CASE STUDY:
SANDVIK MINING's PERTH DISTRIBUTION CENTRE

BACKGROUND

Sandvik Group conducts operations globally within five business areas - Sandvik Mining, Sandvik Construction, Sandvik Machining Solutions, Sandvik Materials Technology and Sandvik Venture. Sandvik Mining is a leading global supplier of equipment and tools, service and technical solutions for the mining industry. The offering covers rock drilling, rock cutting, rock crushing, loading and hauling and materials handling. In 2013 sales amounted to about AUD $4.6 billion, with approximately 13,000 employees globally.

The key driver for Sandvik's decision to relocate the Perth DC was inadequate storage capacity at the old facility. This critical space constraint had necessitated that a proportion of the range of spare parts, being the larger sized items, be warehoused externally by a 3PL operator. This physical split of inventory, and the comparatively higher 3PL contractor costs, were pushing branch operating costs upwards.

Double / multiple handing of inventory in the DC was having a major impact on productivity. The handling inefficiencies were impacted by space constraints, and the nature of the storage media used. Many of the stock keeping units ("SKU's") were stored in wooden crates in pallet racking; often with multiple SKU's in any one crate. Put-away and order-picking productivity was low as a result of needing a forklift to drop each crate to floor level to place or manually take an item to / from the crate, then lift the crate back into the pallet location.

SNAPSHOT OF THE OLD DC

The storage media used in the old DC, including at the 3PL's facility, were as follows:

- Very small sized items – in BAC cabinets
- Small items – in maxi bins stored to 5.0m high
- Medium sized items – in wooden crates in pallet racking
- Large items – on pallets in racking to 5.0m high
- Long items – in cantilever racking to 5.0m high
- Oversized items – a combination of internal floor stack, and external hardstand

The materials handling equipment (MHE) types used included:

- Counter-balanced forklift (yard work)
- High level order picker (operating in a wide aisle)
- Reach truck
- Side-loader (4.0m lift capacity)

SNAPSHOT OF THE NEW DC

The storage media adopted in the new DC are as follows:

- Very small sized items – in BAC cabinets
- Small items – in maxi bins stored to 8.5m high (fast moving items up to 2.0m only)
- Medium sized items – in long span shelving, with vertical dividers to achieve compartmentalisation to 8.5m high
- Large items – on pallets in racking to 10m high
- Long items – in special pigeon-hole compartments in the long-span area / and cantilever racking to 8.5m high
- Oversized items – a combination of internal floor stack, and cantilever racking

The materials handling equipment types used include:

- Counter-balanced forklift (yard work)
- High level order picker (operating in a narrow aisle)
- Reach truck
- Turret truck
- Side-loader (8.5m lift capacity)

KEY DESIGN PARAMETERS FOR THE NEW DC

Planning for the new DC needed to take into account the following project constraints as design parameters:

- The new design and operation had to successfully function in an environment that did not include warehouse management system (WMS) functionality of any real level of sophistication
- The project was to be constrained to tight capex budget guidelines, necessitating a lower-technology design solution
- The new DC is in leased premises over a 3-year lease term, so again a relatively low capex solution was required
- Any shut-down period during the physical re-location of inventory between sites was to be kept to an absolute minimum, to ensure Sandvik's high customer service standards were maintained during the transition
- The combination of the above-listed parameters determined that the Very Small items would remain in the existing BAC cabinets, and the Small items would remain in the maxi-bins, rather than introduce more sophisticated and better fit-for-purpose storage solutions for these items.

SCSA'S ROLE IN THE PROJECT

The scope of SCSA's consultancy support to this project included the following areas:

- Development of the Concept Design of the fitout and layout of the new DC
- On agreement with the client on the Concept Design, translation into Detailed Design including AutoCAD drawings and fitout equipment Specifications

- Support to the procurement process of storage equipment and MHE through technical evaluation of tenderers' submissions
- Detailed product slotting planning for that part of the range that was the subject of the greatest change to the method of storage, ie the medium-sized items which were previously stored in wooden crates in pallet racking, and in the new DC stored in the narrow-aisle long span shelving configuration.

SCSA's approach towards warehouse and DC designs is to develop fit-for-purpose design solutions that provide the best match to the business needs of the client, to achieve optimum operational outcomes as well as optimum project outcomes. This is how we value-add to clients' projects.

For product slotting assignments, SCSA uses advanced product slotting software which uses advanced mathematical algorithms that consider a product's dimensions, weight, velocity, physical characteristics of the environment including bin configurations, pick path and material handling equipment, and operational goals like pallet building, seasonality requirements and product family groupings.

On completion of the product slotting plan, which provided the optimum match between SKU's to bin locations, SCSA created a virtual 3D warehouse model as an aid to the client to facilitate the initial product filling of the new storage fixtures.

"We were looking for a partner we could trust, work closely with, and would be responsive to our needs. SCSA was the ideal choice" said Garry Fly, DC Manager, Sandvik Mining WA.

PROJECT BENEFITS

The benefits to Sandvik from this DC relocation project were substantial, including:

- Consolidation of the WA DC operation into one facility (previously two)
- Withdrawal of that part of the warehousing function previously operated by a 3PL contractor, resulting in a significant reduction in total branch operating costs
- Increase in storage capacity by 100%
- Increase in order-picking productivity rates by 50%
- A safer operation, through better segregation between vehicle and pedestrian traffic and improved ergonomics in product handling
- Reduction in picking errors
- The design provides a solid platform for ongoing continuous improvement, enabling facilitation of the introduction of future process and systems enhancements
- High customer service standards maintained through the physical relocation period, including no loss of sales
- Well balanced workload activity levels throughout the facility, eliminating operator and MHE bottlenecks
- Improved house-keeping outcomes, in particular through the introduction of wire-mesh long span shelving

"*We had solid timber crates in our old DC, and the dust that built up inside was so bad that pickers had to wear gloves. Now, dust just settles on the floor, which allows us to control it and keep the DC clean*" said Garry Fly.

SUMMARY

This relocation project to the new Canning Vale facility has enabled Sandvik to create a leaner, highly responsive and more streamlined DC operation in West Australia, and is set to become a benchmark facility for Sandvik distribution operations globally.

"The project was completed on time and on budget with minimum risk to the business …. Sandvik is delighted with the invaluable contribution made by the SCSA team to this highly successful project", summarised Garry Fly.