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## Examples of Industries Served

- Centrifuge Manufacturers
- Pellet Mill Manufacturers
- Heavy Machine Manufacturers
- Irrigation Equipment Manufacturers
- Tool and Die Manufacturers
- Food Service Companies
- Medical Equipment Manufacturers
- Medical Researchers



# Case Study

## Opportunity:

Controlled Motion Dynamics uncovered an opportunity to help a filter manufacturer with a problem. They had an oil filter base plate-sorting conveyor, built by another company, which they could not use. The sorting conveyor had never worked to specification and had been gathering dust for five years. Instead, the sorting of base plates was done by hand, a slow, labor intensive process. The customer wanted to automate the oil filter assembly process and sorting was the first step. If the sorting step could not be automated there was no advantage to automating the rest of the process. Very specific conditions needed to be met:

1. The part change-over had to be completed in five minutes or less with no tools.
2. The parts without threads had to be kicked off the conveyor into a recycle bin.
3. The parts that were oriented incorrectly (upside down) had to be reoriented.
4. The sorting conveyor had to run 100 parts per minute.

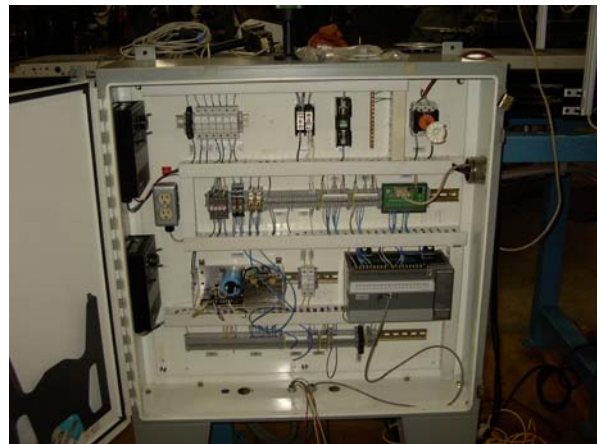
## Solution:

CMDI proposed a solution to the sorting problem while using as much of the original sorting conveyor as possible.

The original operator interface and PLC were retained, along with the conveyor and framework. To simplify, the original cameras were replaced with five Balluff laser sensors, which would detect threads in the part and check the orientation of the parts.

These steps eliminated a complicated camera set-up procedure and shortened operator time in selecting part numbers.

Another improvement included replacing the original reject guillotine gates with Humphrey dual rod cylinder kickoffs. A magnetic conveyor was added to the infeed to help present the parts in a more orderly fashion. The PLC and operator interface programs were rewritten to control the new components and simplify operation:



*Control Panel*

- A forklift operator places a tub of base plates into the machine. The tub is then automatically raised and dumped into a hopper.
- This hopper unloads onto an infeed conveyor that places the parts onto the magnetic conveyor. The magnetic conveyor then places the parts, in single file, onto the sorting conveyor.



- The part then runs down the conveyor passing under the thread sensor. If the part has threads it continues down the conveyor. If the part has no threads, then the kickoff cylinder will push the part into the recycle bin.

- The threaded part passes under the orient sensor. If it is oriented correctly the part will be diverted to the final conveyor. If the part is oriented incorrectly it will be shifted over on the belt where it will be flipped before it is placed on the final conveyor.
- The properly threaded and oriented parts are then sent into the rest of the assembly process.

Controlled Motion Dynamics sorting conveyor system was tested and placed into production with great success. The filter manufacturer was very pleased with the outcome and plans on adding this type of sorter to all of their assembly lines.

