS (1):

NARIME-DTT_ĐÁNH GIÁ NĂNG LỰC CHẾ TẠO JIG & PARTS JIG NARIME-DTT_EVALUATING THE CAPACITY OF Jig & Parts Jig , MANUFACTURE FORM					Ngày / Date: 2013.01.04
Hạng mục/ Items	Nội dung Đánh giá/ Check contents	Kích cỡ T,B,H. Độ cx thiết bị ... / Size	Đánh giá/ Evaluate		
			Có/ Yes	Không/ No	Có khả năng(phải đầu tư thêm thiết bị)/ Have ability(Investment more Equipment)
	Diện tích nhà xưởng /Manufacture Workshop area	1,500 m2 (L95m×W16.5m) in 2500 m2 of total; 2,000 m2 (L60m×W33m) in 28,000 m2 of total; 2,000 m2 (L60m×W33m) in 28,000 m2 of total.	x		
	Sản phẩm chính sản xuất/năm/ Main product manufacturing/year	Đồ gá hàn / Welding JIG	x		
	Máy và đồ gá đã từng chế tạo được/ Machines & Jig manufactured	Đồ gá hàn ô tô cho Honda, Toyota, Mitsubishi,.	x		
	Thiết bị/ Machine	Kích cỡ T,B,H. Độ cx thiết bị ... / Making Size			
	Máy tiện/ Lathe M/C	X300/Z1400/1250prm	X		
	Máy tiện CNC/ CNC Lathe M/C	X270/Z530/4500rpm	X		
	Máy tiện CNC/ CNC Lathe M/C	X270/Z530/4500rpm	X		
	Máy phay/ Milling M/C	STM2R; 1200x300: 03pcs	X		
	Máy phayCNC/ CNC Milling M/C	FUC 20I :X4000Y1600Z1000/4000prm	X		
	Máy phayCNC/ CNC Milling M/C	FNC 106-A20; X1050Y600Z560/6000prm	X		
	Máy phayCNC/ CNC Milling M/C	FNC 106-A20; X1050Y600Z560/6000prm	X		
	Máy phayCNC/ CNC Milling M/C	FNC 6M; X1050Y600Z560/3500prm	X		
	Máy phayCNC/ CNC Milling M/C	MHNC-40; X400Y300Z250/4000prm	X		
	Máy phayCNC/ CNC Milling M/C	GS4050B; X600Y400Z400/10.000prm	X		
	Máy phayCNC/ CNC Milling M/C	TV-4; X558Y406Z400/6000prm	X		
	Máy phayCNC/ CNC Milling M/C	FUC 16M :X1000Y550Z580/6000prm	X		
	Máy phayCNC/ CNC Milling M/C	MISUBISHI :X800Y400Z400/20000prm	X		
	Máy phayCNC/ CNC Milling M/C	MISUBISHI :X800Y400Z400/20000prm	X		
	Máy phayCNC/ CNC Milling M/C	MISUBISHI :X800Y400Z400/20000prm	X		
	Máy phayCNC/ CNC Milling M/C	OKK X600Y350Z350/10000prm	X		
	Máy phayCNC/ CNC Milling M/C	OKK X600Y350Z350/10000prm	X		
	Máy phayCNC/ CNC Milling M/C	OKK X600Y350Z350/10000prm	X		
	Máy phayCNC/ CNC Milling M/C	OKK X600Y350Z350/10000prm (4pcs)	X		
	Máy phayCNC/ CNC Milling M/C 5 AXIS	OKK X800Y400Z400/10000prm (2pcs)	X		
	Máy phayCNC/ CNC Milling M/C 3 AXIS	X1600Y800Z600/6000prm (3 pcs)	X		
	Máy phayCNC/ CNC Bed Milling M/C 3 AXIS	X4000Y1600Z1000/6000prm (1 pcs)	X		
Máy móc/ Machine	Máy mài mặt phẳng/ Surface Grinding M/C	25~50/76/D255/1800m/min	X		
	Máy mài mặt phẳng/ Surface Grinding M/C	25~X1200Y500Z300/D400/2500prm	X		

2.1. CAPACITY OF WORKSHOP TO MAKE JIGS (2):

Máy móc/ Machine	Máy mài mặt phẳng/ Surface Grinding M/C	25~50/76/D255/1800m/min	X	
	Máy mài mặt phẳng/ Surface Grinding M/C	25~X1200Y500Z300/D400/2500prm	X	
	Máy mài Tròn/ Cylinder grinding M/C	D5~25/1000prm	X	
	Máy cắt dây /Wire cutting Machine	780x510	X	
	Máy cắt dây /Wire cutting Machine	X600Y400Z400	X	
	Máy cắt hơi CNC / CNC Gas Cutter	1500-W; 50~2000mm/min; 3000x1500	X	
	Máy laser CNC / CNC laser Cutter	X2000Y4000Z600	X	
	Máy laser CNC / CNC laser Cutter	X1500Y3000Z600	X	
	Máy chấn, uốn / Bending Machine	3000mm	X	
	Máy taro / Tapping Machine	M3~M12/400prm	X	
	Máy khoan / Drilling Machine	4pcs	X	
	Máy hàn MIG/ MIG Welding Machine	2pcs	X	
	Máy hàn TIG/ MIG Welding Machine	200A	X	
	Máy hàn que/ ARC Welding Machine	KR-350; 5pcs	X	
	Máy đo 3 chiều/ 3D CMM M/C	Faro Arm, size 3000mm	X	
Máy đo 3 chiều/ 3D CMM M/C	Faro Arm, Quantum M, size 3500mm	X		
Máy đo 3 chiều/ 3D CMM M/C	Faro Arm, Quantum S V2 3.0 size 2500mm	X		
Máy đo 3 chiều/ 3D CMM M/C	Faro Laser Tracker size 40000mm	X		
Máy đo 3 chiều/ 3D CMM M/C	Laser Tracker Leica AT9600-MR Absolute tracker	X		
Cầu trục/ Crane (capacity)	2 sets (10 tons and 3 tons)	X		
Con người/ Manpower	Nhân lực hiện có/ Manpower	145	X	
	Đơn vị tự thiết kế tại công ty/ Design by themself.	55	X	
	Theo tài liệu đào tạo/ Training Document	H-one standard; HUYNDAI STD	X	
Phương pháp/ Method	Tiêu chuẩn kiểm tra(Máy móc thiết bị hàng ngày)/ Check standard (Daily check)		X	
	Có kế hoạch kiểm tra định kỳ thiết bị đo hàng năm/ Measure machines checking every year.		X	
	Có phân biệt khu vực (dạng Sozai và phụ tùng đã hoàn thiện)/ Distribute area sozai and parts finished		X	
	Bảng kiểm tra phụ tùng trước khi xuất xưởng/ Part checking list (before delivery)		X	
	Phần mềm thiết kế/Software Design	CATIA; DELMIA	X	X
Vật liệu/ Material	Có nguồn gốc xuất xứ / Origin	Việt Nam, Japan, China		

2.2. MEASURING EQUIPMENT:



| Measuring



| Measuring Room



| Laser Tracker : FARO Brand (1 set)



| Laser Tracker : Leica Brand (1 set)



| FARO Quatinum Arm : 3 set

2.3. MACHINERIES & WORKSHOP:



3. PROJECTS & EXPERIENCES:

3.1. Some designed products for Foreign Users (1):

3.1.1. Toyota User:

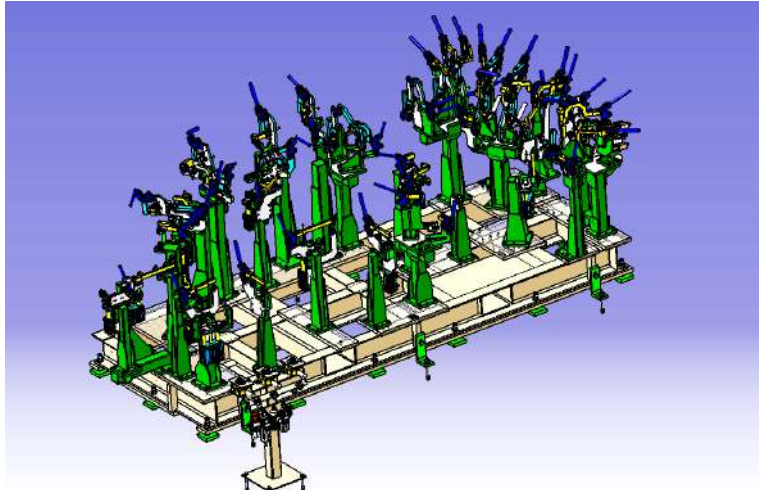


Fig. 3.1.1-1. Side Member Final.

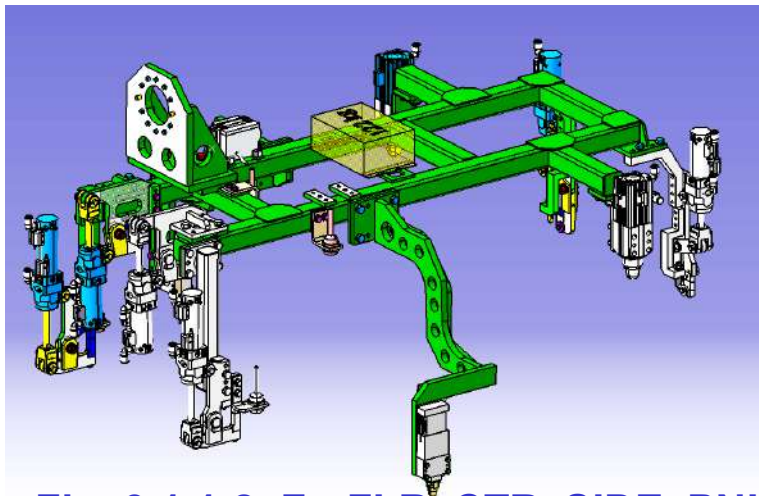


Fig. 3.1.1-2. Fr_FLR_CTR_SIDE_PNL

3.1.2. Honda User:

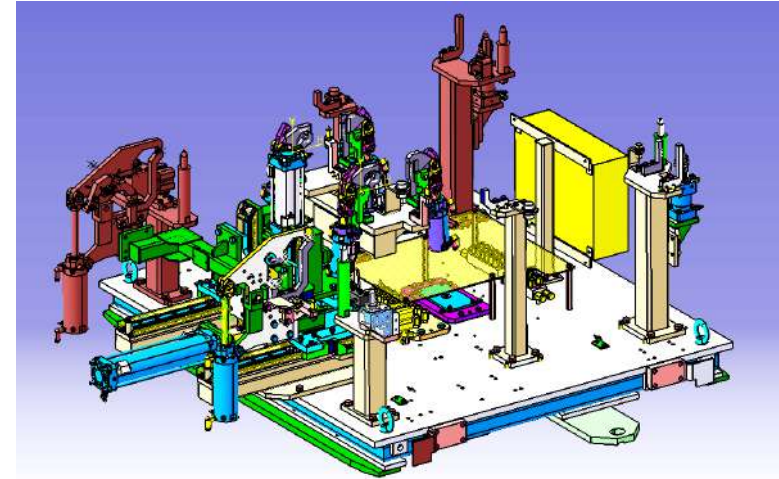


Fig. 3.1.2-1. RR_FLR_FRM.

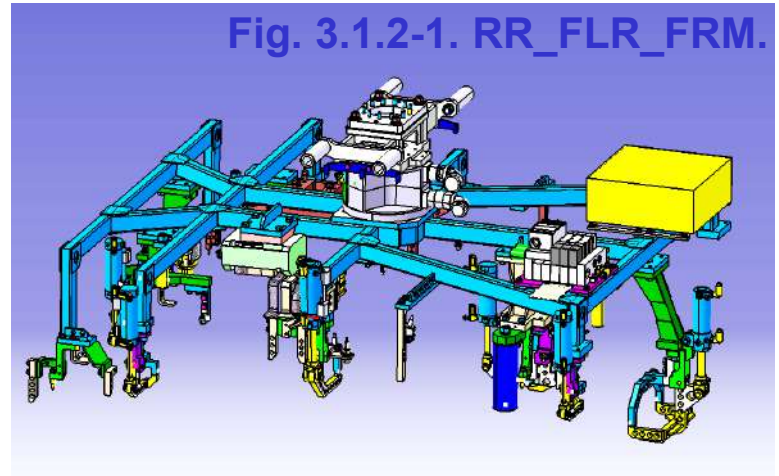


Fig. 3.1.2-2. RR_FLR_UPR_HAND

3.1. Some designed products for Foreign Users (2):

3.1.3. Mitsubishi User:

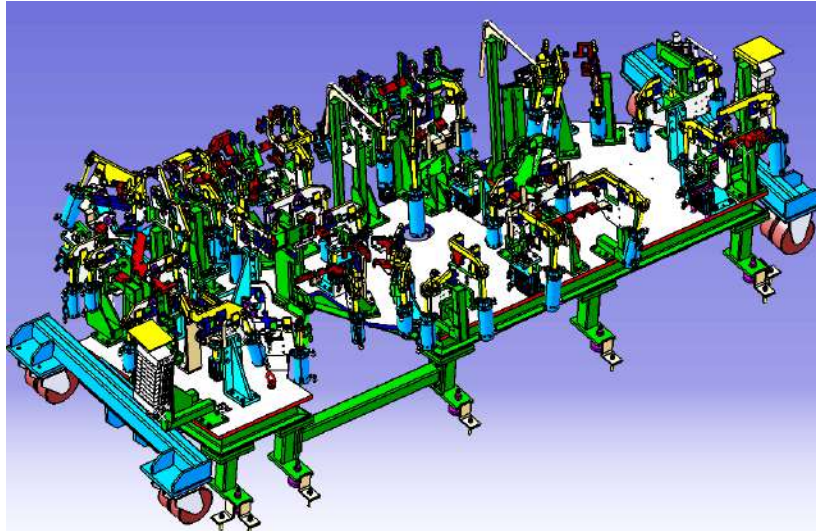


Fig. 3.1.3-1. SIDE FRAME FINAL.

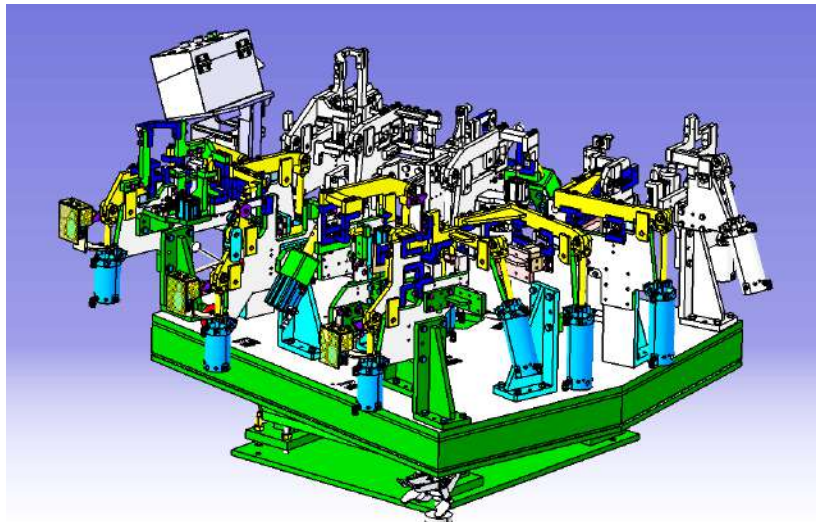


Fig. 3.1.3-2. FLR SIDE INR.

3.1.4. Bellsonica User:

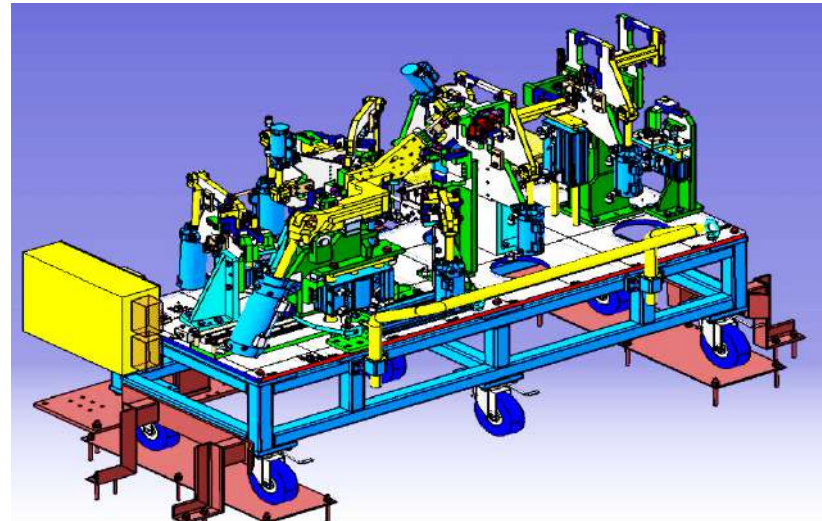


Fig. 3.1.4-1. Front Side Member.

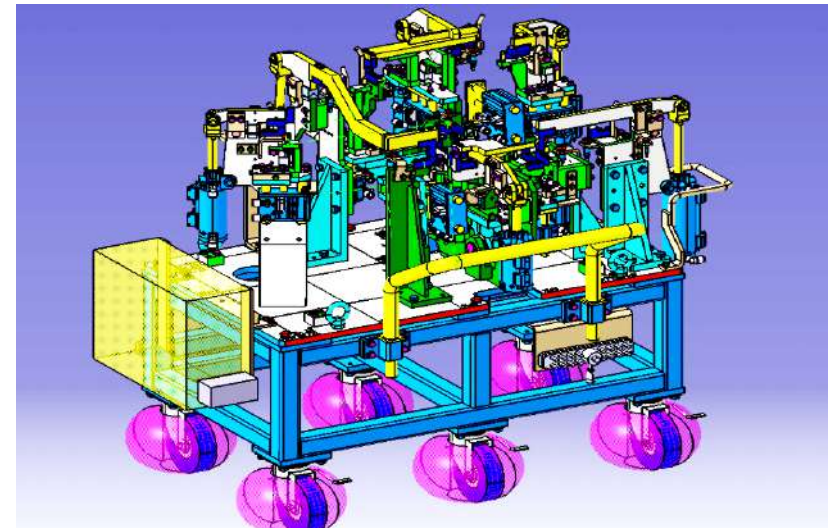


Fig. 3.1.4-2. Wheel House.

3.1. Some designed products for Foreign Users (3):

3.1.5. Nissan User:

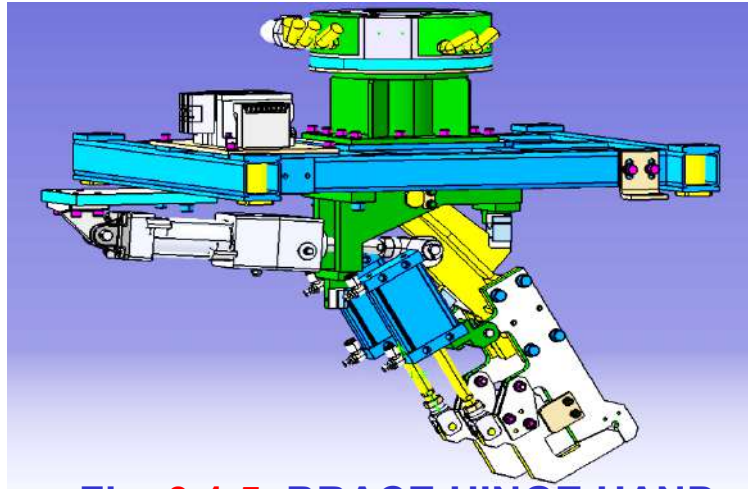


Fig. 3.1.5. BRACE HINGE HAND.

3.1.6. Unipress User:

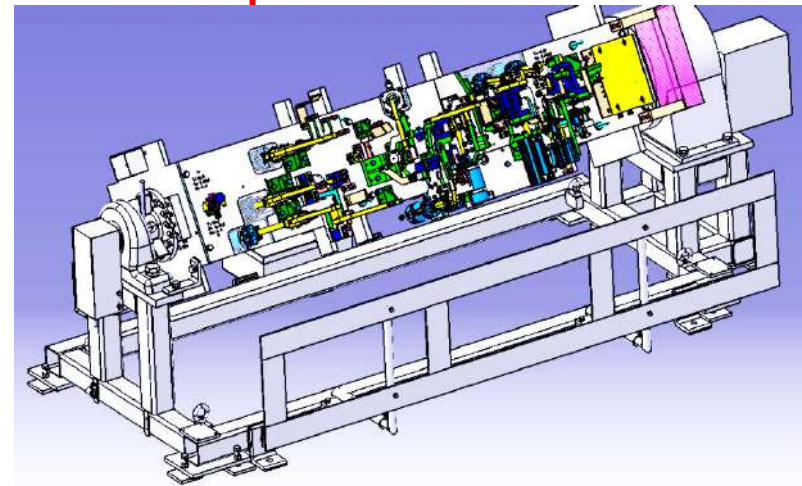


Fig. 3.1.6-1. SP_ROB_J1.

3.1.7. Huyndai User:

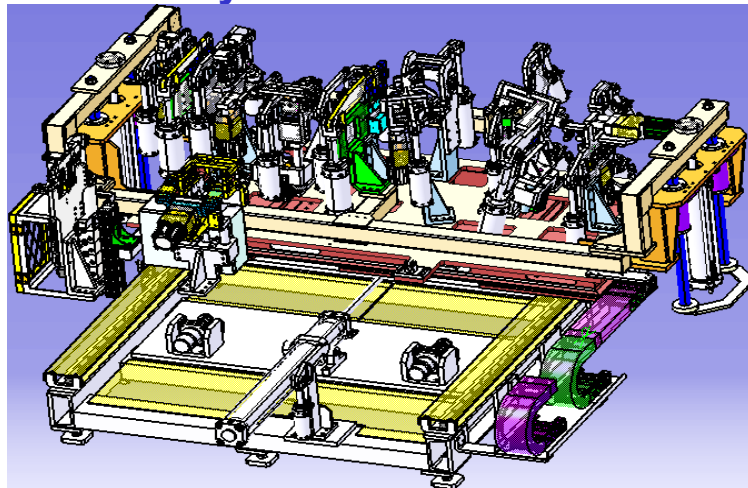


Fig. 3.1.7. RR FLR COMPL.

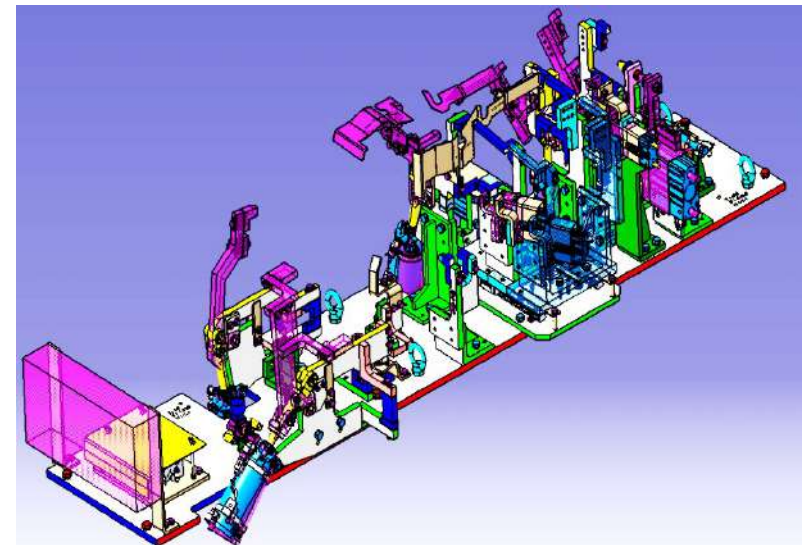


Fig. 3.1.6-2. SP_ARC_ROB.

3.2. Some Projects have been done:

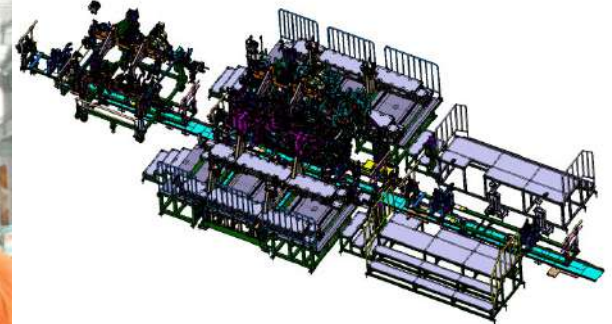
3.2.1. Main Buck Assembly Line 2018

Project	Main Buck (Uniliver45)	Customer	HyunDai Thanh Cong
Capacity	1 BIW/8h	SOP	2018
Lines	Main Buck Assembly Line		
Scope of Work	Design, Manufacturing, I & C, Launch support (DTT)		



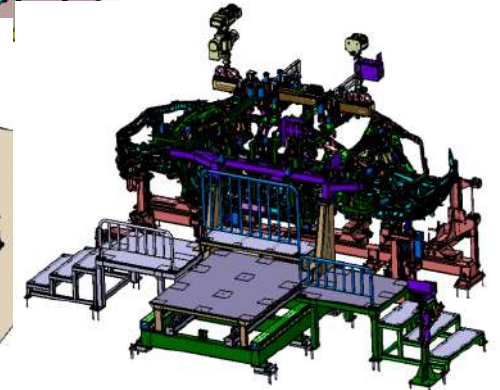
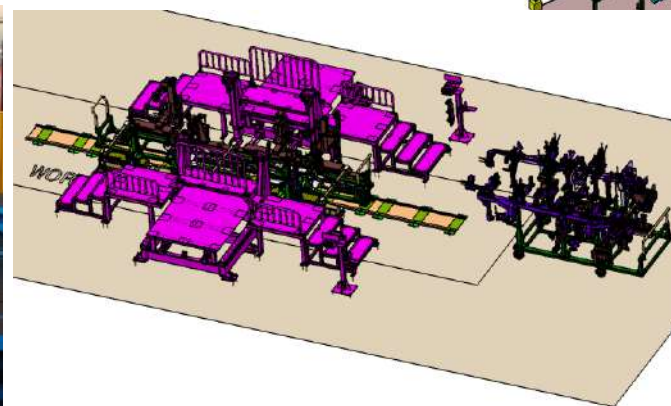
3.2.2. Project for Honda Thailand:

Project	INNER FRAME (CRV)	Customer	HONDA ThaiLand
Capacity	6 JPH (common 2 model)	SOP	2018
Lines	Inner Frame Assembly Main Line		
Scope of Work	Design, Manufacturing, I & C, Launch support (DTT + SEG)		



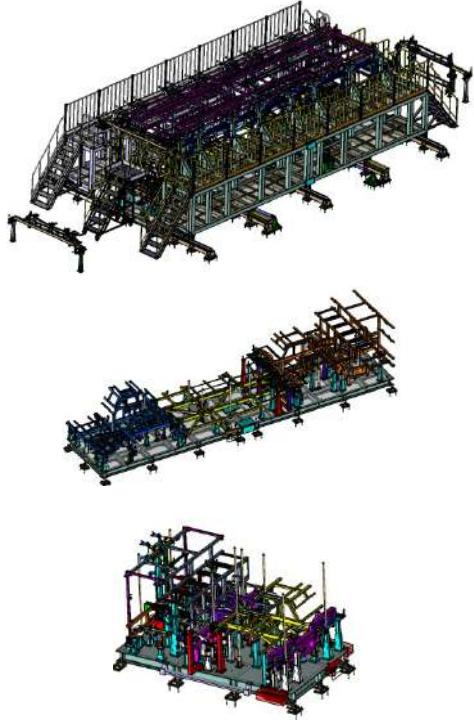
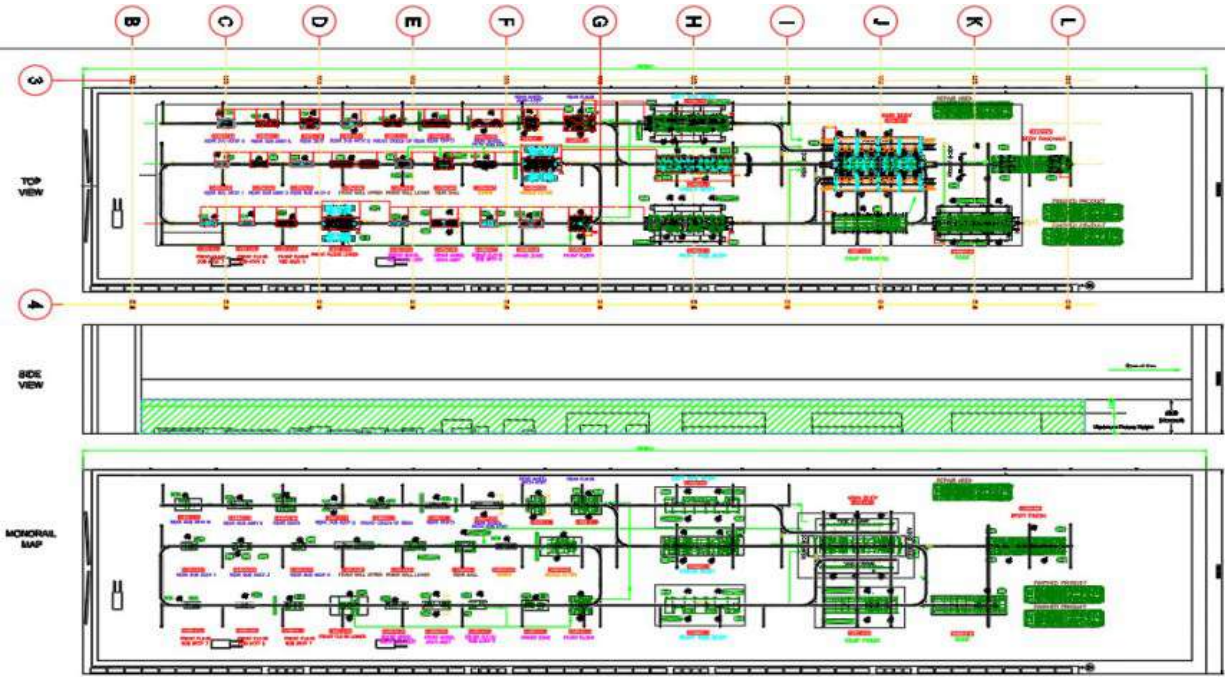
3.2.3. INNER FRAME Main Line 2019:

Project	INNER FRAME (CRV)	Customer	HONDA Vietnam
Capacity	6 JPH (common 2 model)	SOP	2019
Lines	Inner Frame Assembly Main Line		
Scope of Work	Design, Manufacturing, I & C, Launch support (DTT + SEG)		



3.2.4. Project for VinFast: EBus 10.5m:

Project	E-BUS 10.5m	Customer	VINFAST
Capacity	1 BIW/ 4h	SOP	2020
Lines	BIW E-BUS 10.5m Line		
Scope of Work	Design, Manufacturing, I & C, Launch support (NARIME & DTT& MH)		



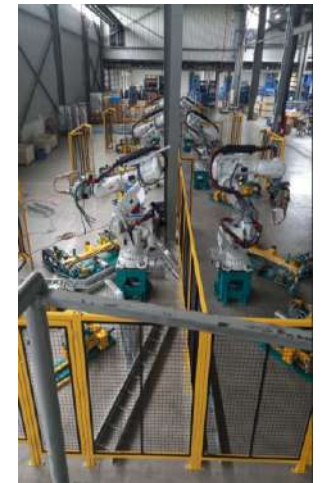
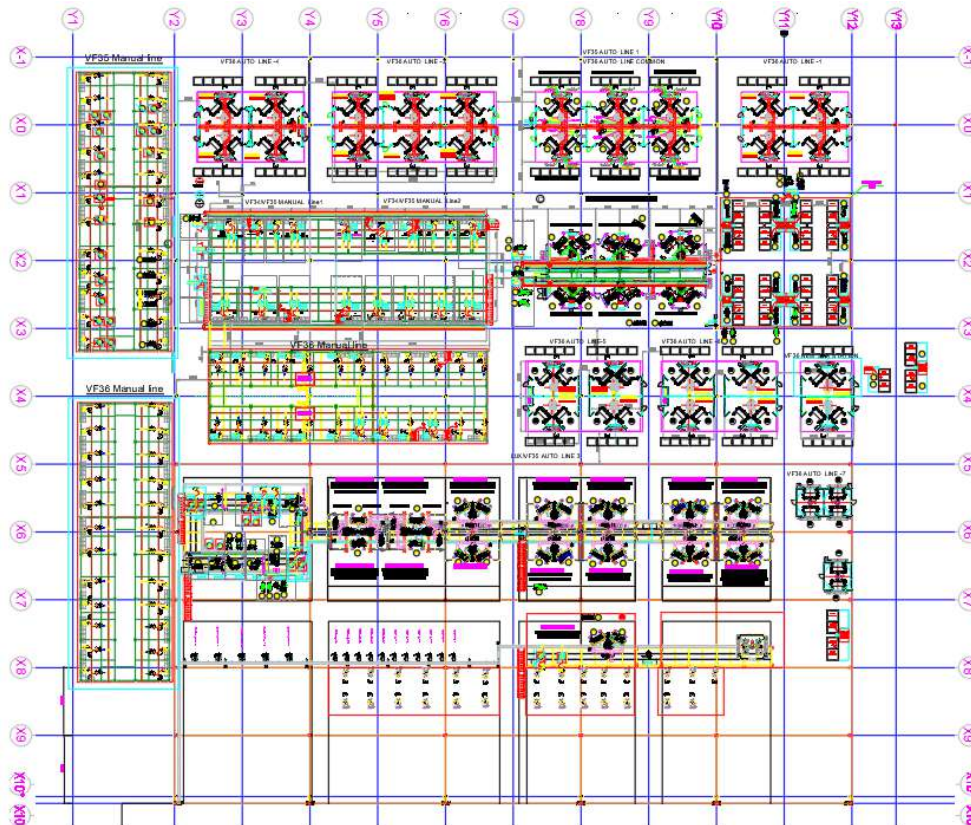
3.2.5. VFe34 (B-BEV) BIW SUB Line:

Project	VF34 BEV	Customer	VINFAST
Capacity	8 JPH	SOP	2021
Lines	VF34 BEV METAL ASSEMBLY SHOP		
Scope of Work	Design, Manufacturing, I & C, Launch support (NARIME & DTT& MH)		



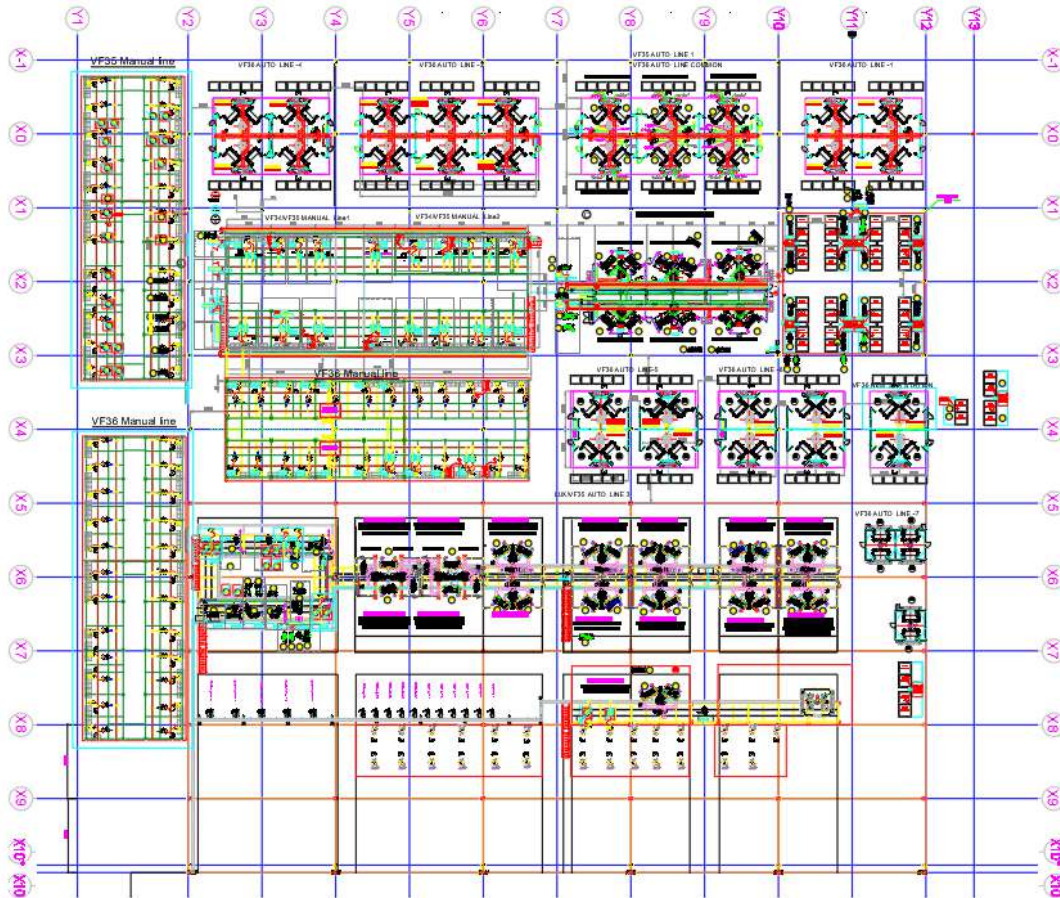
3.2.6. VF8 (VF35; C-SUV) BIW SUB Line 2021:

Project	VF35 (VF8) C-SUV	Customer	VINFAST
Capacity	12 JPH, UP TO 24 JPH	SOP	2021
Lines	VF35 (VF8) C-SUV METAL ASSEMBLY SHOP		
Scope of Work	Design, Manufacturing, I & C, Launch support (NARIME & DTT & MH)		



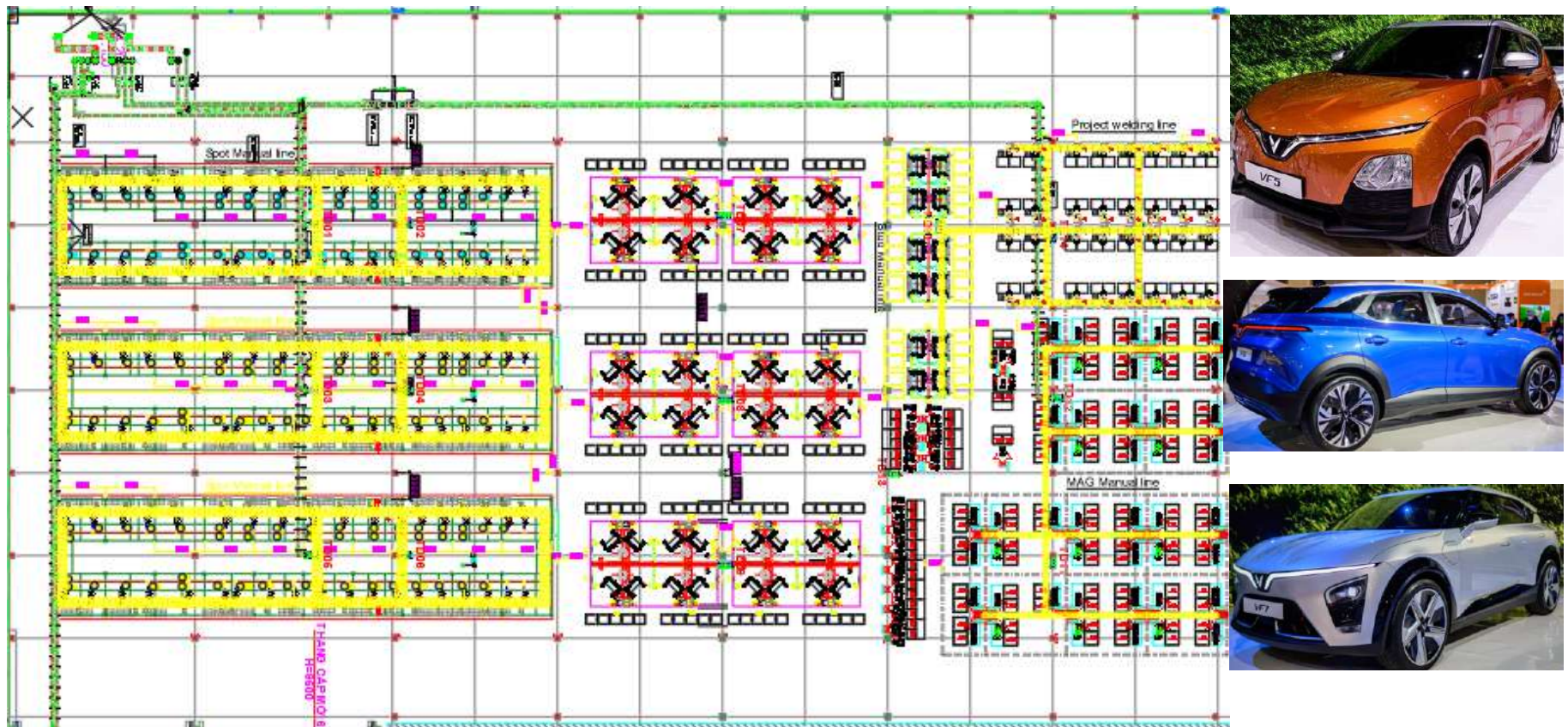
3.2.7. VF9 (VF36; D-SUV) BIW SUB Line 2022:

Project	VF36 (VF9) D-SUV	Customer	VINFAST
Capacity	12 JPH	SOP	2022
Lines	VF36 (VF9) C-SUV METAL ASSEMBLY SHOP		
Scope of Work	Design, Manufacturing, I & C, Launch support (NARIME & DTT & MH)		



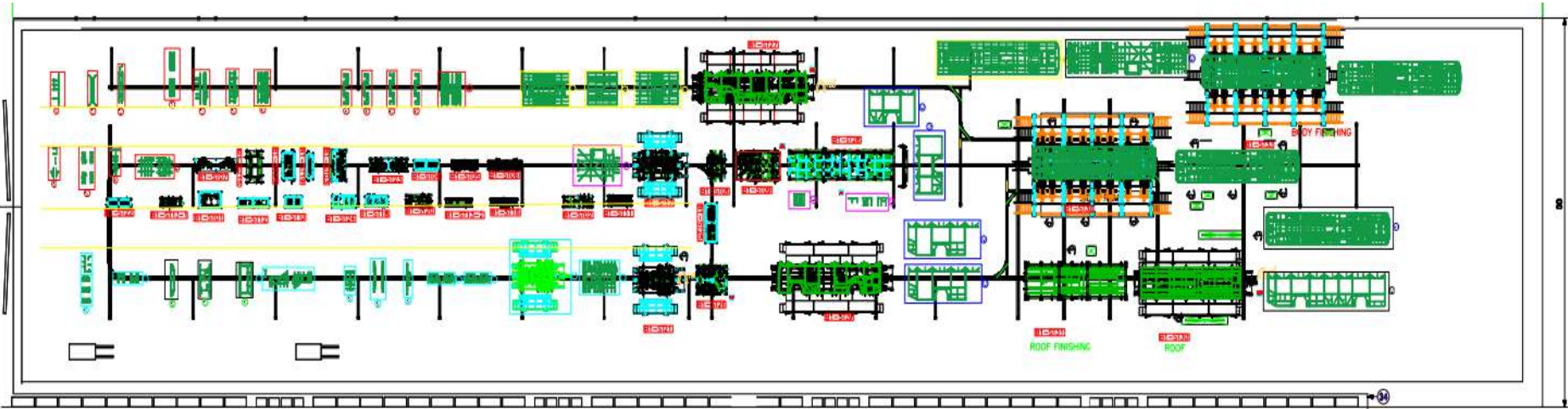
3.2.8. VF5,6,7 BIW SUB Lines 2023 :

Project	VF5; VF6; VF7	Customer	VINFAST
Capacity	24 JPH	SOP	2023
Lines	VF5; VF6; VF7 METAL ASSEMBLY SHOP		
Scope of Work	Design, Manufacturing, I & C, Launch support (NARIME & DTT & MH)		



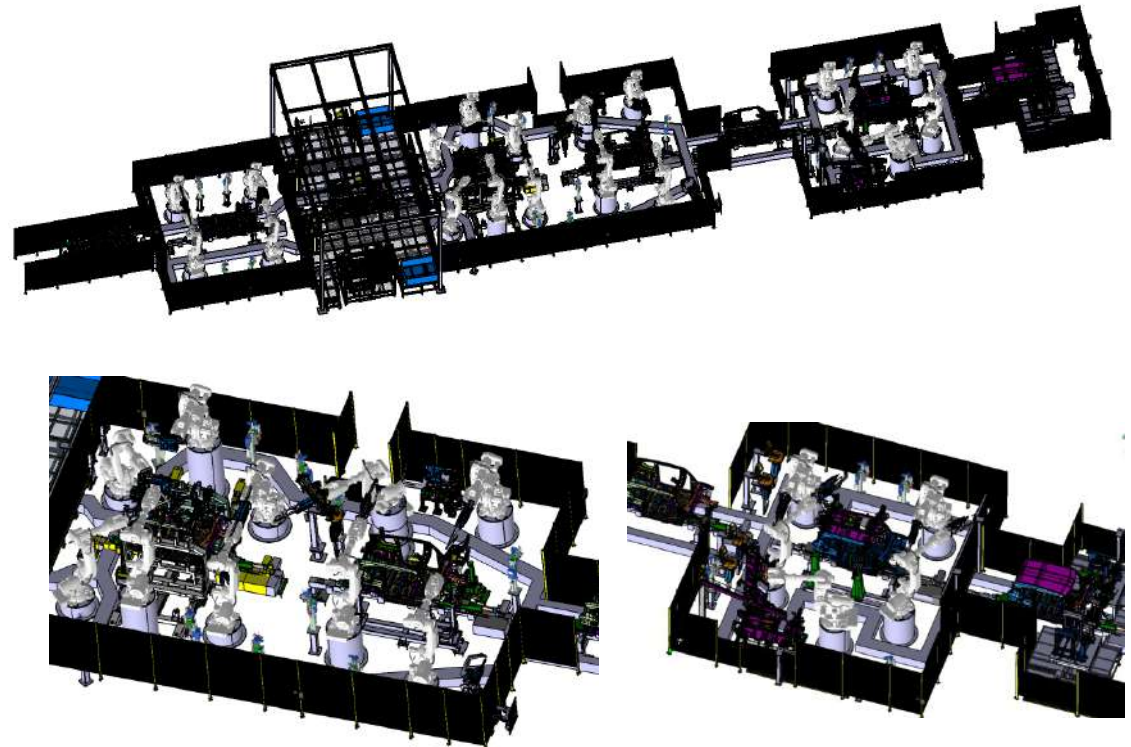
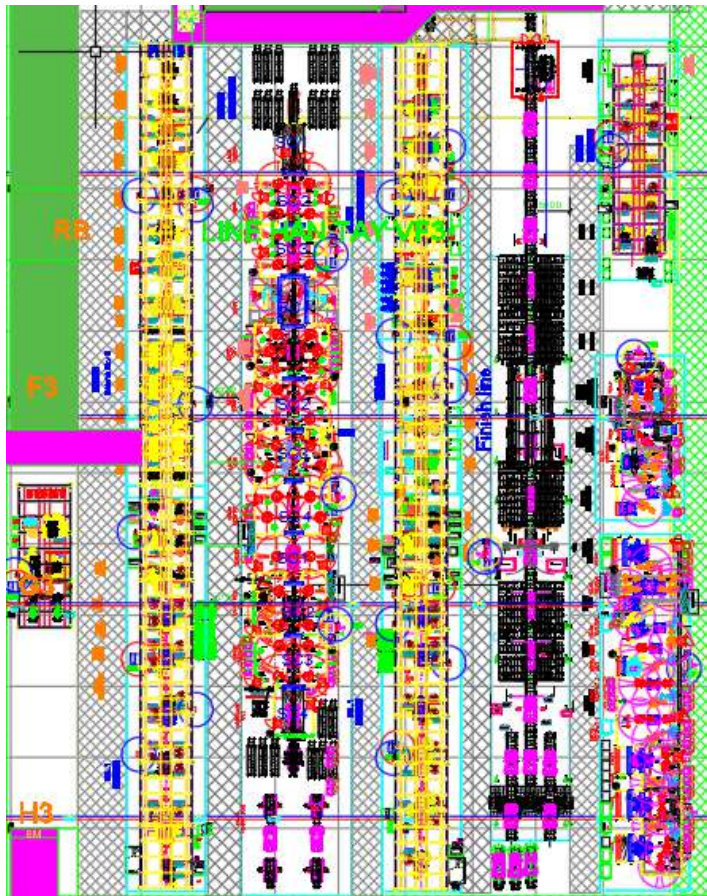
3.2.9. BIW E-BUS 12m Line 2023:

Project	E-BUS 12m	Customer	VINFAST
Capacity	1 BIW/ 4h	SOP	2023
Lines	BIW E-BUS 12m Line		
Scope of Work	Design, Manufacturing, I & C, Launch support (NARIME & DTT)		



3.2.10. VF3 BIW BODY COMPLE Line (Hai Phong) 2024:

Project	VF3	Customer	VinFast
Capacity	24 JPH	SOP	2024
Lines	VF3_BIW BODY COMPLE LINE		
Scope of Work	Design, Manufacturing, I & C, Launch support (NARIME & DTT,DTI& MH)		



3.2.11. VF3 BIW BODY COMPLE Line (Ha Tinh) 2025:



3.2.12. The other Projects for VinFast: Limo Green; Ebus 8.6m; Ebus 6m; Others :



Thank you !

National Research Institute of Mechanical Engineering

No.4, Pham Van Dong Street, Cau Giay District Ha Noi
Viet Nam

Tel: +84 24.376 44442

Fax: +84 24.376.49883

Email: narime@narime.gov.vn