

Packs a Punch with CPG Assembly

Pays for Itself in 4 Months; Delivers a \$278,000 3-Year Project Savings

Task: Packaging operation including light assembly and part transfer

Current Process

A plastics manufacturer for consumer packaged goods operates a line in which an operator repeatedly fills a canister by transferring a cylinder from one conveyor into a housing that sits on a second conveyor. After the second conveyor becomes full, the canister moves down the line for further packaging. Currently, the operator spends 100% of his working time loading the cylinders and pushing the button periodically to start the second conveyor.

Process With Baxter

In this task, a single robot can perform the operation continuously over a 2-shift period, just as two individuals had done over that same timeframe. The operators who had been performing that task are now responsible for both supervising the robot's operation and focusing on more value-added tasks in other areas of the plant.

Savings Analysis

Assuming Baxter runs at two shifts per day, loading 2 cylinders at 5 second intervals continuously over that time, the expected savings is as follows:

- At a fully burdened pay rate of \$25 per hour, the labor cost (for one operator across two shifts) is \$8,680 per month. Baxter's operating cost is simply electricity usage, estimated at \$52/month. This represents an operational savings with Baxter of \$8,628 per month.
- When all project costs are considered – depreciation, electricity usage, and robot price (at \$32,000*) – Baxter will cost \$871 per month, as opposed to \$8,680 in total operator labor costs.
- Baxter delivers a break-even point at 4 months, and the project savings is \$278,625 over a 3-year period.

Additional Benefits with Baxter

- Greater diversity of tasks and less monotony for the human operator.
- Fewer repetitive motion injuries for the operator.
- Can be quickly deployed to take over the task, and compares favorably to the greater base cost, integration and programming time and expense required for typical industrial robots.

Operational Cost Comparison

	2 Human Operators (1 operator for each of 2 shifts)	Baxter Robot (over 2 shifts)	Savings/Gain
Monthly Cost	\$8,680 (@\$25/hr.)	\$52	\$8,628
Yearly Cost	\$104,166	\$625	\$103,536
Three-Year Cost	\$312,498	\$1,875	\$310,608



Savings realized after 4 months



*Including robot base cost, all available accessories and a 3-year extended warranty plan.

Project Cost Comparison

Metrics	Cost	Notes
Baxter scenario:		
Robot Price	\$32,000	Includes extended 3-year warranty, pedestal, and two end-effectors
Electricity Cost (kWh)	0.150	
Robot electricity usage cost – per month	\$52.08	
Robot electricity usage cost – per year	\$625.00	
Operator-only scenario:		
# of operators/shift	1	
Labor Rate, fully burdened – per hour	\$25.00	
% use of operator	100%	100% of one person's time to perform the same task
Monthly operator use	347 hrs	Single operator across two individual shifts
Total Labor Cost – per month	\$8,680	
Total Labor Cost – per year	\$104,166	

Calculations						
Monthly Gain ¹		\$8,628		Robot Price ³		\$32,000
Month	ROI²	Cost Savings		Month	ROI²	Cost Savings
1	-73%	-\$23,371		9	143%	\$45,656
2	-46%	-\$14,743		10	170%	\$54,284
3	-19%	-\$6,114		11	197%	\$62,913
4	8%	\$2,513		12	224%	\$71,541
5	35%	\$11,142		18	385%	\$123,312
6	62%	\$19,770		24	547%	\$175,083
7	89%	\$28,399		30	709%	\$226,854
8	116%	\$37,027		36	871%	\$278,625

¹ Monthly Gain = Cost of Labor - Robot Costs ² Return on Investment = (Gain - Cost) / Cost ³ Robot price includes extended 3-year warranty, pedestal and two sets of end-effectors



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