

# Concept to Manufacturing Support for Process Yarns and Fabric Reinforcement Manufacturer

## Case Study Highlights

### Client Profile:

Process yarns and fabric manufacturer, Germany

### Objective:

To conceptualize, model and implement the plant layout for manufacturing process yarns and fabric reinforcement for rubber industry

### Challenges:

- Understanding the manufacturing requirements and identify the requirements of resources for plant
- Conceptualizing the plant layout as per the actual available site space, production capacity required and cost constraints
- Identifying constraints related to the implementation of conceptualized layout
- Developing actual prototype machines as per the design calculations

### Solution:

The overall project was accomplished by a team of 5 engineers and draftsmen in six stages. The manufacturing requirements and plant resources were identified, based on which the conceptual model was developed. The plant layout with general arrangement of equipments was finalized collaborating with the client. The structure design was also analyzed through simulation tools before actual implementation. Through the use of CAD tools, equipment prototypes were developed and manufactured simultaneously. Extensive support was provided for manufacturing support as well as erecting the plant successfully.

## Software Used: AutoCAD

As an engineering solutions provider to organizations globally, a leading process yarn and fabric manufacturer from Germany approached us for a comprehensive concept to manufacturing solution, in order to setup the manufacturing plant for production. Hi-Tech's team of engineers and draftsmen collaborated with the client to conceptualize the layout, considering the available resources, costs, site space and production capacity required.

## Solution

The overall project was separated into six stages:

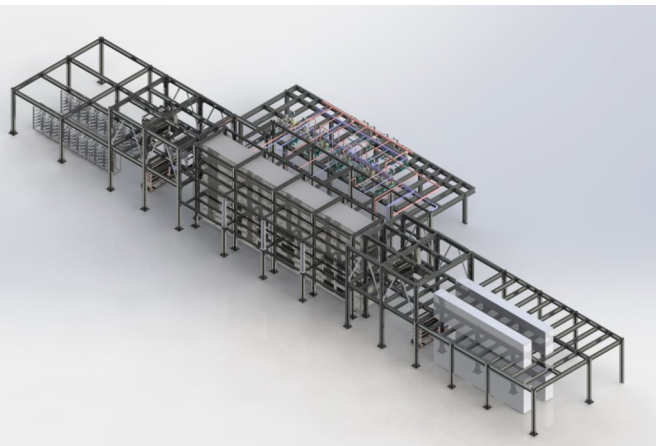
- Concept development
- General arrangement drawing preparation
- Analysis and validation
- Prototype manufacturing
- Development of manufacturing drawings
- Manufacturing support & support in plant erection

Based on the project specifications, the concept was first idealized with sketches and preliminary design calculations to identify general arrangement layout. Through CAD tools, the layout was modeled and finalized after several modifications. A 3D layout was also prepared for better understanding and visualizing the arrangement of equipments. The structure modeled was also analyzed using simulation tools to identify the effects of actual loading conditions and design modifications required.

For prototype manufacturing of equipments, detailed shop floor drawings were prepared and actual prototypes were developed followed by an onsite quality check. Hi-Tech also assisted in developing manufacturing drawings and supported the plant erection team to implement the finalized CAD model into actual layout.

## Benefits

- The entire plant data was documented with adequate sketches, general arrangement drawings and detailed shop floor drawings.
- Established the plant layout ready to begin manufacturing with no lag in production time
- Support in plant erection reduced implementation time and associated cost
- CAD documentation provided a database to the client in implementing similar plant at different locations



## About Mechanical 3D Modelling

Mechanical 3D Modelling is an India based company that caters for global clientele and plans to penetrate deeper into the existing and emerging markets. Proficiency lies in offering qualitative, cost effective and time bound mechanical engineering design services, including 2D, 3D CAD drafting, 3D solid modeling, FEA, CFD, rapid prototyping, reverse engineering. Professional and highly experienced team can handle all kind of CAD projects with the use of AutoCAD, Wildfire, 3D Max, Inventor, Solid Works, Solid-edges and Pro-e tools.