

# NAKUL SUDHIRRAO DANGE

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## OBJECTIVE

I see my career as a continuous process of learning and applying my knowledge to my working domain with a focus on innovation & excellence & to hold a strategic position in a dynamic organization which demands high degree of excellence, competency, hard work which can provide the scope of growth for personal along with organization.

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## Profile Summary

- **7+ years of experience in Design, Development, Troubleshooting & Installation** of Industrial Automation System. PLC, HMI, Drives.
- Currently designated as **Sr. Project Engineer** with **Sarla Advantech Pvt Ltd. Pune, India.**
- **SIEMENS 840DSL Safety Integrated certified.**
- **FORD's ECPL certified.**
- Having knowledge of programming with many PLC manufacturer i.e. **SIEMENS, ROCKWELL AB, MITSUBISHI, DELTA, MESSUNG, CECO, AUTONICS** etc.
- Experience in developing PLC & HMI programs based of standards set by **FORD-FAST, CHRYSLER, ZF** etc.
- Worked on **FORD Motor's** well-known **OMS** template.
- Worked on **SIMATIC iMAP**, an old system architecture of SIEMENS.
- Also had experience of 1 year in **Machine Maintenance** as **Graduate Trainee Apprentice Engineer** with **NRB Bearings Ltd. Aurangabad, India.**

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## Work Experience

### Sr. Project Engineer- SARLA ADVANTECH Pvt Ltd

(From 10/2018- till date)

- Understand the conceptional design & develop system flow chart.
- Understand Customer's Standard Templet (if any) for designing PLC & HMI programming.
- Design PLC programming code & HMI screen's as per flow chart & Customer's Standard Templet offline.
- Understand the complete scope of work & assign between team to get work done on time.
- Installation & commissioning of project at customer end.
- Preparing weekly planning of work at site & strictly following.
- Provide Training to system end user.
- Provide online/offline support to site team.

### Member-Controls, PRECISION AUTOMATION & ROBOTICS INDIA LTD, PUNE, INDIA

(From 09/2014 to 10/2018)

- Understand the conceptional design & develop system flow chart.
- Understand Customer's Standard Templet (if any) for designing PLC & HMI programming.
- Design PLC programming code & HMI screen's as per flow chart & Customer's Standard Templet offline.
- Understand the complete scope of work & assign between team to get work done on time.
- Testing & debugging the system at company premises.
- Dealing with customer inspection team at shop floor. Providing solutions & answers during customer inspection.
- Installation & commissioning of project at customer end.
- Preparing weekly planning of work at site & strictly following.

- Understanding customer requirements, new modification & convey to respective departments to get it done & implement it on site.
- Provide Training to system end user.

#### **Application Engineer- ACE AUTOMATION, PUNE, INDIA**

(From 04/2013 to 09/2014)

- Understanding Customers requirements. Accordingly provide best suited solution.
- Identifying system requirements by means of Electrical & Mechanical devices & material.
- Dealing with suppliers for different material required for project.
- Sending requirements, getting quotes, finalising the amounts & ordering project required material from suppliers.
- Designing electrical drawings. Taking approval from customer.
- Designing flow chart of sequence of operations. Taking approval from customer.
- Understanding customers standards & designing PLC program & HMI screens.
- Testing & debugging of system at shop floor.
- Installation & commissioning of project at customer end.

#### **Commissioning Engineer- Logical Automation & Solution Pvt. Ltd. Aurangabad, INDIA**

(From 09/2012 to 04/2013)

- Develop PLC program & HMI screen for retrofitting machines.
- Offline support for site engineer.
- Installation & commissioning of project at site.
- Electrically disconnecting, shifting & re-connecting of machine.

#### **Graduate Trainee Apprentice Engineer- NRB Bearings Ltd. Aurangabad, INDIA.**

(From 08/2011 to 08/2012)

- Support to Shift engineer for daily breakdown.
- Handling inhouse projects, shifting of machines, installation of new machines etc.
- Handling daily break down in shift.

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#### **Project Details**

##### **1. PTME Controls Engineer**

**Customer-** DuroByte, Canada, **End Customer-** FORD, Sharonville Transmission Plant.

**Duration-** 1 month (customer plant)

**Environment-** SIEMENS S7 300 PLC- CPU ET200 Pro IM154-8FX, WinCC Flexible HMI MP377, VFD G120 CU240, **GigE cameras & controller** (CAM-CIC-5MR-14-GC), **Promes Press, Sato printer**

##### **Responsibility-**

PDS (Programmable Device Support) using AutoSave from MDT

Collect initial programs and documentation from OEMs and load to the PDS system

Ensure configuration and validation of Uploads, Downloads, Compares and Notifications

QTS(Quality Tracking Services), Acronis Back

Work with OEMs and IT to update QTS worksheets and validate data against QTS reports

Maintain revision history of QTS sheets and update controls engineers

Acronis Back

Ensure Industrial PC backups are complete and up to date

Solid Core Validation

Ensure Solid Core is installed and working to Ford specifications on all Industrial PCs

## QWX (Quality Works)

Work with OEMs and Plant IT to ensure connectivity, data uploads and data validation  
Support and update Process Development Documentation (PDD) sheets  
Ensure S7 logic is setup against Promess, Atlas Copco and Vision firmware revisions  
Attend weekly meetings with Ford Controls for status updates and instructions.  
Review, access and assist OEMs with reviewing and meeting Risk Assessments.  
MIDAS execution at Runoff and/or Launch Phases.  
Update & track Open issue list.  
Provide technical support to Plant controls & OEM.

### 2. Packout cell Dunnage conveyor, pick & place robot

**Customer-** ZF Axle Drives Marysville, USA.

**Duration-** 4 months (customer plant)

**Environment-** SIEMENS S7 300 PLC- CPU317-2 PN/DP, **SIEMATIC iMAP**, TIA HMI TP1200, WinCC Flexible HMI MP277, G120 drives, Weber printer, SICK area scanner, FANUC robot

**Responsibility-** Lead project at site in installation & commissioning phase. Verification, testing & validation of PLC program, HMI screens & robot auto cycle as per SoP. Update hardware for iMAP. Training to controls & maintenance team. Attend customer meetings, provide design related modification.

### 3. BATTERY assembly line

**Customer-** FORD Rawsonville Plant, USA

**Duration-** 6 months (Shop floor), 1 month (FORD plant)

**Environment-** SIEMENS S7 300 PLC- CPU ET200 Pro IM154-8FX, WinCC Flexible HMI MP377, VFD G120 CU240, **GigE cameras & controller** (CAM-CIC-5MR-14-GC), **Promes Press**, **Sato printer**, WMA test stand- Leak tester, WMA & UNICO test stands- E Check for battery charging & discharging.

**Responsibility-** Design, develop & test PLC program for Manual work stations with FORD's **FAST 3.4 templet** as per function architecture.

Design, develop & test PLC program for Auto stations with FORD's **FAST 3.4 templet** as per function architecture.

Develop & test **OMS** logic for Manual & Auto stations.

**QTS & FIS**(data tracking server) modification & testing.

Teach GigE camera for testing presence of TIM, QR code, End caps, HV+/- electrical BEC connector, Current sensor connector, contact control connector, Vcont connector, LV wire harness connector, Thermistor connector, Sensor lead Connectors, Warning label presence etc.

Attend customer meetings.

### 4. Axel Assembly retool

**Customer-** ZF Axle Drives Marysville, USA.

**Duration-** 1year (customer plant)

**Environment-** SIEMENS S7 300 PLC- CPU317-2 PN/DP, **SIEMATIC iMAP**, TIA HMI TP1200, WinCC Flexible HMI MP277, AnyBus communication module, Atlas Copco nut-runner, OEM interfacing, QDM/MDA(data tracking server) interfacing.

**Responsibility-** Lead project at site in installation & commissioning phase. Verification, testing & validation of PLC program, HMI screens & robot auto cycle as per SoP. Update hardware for iMAP. Training to controls & maintenance team. Attend customer meetings, provide design related modification.

### 5. Retool program (GMET) at Trenton plant

**Customer-** FCA, Trenton

**Duration-** 1.5 month

**Environment-** SIEMENS CPU317F-2PN/DP, TP1200, IFM laser marking

**Responsibility-** Production support, Update & test conveyor logic as per sequence, update & test laser marking for quality & grade as per FCA standards.

### 6. DRAGON NA Engine assembly line

**Customer-** FORD Chihuahua Plant, Mexico.

**Duration-** 2 months (Shop floor), 9 months (FORD plant).

**Environment-** SIEMENS S7 300 PLC- CPU ET200 Pro IM154-8FX, CPU 317F-3, **NCK 840D sl**, WinCC Flexible HMI MP377, SIMATIC HMI panel for gantry, SERVO drive S120 CU320, G120 drives, Keyence Laser marker, Cognex cameras, PN-PN coupler.

**Responsibility-** Develop & test PLC program for Dragon Engine Block from Start of line to end of line. Total 11 transfer conveyors, 4 SPC conveyors, 2 PLC based pick & place gantries, 2 auto assembly & dis-assembly stations(nut-runner), 1 manual inspection station, 1 Cup plug assembly station with camera verification, 1 laser marking machine. All with FORD's **FAST 3.4 templet** as per function architecture. Develop sequence flow chart. Hardware configuration, VFD configuration, i-device communication.

Develop & test **OMS** logic for Manual & Auto stations.

**QTS & FIS**(data tracking server) modification & testing.

Execute safety matrix with Infeed & Outfeed gantries.

Make basic changes in part program. Activate Safe came, insert teach values.

## 7. Engine assembly line

**Customer-** Cummins India limited, Faltan, India.

**Duration-** 1 month.

**Environment-** SIEMENS S7 300 PLC- CUP 317 2PN/DP, Telisis Pin marking

**Responsibility-** Develop & test PLC program for child part assembly. Set Telisis pin marking machine for marking part number.

## 8. DRAGON Engine assembly line

**Customer-** FORD Sanand Plant, India.

**Duration-** 2 months (Shop floor), 5 months (FORD plant).

**Environment-** SIEMENS S7 300 PLC- CPU ET200 Pro IM154-8FX, CPU 317F-3, WinCC Flexible HMI MP377, SIMATIC HMI panel for gantry, SERVO drive S120 CU320, G120 drives, Keyence Laser marker, Cognex cameras, PN-PN coupler.

**Responsibility-** Develop & test PLC program for Dragon Engine Block from Start of line to end of line. Total 11 transfer conveyors, 4 SPC conveyors, 2 PLC based pick & place gantries, 2 auto assembly & dis-assembly stations(nut-runner), 1 manual inspection station, 1 Cup plug assembly station with camera verification, 1 laser marking machine. All with FORD's **FAST 3.3 templet** as per function architecture. Develop sequence flow chart. Hardware configuration, VFD configuration, i-device communication.

**QTS & FIS**(data tracking server) modification & testing.

Execute safety matrix with Infeed & Outfeed gantries.

## 9. DV5 Engine assembly line

**Customer-** FORD Sanand Plant, India.

**Duration-** 1 month (FORD plant).

**Environment-** SIEMENS S7 300 PLC- CPU ET200 Pro IM154-8FX, CPU 317F-3

**Responsibility-** Develop & test PLC program for **QTS & FIS**(data tracking server) system as per FORD requirement.

## 10. Pump testing SPM

**Customer-** Hytech Education systems, Pune, India.

**Duration-** 1 month.

**Environment-** Allen Bradley Micro 830 series PLC, CCW programming language.

**Responsibility-**

1. Develop & test PLC program for checking voltage, current, water flow/pressure & noise of wiper motor.

2. Develop & test PLC program for Electro-Pneumatic & Electro-Hydraulic study kit. This kit is used in college for understanding how Electro-Pneumatic & Electro-Hydraulic system works.

## 11. Spray painting machine

**Customer-** K-flex, Pune India.

**Duration-** 10 days

**Environment-** CECO 20HRD PLC

**Responsibility-** Develop & test PLC program for Spray painting on capacitor film at OEM place.

## 12. Knuckle bearing pressing machine

**Customer-** FIAT, Ranjangaon, India.

**Duration-** 20 days

**Environment-** AB Panel view plus HMI & Micrologic 1200 PLC.

**Responsibility-** Develop & test PLC program & HMI screen for showing Force vs Displacement of Knuckle bearing pressing machine.

### 13. X axis gantry system

**Customer-** Phoenix mecano, Pune, India.

**Duration-** 1 month

**Environment-** Delta DVP20 & Delta ASD drive

**Responsibility-** Develop & test PLC program for X axis gantry system of pick & place unit. Involved in electrical drawing & wiring, VFD configuration.

### 14. Paint Filling machine

**Customer-** Mount packaging, Pune, India.

**Duration-** 1 month

**Environment-** Siemens S7300 PLC, BARTEC HMI, SINAMICS 611U drive, weighing scale

**Responsibility-** Develop & test PLC program for precise paint filling & packaging machine. Develop HMI screens in BARTEC HMI panel, configure 611U drive as per application.

### 15. Child part inspection & assembly machine

**Customer-** Sigma Industries, Pune, India.

**Duration-** 1 month

**Environment-** Delta DVP20, Stepper motor with controller

**Responsibility-** Develop & test PLC program for child part inspection & assembly machine.

As well as involved in following projects-

16. Disconnecting and reconnecting of id grinding machines electrically. e.g. Boar grinding, ID grinding, Mechndora supper finishing ID grinding machine
17. Installation & commissioning- KM-85 supper finishing machine. This is the machine used for pre-final and final finishing of ID of bearing. I'd programmed partially, installed hardware e.g. 611U SIMODRIVE of Siemens, Configured it, Communication between PLC Drive and field IO's.
18. Worked on pick and place robot of **Universal robot UR5**.
19. Worked, designed, programmed concept of STACKER for pick and place purpose. STACKER is the option for conveyer belt which takes less space as compare to conveyer belt.
20. In house Installation of following m/c's. Multi spindle turning m/c's HMT make, Broaching & Punching m/c's LEM make, VISION SYSTEMS High Precision Checking m/c, 1010 KVA DG Set of CUMMINS POWERICA
21. Handling day-to-day BREAK-DOWNS i.e. Electrical, Mechanical.

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## Integration Tools Used

### PLC Hardware & Software-

SIEMENS- S7300/300F, S7 1200 / SIMATIC Manager 5.5, MicroWin

ROCKWELL- ControlLogix 1200,500, Micro 800 series / RSLogix500, CCW

DELTA- DVP40, DVP20 / WPLSoft, PMSOFT, ISPSOFT

CECO- HRD12, HRD20 / CECO client

AUTONICS- LP series (PLC+HMI)

### HMI Hardware & Software-

SIEMENS- Comfort Panel, TP1200 / WinCC Flexible2008, TIA portal V12,13,14

ROCKWELL- Panel View Plus 600 / Factory Talk View 6

DELTA- DOP B series / DOPSoft

Bartec- Polaris Smart HMI / BMS Graf Pro

#### **VFD, Servo Hardware & Software-**

SIEMENS- VFD G120, S120(CU320), MicroMaster, Simodrive 611U / SIMATIC Starter V3, V4.4

ROCKWELL- PowerFlex40

DELTA- ASD A series / COMMGR, ISPSoft

#### **Nutrunner Hardware & Software-**

Atalas Copco Power Focus

#### **Vision system Hardware & Software-**

Cognex Insight Explorer V2.4, V4, V5.5

#### **GigE Ether Inspect**

#### **Marking system Hardware & Software-**

Telesis pin marking

Keyence Laser marking

#### **Industrial printer system-**

Weber printer & applicator

Sato printer

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#### **Educational Qualification**

- Diploma in E & TC (year 2008)
- Degree in E & C (year 2011)

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#### **Personal Details**

Date of Birth-	01/05/1988
Passport No-	Z3269463
Valid Visa-	B1/B2 (USA), valid till 10/07/2026
Marital Status-	Unmarried
Language Known-	Marathi, Hindi, English, Spanish(beginner)