



tracePT

MANUFACTURER INVESTS IN FOUR DEDICATED *SHINI*UK MATERIAL BLENDING SYSTEMS

**Supporting a Major Extrusion Expansion
with Accurate, Reliable Material Handling**

The Project

A manufacturer in Worksop required a complete material handling and gravimetric blending solution for four recently acquired extrusion lines. Each extruder was expected to process approximately 650 kg per hour, creating a combined potential throughput of around 2,600 kg per hour.

Following a detailed consultation and system design process, Trace PT and Shini UK developed a dedicated blending and material handling system for each extrusion line. The complete solution included four gravimetric blending systems, bulk material discharge equipment, material storage, vacuum conveying, installation and operator training.

The Challenge

The four extruders needed a reliable method of receiving, conveying, dosing and blending several different materials, including:

- LDPE
- Reprocessed pellet
- Masterbatch
- Additives

The customer initially requested a quotation for four Shini gravimetric blenders, with each system capable of supporting an extrusion rate of approximately 650 kg per hour.

However, the blender was only one part of the requirement.

The complete system also needed to address:

- Safe and efficient unloading of one tonne material bags
- Automatic transfer of materials to each extrusion line
- Accurate dosing of masterbatch and additives
- Sufficient storage capacity to reduce operator intervention
- Clear identification of different secondary materials
- Flexibility for future changes in throughput and material ratios
- Installation within the customer's required production schedule

The customer was also considering whether two large central blending systems could supply all four extruders, or whether each extruder should have its own dedicated blender.

Understanding The Production Requirements

Trace PT visited the manufacturer's Worksop site to review the equipment, discuss the production process and understand how operators would manage materials across the four lines.

Two potential system concepts were then developed.

Option One

Two high capacity gravimetric blending systems, with each blender supplying two extruders.

Option Two

Four dedicated gravimetric blending systems, with one independent system installed on each extruder. Although the four system solution required more ancillary equipment and represented a greater initial investment, it provided the operational flexibility and process control the manufacturer required.

Each extrusion line could be managed independently, allowing different recipes, materials and production requirements to be handled without affecting the other lines.

tracePT

The Solution

The manufacturer selected the four system option, providing a dedicated gravimetric blending and conveying arrangement for each extruder.

The complete system included:

- Four Shini gravimetric blending systems
- Material receivers and automatic loading equipment
- Two double outlet bulk bag discharge stations for LDPE
- Two double outlet bulk bag discharge stations for pellet
- Eight MST material storage bins for masterbatch and additives
- Upgraded vacuum pumps and receivers
- Up to 160 metres of suction hose
- Required plugs, fixings and installation materials
- On site installation, commissioning support and operator training

Each bulk bag discharge station was designed with two outlets, allowing one station to supply two extrusion lines.

Two stations were allocated to LDPE and two to pellet, while the eight smaller storage bins supplied masterbatch and additives to the individual blending systems.

Reducing Operator Involvement

The system was designed around the expected throughput of 650 kg per hour per extruder and an assumed material bulk density of 0.65.

Based on these operating conditions, the estimated replenishment frequencies were:

- LDPE bulk bag replacement approximately every hour
- Pellet bulk bag replacement approximately every nine hours
- Masterbatch storage bin refill approximately every seven and a half hours
- Additive storage bin refill approximately every seven and a half hours

These calculations gave the manufacturer a clear understanding of the expected operator workload before placing the order.

The fixed bulk bag discharge arrangement also removed the need for operators to reposition loose suction probes and hoses around the production area, helping to create a safer and more organised working environment.



Improving Material Identification

The original system specification included eight square material storage bins.

Following further discussions with the customer, the configuration was changed to:

- Four square storage bins
- Four rounded storage bins

The two different bin shapes make it easier for operators to distinguish between masterbatch and additive materials, reducing the potential for loading errors.

Building In Additional Capacity

Trace PT also upgraded the vacuum pumps and material receivers throughout the system at no additional cost.

Although the larger components were not essential for the initial production requirement, they provide additional capacity should the manufacturer increase throughput or change material ratios in the future.

This approach ensured that the system was not only suitable for the immediate application, but also gave the customer greater flexibility as production developed.

Working Within The Customer's Budget

The manufacturer identified the dedicated blender solution as the preferred technical option, but the initial cost was above the allocated project budget.

Trace PT worked directly with Shini to secure additional commercial support. Trace PT also contributed its own pricing support, enabling a revised proposal to be presented to the customer's ownership team.

The revised package retained the full system specification, installation support and equipment upgrades while helping the manufacturer obtain approval for its preferred solution.

Installation & Support

The installation programme was planned to take up to seven days and included operator training to ensure the production team could confidently manage the blending, conveying and material replenishment process.

Trace PT also arranged further site discussions to review:

- Final equipment positioning
- Material routes
- Suction hose layouts
- Installation requirements
- Access around the extrusion lines
- Operator responsibilities
- Future fixed aluminium pipework options

This collaborative approach allowed the system to be developed around the site and the production team, rather than supplying individual machines without considering the wider process.

The Customer Benefits

The selected system gives the manufacturer:

- Independent material control for each extrusion line
- Accurate gravimetric dosing and blending
- Capacity to support approximately 650 kg per hour per extruder
- Reduced manual material handling
- Fewer loose hoses and suction probes around the production area
- Clearer identification of masterbatch and additive materials
- Predictable material replenishment intervals
- Greater flexibility for recipe and production changes
- Additional conveying capacity for future requirements
- One supplier responsible for equipment, system design, installation and training



A Complete System Approach

This project demonstrates the importance of looking beyond an individual blender or ancillary machine.

By reviewing the complete material journey, from one tonne bulk bags through to the throat of each extruder, Trace PT and Shini UK were able to design a coordinated solution covering material discharge, storage, conveying, dosing, blending and operator involvement.

The result is a flexible four line system designed around the manufacturer's current production requirements while retaining capacity for future growth.



Project Summary

Customer

Manufacturer in Worksop

Location

Worksop, Nottinghamshire

Application

Material handling and gravimetric blending for four extrusion lines

Extrusion throughput

Approximately 650 kg per hour per line

Combined potential throughput

Approximately 2,600 kg per hour

System configuration

Four dedicated Shini gravimetric blending systems

Materials

LDPE, pellet, masterbatch and additives

Trace PT Scope

Consultation, site review, system design, equipment supply, installation planning and operator training

Planning a new material handling or blending system?

Trace PT supplies complete plastics ancillary systems, from individual machines through to fully integrated material handling, conveying, drying and blending projects.

Contact our team to discuss your production requirements.