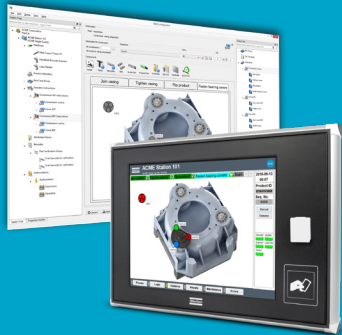


# Error proofing the assembly process offers thousands in cost savings and ensures long-term sustainability.

Atlas Copco



## CHALLENGE

*Our customer had a very complex manual assembly process that lent itself to many human errors, including missing or misplaced fasteners that in turn affected production efficiency. In addition to that, due to the type of tooling that was utilized, there was an overall lack of traceability. These issues resulted in quality problems requiring labor-intensive reworks, which ultimately effect overall production throughput and profitability. The customer was also concerned with the long-term impact that quality problems would have on future business.*

## SOLUTION

Atlas Copco worked with the customer's Production Engineering and Quality Engineering departments to determine that the lack of operator instructions was the main weakness of the current assembly process. We worked together to develop a fully integrated error-proofing solution that included operator guidance software, complete with build sequence instructions and all supporting accessories (i.e. barcode scanner, socket trays, printer, etc.) to improve overall throughput and traceability of the process. This fully integrated error-proofing solution also minimized the labor-intensive rework that was ultimately costing the customer hundreds of thousands of dollars.

ANNUAL SAVINGS  
**\$250,000**

## IMPACT

With this solution we were able to reduce quality issues that caused the labor-intensive rework and limited the production throughput. The customer said, "We would not have been able to maintain the business with customers for the past couple of years had the AC operator error proofing solution not been purchased." The customer now has complete traceability, which offers intangible value in establishing production processes that will ensure long-term sustainability.



**ANNUAL REWORK COST:**  
**\$50,000 USD**



**THROUGHPUT INEFFICIENCIES:**  
**\$20,000 USD**



**PAYBACK IN MONTHS:**  
**19.5 MONTHS**



**TOTAL ANNUAL SAVINGS:**  
**\$250,000 USD**

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SAVE MONEY AND BECOME MORE COMPETITIVE?**

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# Preventative maintenance program saves \$300,000 per year in reduced downtime.

Atlas Copco



## CHALLENGE

Production uptime at our customer's facility was adversely affected when they were running tools to failure without any preventative maintenance practices in place. This run-to-failure model caused costly, unplanned downtime. The customer was averaging 10 minutes of downtime per month at a rate of \$2,500 per minute, or approximately \$300,000 per year, due to downtime caused by tool failures.

## SOLUTION

After a deep dive into the customer assembly processes and maintenance practices, it was proven that the run-to-failure model was the root cause of the tool failures and, ultimately, the high costs associated with them. Through our Service group at Atlas Copco, we were able to implement a full preventative maintenance program on all tools. It included software that notifies the engineers when the tool had reached the cycle count at which it needs preventative maintenance done.

ANNUAL SAVINGS  
**\$300,000**

## IMPACT

Implementing a preventative maintenance program with the Visual Manager software allows the production engineer or maintenance staff to pull the tool offline prior to failure, which reduces unplanned downtime. In fact, the customer said, "90% of unexpected tool failure has been eliminated from our plant with the help of the PM program and Visual Manager."



**MINUTES OF DOWNTIME  
PER MONTH: 10 MINUTES**



**COST PER MINUTE OF  
DOWNTIME: \$2,500 USD**



**PAYBACK IN MONTHS:  
6 MONTHS**



**TOTAL ANNUAL SAVINGS:  
\$300,000 USD**

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# Transformation from air to electric tooling eliminates containment costs associated with poor quality.

Atlas Copco



## CHALLENGE

By utilizing a pneumatic tool in their process, our customer saw fasteners that were fully torqued, but not seated properly. The function of this pneumatic tool would provide OK status on NOK product because it did not have the capability of detecting the actual failure mode. Because of this, the customer was delivering incorrectly assembled products to their customers, which caused them to be placed on containment at the cost of \$30,000 for each instance of containment.

## SOLUTION

After observing the current process and component stack up, Atlas Copco determined with the customer that we should implement an electric tool with advanced fastening strategy to overcome the prevailing torque issues. Additionally, to prove that an advanced fastening strategy would detect the current failure mode, as well as other potential fastening failures, a study was done with the Production Optimization group at Atlas Copco. Through that study, a fastening program utilizing "PVT Selftap" strategy was developed and implemented on a new electric tool system.

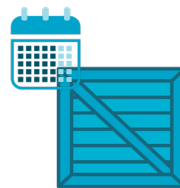
ANNUAL SAVINGS  
**\$60,000**

## IMPACT

"Since the installation of all tooling and Production Optimization implementation, we have not incurred any additional containment cost." - Customer



CONTAINMENT COST PER  
INSTANCE: \$30,000 USD



INSTANCES PER YEAR:  
2 INSTANCES



ANNUAL CONTAINMENT  
COST: \$60,000 USD



TOTAL ANNUAL SAVINGS:  
\$60,000 USD



PAYBACK IN MONTHS:  
9 MONTHS

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# Payback achieved in less than two weeks when utilizing an Atlas Copco cam-over style wrench to eliminate stripped threads.

Atlas Copco



## CHALLENGE

A customer was utilizing a standard mechanical click wrench in their process, which caused excessive scrap when used incorrectly. This type of mechanical click wrench is heavily dependent on the operator's use and can allow the operator to apply additional torque/angle on the joint. This ultimately affected the clamp load of the joint, causing stripped threads on the over-torqued applications. The customer was scrapping two to three castings per week due to stripped threads, at a cost of approximately \$75 per casting.

## SOLUTION

Through testing, we were able to show the impact of "over-torqueing" an M8 bolt/hard joint with the click wrench by an added 10 degrees, plus increased torque by 10 Nm or 40%, which in turn put the joint out of specification. We also demonstrated the capabilities of the Atlas Copco SWR (Slipping Wrench) mechanical wrench that utilizes a cam-over mechanism to make overloading the wrench impossible. Through this demonstration, the customer agreed to switch all standard click wrenches over to the Atlas Copco SWR model.

ANNUAL SAVINGS  
**\$9,659**

## IMPACT

With the high process capability delivered by the cam-over mechanism, over-tightening is eliminated. The customer is no longer stripping threads on the castings, thereby eliminating scrap costs associated with "over-torqueing".



**COST PER SCRAPPED PART: \$74.30 USD**



**10 PARTS SCRAPPED PER MONTH: \$802 USD**



**PAYBACK IN WEEKS: 1.5 WEEKS**



**TOTAL ANNUAL SAVINGS: \$9,659 USD**

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