

# Case Study: Beta Emission Gauging System for Manufacturer's Client



# Quad Plus®



OEM requested assistance to install equipment and integrate electrical systems for their client in the manufacturing industry.

## Objectives

- Provide turnkey installation of the OEM's two calender web manufacturing equipment with precision product measurement for process control.
- Install and commission first nuclear emission gauging equipment following Quad Plus licensure.

## Solutions

- Installed OEM manufacturing equipment.
- Provided electrical integration of OEM equipment with the client facility.
- Installed and integrated Quad Plus scanning frames for each calender manufacturing machine with a beta measurement source.

## Results/Benefits

- Superior measurements, reporting, and product control.
- Reduced startup scrap and waste.
- Closer-to-target runs.
- Raw material savings.
- Improved production.
- Increased profits.

## Background

An original equipment manufacturer (OEM) contacted Quad Plus to install its manufacturing equipment, provide electrical systems integration and supply two gauging systems for its building products client. The system installed produces a continuous polymer sheet or web by extrusion and a dual calendering (roller) process. The manufacturing line produces Thermoplastic Polyolefin (TPO) in rolls for use in commercial roofing.

## Quad Plus Solution

Quad Plus professionals provided the installation of the OEM equipment, the machine electrical package, and two gauging systems consisting of a scanning frame with beta emission measurement at each of the two calenders. Each beta emission source and detector measures the sheet thickness and profile for both machine direction (average thickness in the direction of the product flow) and the cross direction (thickness profile across the width of the web). This high-precision measurement data feeds an automatic profile control (APC) system that provides corrective adjustment to the extrusion die.

With this integration, the high precision measurement of the gauging system provides direct feedback to the manufacturing process to achieve superior product quality. Among the benefits are a reduction in startup scrap, closer-to-target runs, raw material savings, improved production efficiency, and ultimately, an increase in profitability. The gauging HMI screens present an operator view of the gauging results to identify trends and inform of issues, if encountered. The new process controls delivered product measured at a 0.2 standard deviation from target thickness; significantly more precise than many competitive systems.

Both the OEM and customer personnel are pleased with the performance of the newly completed equipment installation and impressed with the performance of Quad Plus. While offering gauging solutions in several formats and sensors, this project marks our first installation of Quad Plus's beta emissions equipped scanner systems in the United States. Following a two-year process of education, experience, and NRC licensure to install these products, receipt of our radioactive material license allows Quad Plus to join the Sealed Source Device Registry with the Nuclear Regulatory Commission (NRC).