

CASE STUDY**Window Maker
Improves
Productivity
& Operational
Agility**

A lean transformation can move quickly, even during a pandemic. Rapid plan-do-check-act (PDCA) cycles accelerate lean adoption and productivity gains at a massive window manufacturing complex in Poland.

Client

Dovista Polska's Window Village consists of eight factories (T1 through T8) clustered together with more than 100,000 sq. meters of manufacturing space and 2,400 people.

Challenge

Despite modern facilities and state-of-the-art equipment, the sites needed to dramatically improve efficiency.

Solution

Based on TBM's initial diagnostic, we recommended a range of lean practices that would improve the workflow and have an immediate impact on productivity, including standard work, adherence to takt time, balanced work cells, visual management, revamped material replenishment processes and leader standard work.

Results

Process changes and a 28% productivity increase in the paint shop had an immediate impact on downstream processes. The first two factories achieved 30% productivity improvements, contributing to a sitewide gain of 15% this year.

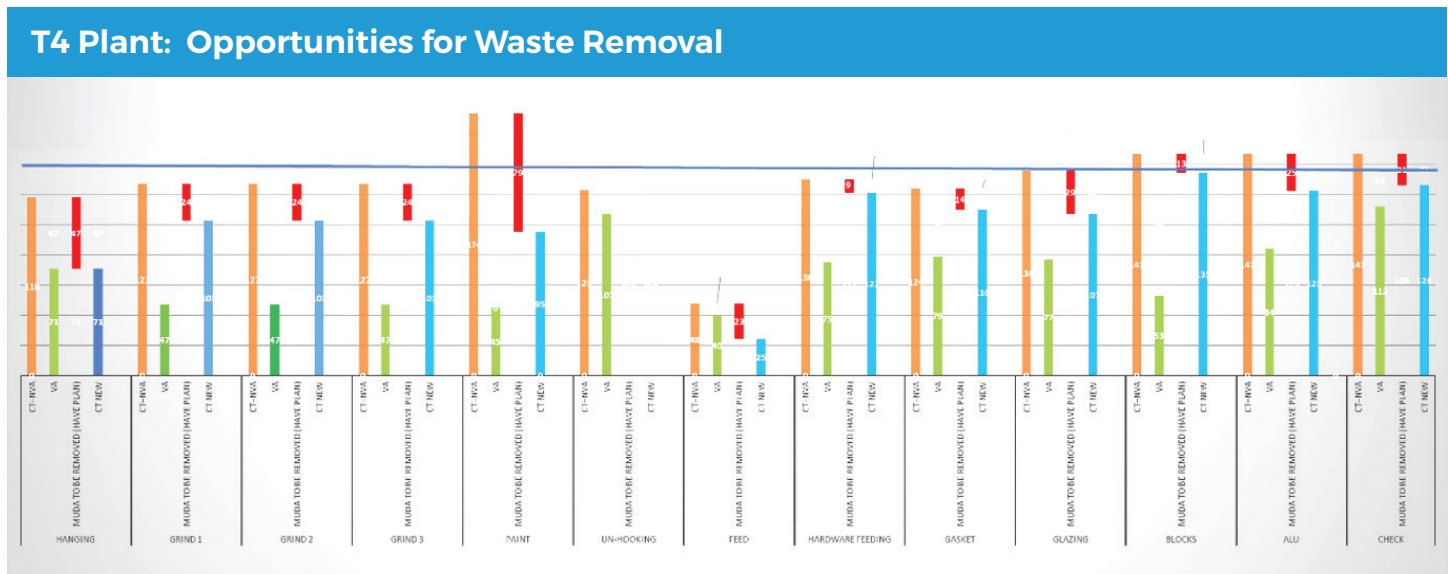
The eight plants in Dovista Polska's Window Village make custom-order windows and doors exported to homes and commercial buildings in the United Kingdom, Germany, Denmark and other Scandinavian countries. In 2019 the cost center produced 645,000 window and door units, consuming 7,000 kilometers of wood molding, 2 million sq. meters of powder paint and 1,000,000 sq. meters of glass.

The Dovista Window Village site leaders decided to start the improvement initiative in the T4 factory because productivity was languishing at 60% of the engineering standard. This case study shares how TBM worked with them to boost the facility's productivity by more than 30% in three months. That progress and experience is now being used as a model to drive similar gains at each factory in the complex, lowering costs and bolstering the company's ability to meet surging demand during the pandemic.

"Companies typically have safe improvement goals like 3% or 5%," says Wojciech Baszkowski, Managing Director for Dovista Polska. "After the diagnostic we announced our goal: 30% improvement in three months. That was a shock and it was difficult for some people to accept."

Management issues slowed down implementation before they could get the right people in place, according to Baszkowski. "A lot of our experience this year was about overcoming the resistance from management as well as among employees and unions. We had to think differently. We needed some outside knowledge and inspiration to speed up the pace," he adds.

FIGURE 1



For each production area, this bar chart shows the current cycle time (orange), value added steps (green), waste to be eliminated (red), and the projected future cycle time (blue).

Full Speed Ahead

The production lines in Dovista's modern, well-lit facilities are highly flexible and engineered to manufacture many different-sized windows and doors, all of which are made-to-order. Following the two-week diagnostic and management's approval of the improvement plan, TBM senior consultant Jakub Konopczak began working with the T4 production teams at the end of February 2020. This was just weeks before most European countries mandated economic lockdowns to control COVID-19 outbreaks. Although the gates were closed to non-essential contractors, company leaders gave special permission for Konopczak to enter because this project is a strategic business priority.

Improvement opportunities identified during the diagnostic included scheduling inefficiencies, time spent moving around work-in-process trollies to find the right parts, and a variety of other issues that were impeding workflow and undermining productivity (See Fig. 1). Some workers were overburdened and rushing to get their work done while others were standing around waiting.

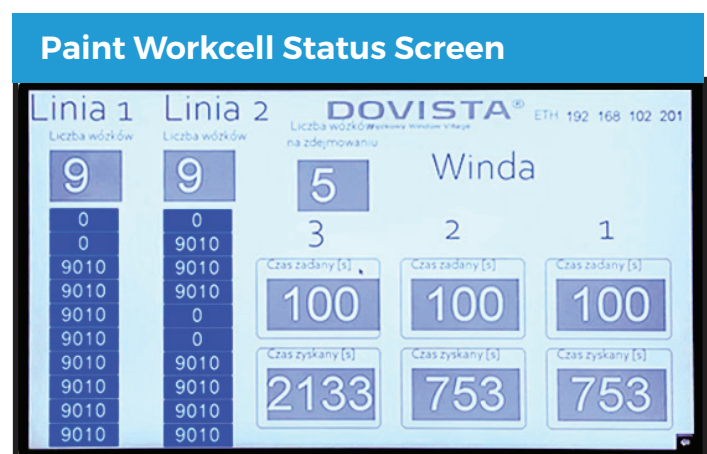
Initial priorities included:

- Changing the machine shop layout to support an effective pull system
- Balancing operator loading on assembly lines to takt time
- Better production scheduling to bring all parts together at the same time

- Implementing 5S and other visual management practices
- Streamlining material replenishment processes
- Establishing standard work for all key operations
- Introduction of leader standard work to improve management discipline and maintain progress

In addition to these projects, implementation of a rolling takt time in the paint shop had a major impact on downstream workflow and overall productivity. The main challenge in the paint shop is product complexity and variety. The line, which features an overhead chain conveyor running through the paint booth, was designed to accommodate windows measuring as small as 30 x 30 cm to as large as 3 x 3 meters. Working without a clear standard, operators had been taking as long as they thought they needed to do a quality job on each window.

FIGURE 2



Workcell display showing adherence to takt time by shift.

To speed up the workflow an average takt time of 100 seconds was calculated and set. After 100 seconds the conveyor automatically starts moving each window forward. If a small window takes less time to paint, the worker presses a button to release it early. The extra time, which they can see on a display in the work cell ([See Fig. 2](#)), is then “banked” for larger or more complicated units. The new approach enabled workers to paint an acceptable quantity in the right amount of time and drove significant productivity improvements. The new setup has been so successful that it was soon implemented on other paint lines throughout the complex.

Learning to See and Respond to Problems Using Rapid Cycles of “Plan, Do, Check, Act”

Many lean initiatives suffer from slow implementation. Teams generate detailed improvement plans on paper, but the management system is not disciplined enough to get things done in a reasonable timeframe, which leads to poor results, frustration and disillusionment. Root causes include conflicting messages and priorities, lack of leadership engagement, work cultures that don’t support change, rationalization of delays and other priorities taking precedence.

After working with the T4 team to create a detailed improvement plan, Dovista executives gave Konopczak—who worked full time in the factory through the end of May—direct control to mentor site management through the implementation phase. This was critical to the speed of implementation. No matter how well drawn out an improvement plan is, the execution phase is dynamic and requires frequent adjustments.

With the onset of the pandemic, childcare issues, health concerns and other fallout from the pandemic soon pushed the daily absenteeism rate at the site from 4% to 15%. At the same time—because of economic uncertainty, reduced immigration and other factors—the annual employee turnover rate fell from around 20% to 7%, which made it easier to introduce process changes.

Konopczak kept everything on track and accelerated the plan-do-check-act improvement cycle with frequent check-in meetings. In some instances he met with teams multiple times each day. These reviews took place at all levels—including weekly updates with the project sponsor—keeping everyone focused and aligned.

As important as keeping projects moving forward, frequent reviews support management development. This is crucial to sustainment of performance gains and maintaining momentum when TBM consultants are no longer on site every day. Through this daily coaching Dovista line leaders and foremen have developed their abilities to see waste in the production processes.

They have learned to address abnormalities and how to apply the appropriate problem-solving tools on a daily basis before issues can escalate.

This is the biggest change program ever undertaken at the site. As the initiative has expanded to other facilities, supervisors and management have been more prepared for the changes, which has enabled them to achieve move forward and achieve the performance gains faster. People can see what has been done and are less skeptical and resistant to changes. They also understand that management is fully committed.

Early Results Fuel Future Progress

TBM’s engagement with Dovista began in January 2020, gathered momentum during European lockdowns, and continues to expand. The approach and progress in T4 has served as model for rollouts in other facilities in Window Village.

Adherence to the rolling takt time on the T4 paint line reduced cycle times by 18% and improved daily productivity from 580 to 650 windows and doors per day.

Other floor-level results include:

- 20% reduction of non-value-added activity in assembly, freeing up capacity to meet increased customer demand
- 15% productivity increase in wood machining department
- Increased direct packing of orders at the end of the line (20% to 70%)
- 30% productivity improvement in the first three plants, and a sitewide 15% improvement ([See Fig 3](#))

"It's amazing how fast we are going from phase one to phase two, achieving similar results, without obstacles in our way," says Baszkowski.

"There's been a huge transformation among the people, especially mid- and lower-level managers. They understand why we are doing it. They are now coming to work thinking about what we can change and how they can improve their areas. This is even more valuable than the 30% productivity improvements because of the longer-term impact."

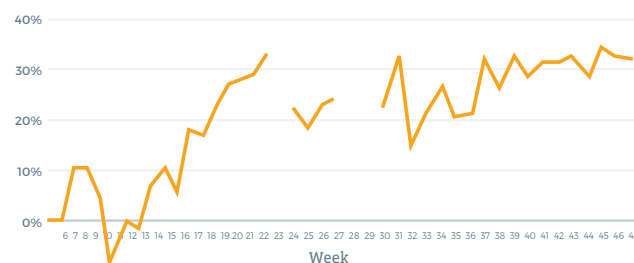
He reports that the pandemic has had a minimal impact on the company's year. The heightened demand and downward pressure on labor costs have actually improved financial performance. Increased demand in the home improvement sector has driven a 10% increase in net sales this year. The combined material waste and labor cost reductions in Window Village will deliver millions of euros in cost savings through the end of the year. In an intensely competitive industry this has given the business more flexibility to adjust price quotes and still maintain acceptable margins.

Currently, we are working together to implement similar transformation projects in other facilities on the site. They have made plans to work on indirect business areas, including outbound logistics and the warehouses. To support future efforts, TBM has helped Dovista launch and train a permanent continuous improvement team who will lead future efforts and maintain the positive momentum for years to come.

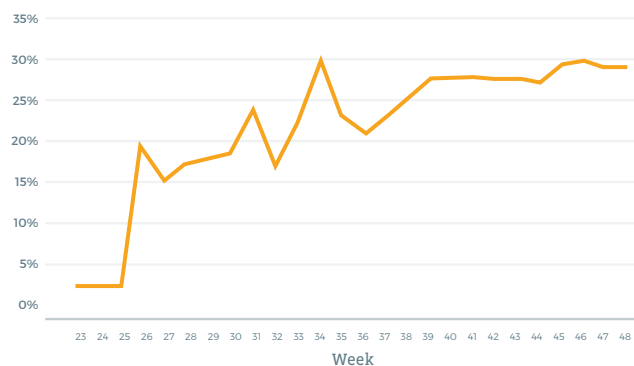
FIGURE 3

Dovista Cumulative Productivity Improvements By Week (2020)

T4 Plant



T3 Plant



T1 Plant



Cumulative 2020 changes in productivity by week. Gaps are holidays when the T4 plant was closed.

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