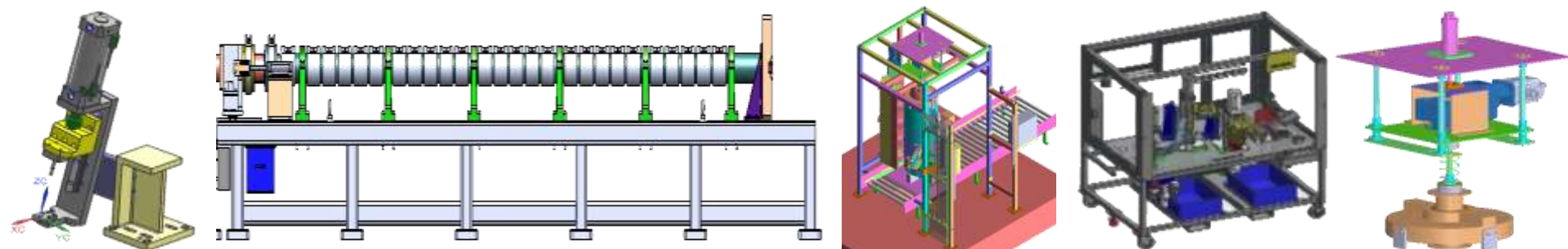
 **Heavy Engineering**
Design and Manufacturing

Aktis offering for this segment encompasses a broad range of capabilities to reduce life cycle costs, improved reliability, improved performance and product optimization



100+ Finishing/Assembly/Welding Fixtures and 20+ SPMs

- Fixtures design
- Special Purpose Machines
- Mechanical design
- Pneumatic design
- Electrical design
- PLC Programming
- Calculations
- Selection of standard parts
- Design for Safety



- Sourcing of standard parts
- Fabrication of components
- Assembly
- Electrical Panel Board Wiring
- Pneumatic connections
- Electrical Field wiring
- PLC Programming Integration
- Debugging & Troubleshooting
- Functional and durability testing

ONE STOP SHOP for
Fixtures, Special purpose machines and resolving assembly line issues

Product Development of Automated Finishing Fixtures for Automotive Tier 1, Canada

Scope:

- To design, fabricate, assemble & testing of Automated Fixtures which are used to finish the Automotive blow molded AC plastic ducts

Challenges:

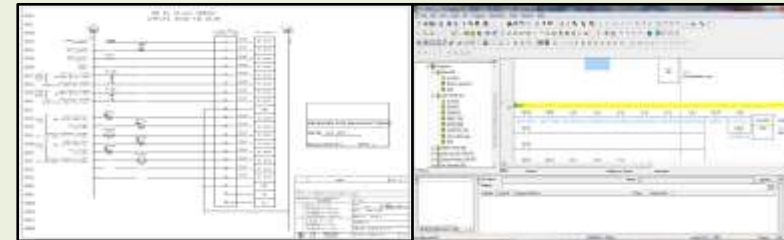
- Tight tolerance requirements of finishing operations on the ducts
- Integration of Mechanical, Pneumatic & Electrical components along with PLC programming

Key Highlights:

- Design & manufacturing process was standardized for repeated use for future fixtures
- Machine was production ready so that the installation at customer site will be just plug & use
- Dedicated Assembly line of fixtures made available

Value Addition:

- Quick turn around time from design to dispatch
- One stop shop for making the complete product starting from design to fabrication / testing

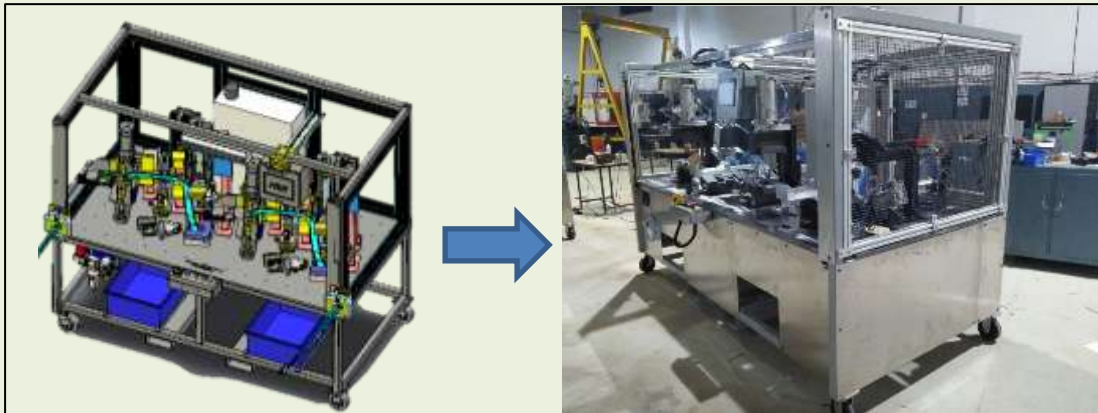


ELECTRIAL SCHEMATIC
DRAWING

PLC PROGRAM



HMI PROGRAM



CAD DESIGN TO FINISHED MACHINE



ELECTRICAL PANEL
BOARD WIRING



PNEUMATIC TUBING

SPM – Automatic Tank Enameling Machine - OEM, Denmark

Scope:

- Design and development of machine for automatically enameling tank inner
- Concept design, detailed design, manufacturing drawings and BOM
- Sub-stations design for rotating, lifting and filling enamel

Challenges:

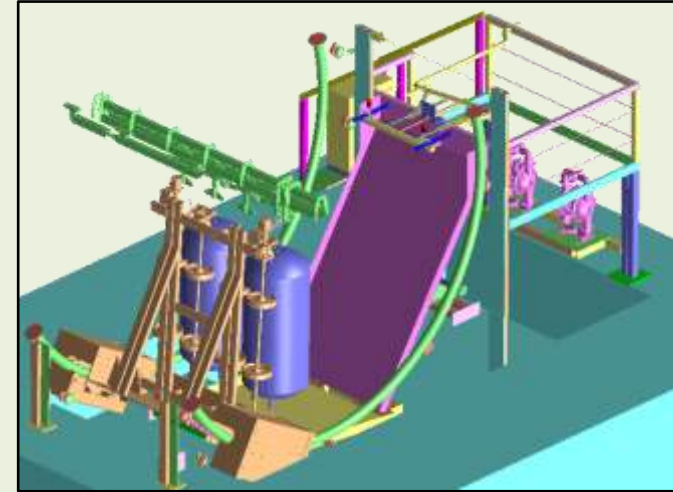
- Achieving 105° angle movement with motors and drives
- Reducing the enamel wastage and collection of the residual enamels

Key Highlights:

- Achieved complete and even coating
- Quick turn around time
- Overall process time reduced by 60% over the existing manual option

Value Addition:

- Size and shape of the machine was within the available space in the factory



AUTOMATIC MACHINE FOR ENAMELING

SPM – Semi-Automatic Winding Machine - OEM, Denmark

Scope:

- Design and development of semi-automatic winding machine for winding Aluminum tube around water heater tank
- Concept design, detailed design, manufacturing drawings and BOM

Challenges:

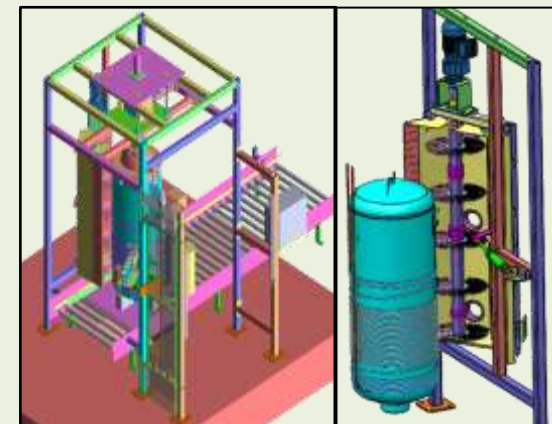
- Gripping and rotating the tank before winding

Key Highlights:

- Aluminum tube profile modified from round to oval shape to improve surface area contact with the tank
- Machine installed in the conveyor line itself for reducing loading and unloading time

Value Addition:

- Cycle time reduced significantly



WINDING MACHINE

BRUSH ASSEMBLY

Manual Assembly Fixtures - OEM, USA

Scope:

- Design and development of simple manual fixtures for assembly of small components
- Concept design , detail design, prototyping and testing

Challenges:

- Develop modular type fixtures with interchangeable inserts for different parts

Key Highlights:

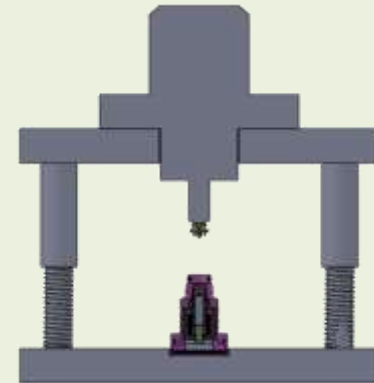
- Developed simple, low cost, light weight and easy for handling fixtures
- Solved issues of accessibility for assembly and handling small parts

Value Addition:

- Assembly cycle time reduced significantly



SIMPLE FIXTURE FOR
STEEL PLUNGER AND
RUBBER CAP
ASSEMBLY



PRESS TYPE FIXTURE FOR
PLASTIC RETAINER AND
SOLENOID BODY
ASSEMBLY

Testing Fixtures - OEM, USA

Scope:

- Design and development of fixtures for testing material strength and inspection of sub-assembly
- Concept design, detail design, prototyping and testing

Challenges:

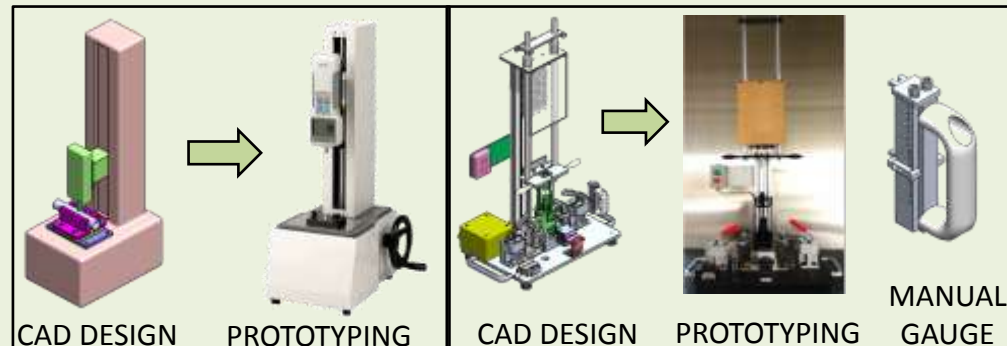
- User friendly fixtures with simple operating sequence

Key Highlights:

- Selection of suitable standard parts and measuring equipments in co-ordination with relevant suppliers

Value Addition:

- Quick turn around time for design, prototyping and testing



EMITTER TUBE STRENGTH
TESTING FIXTURE

TOILET FLUSH VALVE: 800 FRAME
INSTALLATION AND INSPECTION FIXTURE