

e&a

Control Costs to Drive Profit

Introduction

Earnest & Associates is obsessed with helping manufacturers run leaner.

To get to that leaner, more profitable place, you need a timely and insightful understanding of your costs. As supply chains grow longer and more complex in our global economy, a clear view into your costs is critical to sustaining the stable, managed growth of your top-line revenue and bottom-line profits.

Whether you're an ETO, CTO, MTO or MTS discrete manufacturer, or working in a mixed environment, use this e-book to unlock your profit potential by seeing more keenly into the nature and flow of the underlying costs of your operations.

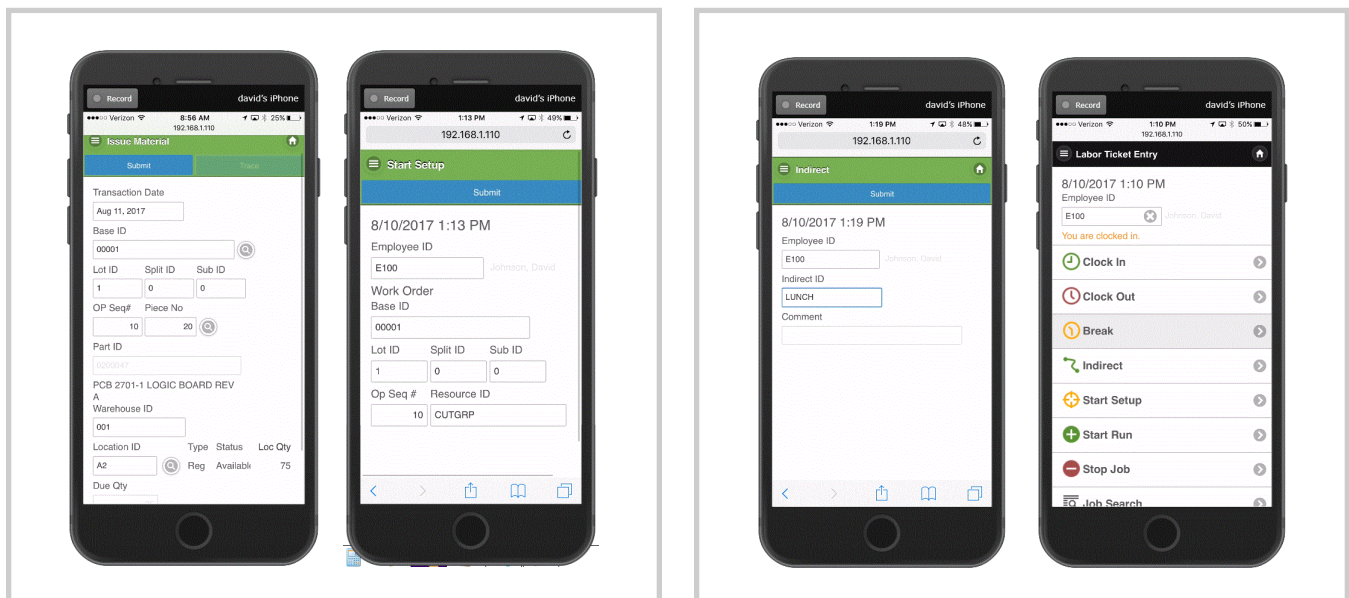
Key steps in growing profits: identifying and incorporating critical costs

There are several best practices for capturing and defining costs within the manufacturing process. Limited ERP capabilities and incorrect assumptions about the true nature of costs and cost flows can keep any manager from making sound decisions about driving profit growth.

Capture floor costs seamlessly

When you accurately capture your floor costs as they happen, you can make timely pricing decisions and drive up margins. The mobile nature of cost capturing is naturally intuitive, which results in a shorter learning curve, quicker adoption, and fewer data collection errors. This is invaluable for collecting production floor data in complex production scenarios such as:

- Managing multi-level bill of materials consisting of multiple sub-assemblies
- Deploying a single resource to simultaneously perform multiple jobs and/or tasks
- Complying with multiple inspection steps throughout the production process
- Integrating lot tracking in the production process
- Efficiently issuing material directly into the production process from the production floor



USE MOBILE SHOP FLOOR CAPTURE TO EXPEDITIOUSLY AND ACCURATELY CAPTURE FLOOR ACTIVITY. THIS PROVIDES YOU IN-PROCESS WORK ORDER INSIGHT AND ALLOWS YOU TO MANAGE PRODUCTION PROACTIVELY.

Getting Real Time Visibility into Work-in-Process Costs

While still in the production process, Real Time Variance

Visibility allows you to:

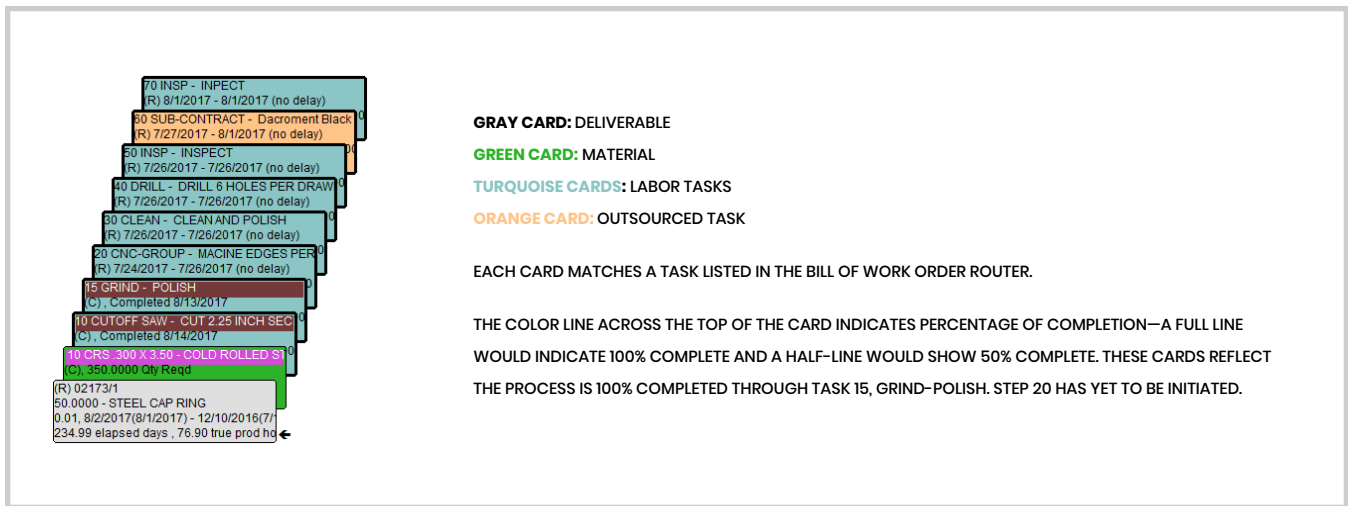
- Adapt to changing conditions that impact fulfillment commitments
- Initiate steps to protect margins while still in production
- Provide timely data to correct estimates so that future pricing and production are not impacted by the same variances

Real Time Production Floor Visibility lets you:

- See the completion percentage of each job
- Monitor the overall status of your production floor
- Gauge the impact on capable-to-promise capacity with new orders

Detail	Quantity	Estimated	Actual	Variance	Projected	Est. Total Hours	Act. Total Hours	Var. Total Hours
- 02173/1 - STEEL CAP RING	50	4,313.17	2,010.93	2,302.24	4,460.09	76.90	24.75	52.15
- 10 CUTOFF SAW - DO-AL	50	1,856.30	2,002.19	-145.89	2,002.19	37.75	24.33	13.42
CRS 300 X 3.50 - COLD F	350	829.50	1,145.25	-315.75	1,145.25			
15 GRIND - GRINDERS	50	7.71	8.74	-1.03	8.74	0.28	0.42	-0.14
20 CNC-GROUP -	50	1,185.75	0.00	1,185.75	1,185.75	25.50	0.00	25.50
30 CLEAN - Cleaning Area	50	340.00	0.00	340.00	340.00	12.50	0.00	12.50
40 DRILL - HIGH SPEED DR	80	14.35	0.00	14.35	14.35	0.53	0.00	0.53
50 INSP - Inspection	50	4.53	0.00	4.53	4.53	0.17	0.00	0.17
60 SUB-CONTRACT - Out	50	900.00	0.00	900.00	900.00	0.00	0.00	0.00
70 INSP - Inspection	50	4.53	0.00	4.53	4.53	0.17	0.00	0.17
Total	50	4,313.17	2,010.93	2,302.24	4,460.09	76.90	24.75	52.15

Step 10 has incurred a \$145.89 labor cost overrun variance, but came under the hours estimate by 13.42 hours. This could be indicative of a mismatch between the resources and/or cost application rate used in the making of the estimate and what was actually deployed in production. Step 15 has incurred a labor cost and hours overrun variance. Material acquisition (CRS.300 X 3.50) reflects a cost variance of \$315.75. As a result of these variances, project cost and estimates to complete have been adjusted, accordingly.



ERP Capability to Make Retroactive Purchase Cost Variance Adjustments

Frequently, raw material purchase cost variances are not identified until vendor invoices are matched to PO receipts—many times after the project has been closed out and the finished goods have been shipped. In this situation, unless the cost variance can be retroactively adjusted:

- Margins, item production cost and raw material and finished goods item unit and inventory costs will be misstated
- Estimates and engineering masters will perpetuate the variance misstatement into new work
- Financial reporting will be misstated in its cost of goods sold and inventory carrying cost values, and possibly in cost recognition timing

The below chart illustrates the impact of an ERP not being able to retroactively adjust for a \$20.00/unit purchase cost variance for raw material item XYZ—which was not discovered until matching the vendor invoice to the PO receipt. Without the capability to adjust the originating transactions:

- Raw Material and Finished Goods Inventory Carrying Value, and Items XYZ & ABC unit costs are understated:
 - Raw Material Inventory - \$10,000; Item XYZ, \$20.00/Unit
 - Finished Goods Inventory - \$5,000; Item ABC \$50.00/Unit
- COGS is understated and Margin on Item ABC is overstated by \$5,000.00
- The General Ledger is charged with an unidentified purchase variance to COGS of \$20,000

TRANSACTION CYCLE –

- (1) PO Receipt for 1,000 units of XYZ Part for \$100/ea
- (2) 500 units of XYZ Parts Issued to WO 123 to make 200 units of Item ABC
- (3) Work Order 123 Closed Out to Finished Goods for 200 units of Item ABC
- (4) 100 units of Item ABC Sold
- (5) Vendor Invoice Received for 1,000 units of XYZ Part @ \$120/ea

Retro Cost Adj Capability										
	Write-Off Cost Variance				Retro-Adjust Cost Variance				Retro-Adjust Correction	
	Transaction	Units	Cost	Cst/Unit	Transaction	Units	Cost	Cst/Unit	Cost	Cst/Unit
Raw Materials Inventory	(1)	1,000	\$100,000	\$100	(1)	1,000	\$100,000	\$100		
	(2)	(500)	\$ (50,000)	\$100	(2)	(500)	\$ (50,000)	\$100		
					(5)		\$10,000	\$20		
		500	\$50,000	\$100		500	\$60,000	\$120	\$10,000	\$20
Work In Process	(2)	500	\$50,000	\$100	(2)	500	\$50,000	\$100		
	(3)	(500)	\$ (50,000)	\$100	(3)	(500)	\$ (50,000)	\$100		
		-	-	-		-	-	-		
Finished Goods Inventory	(3)	200	\$50,000	\$250	(3)	200	\$50,000	\$250		
	(4)	(100)	\$ (25,000)	\$250	(4)	(100)	\$ (25,000)	\$250		
					(5)		\$5,000	\$50		
		100	\$25,000	\$250		100	\$30,000	\$300	\$5,000	\$50
Sales Journal: COGS	(4)	100	\$25,000	\$250	(4)	100	\$25,000	\$250		
					(5)		\$5,000	\$50		
		100	\$25,000	\$250		100	\$30,000	\$300	\$5,000	\$50
Sales Journal: MARGIN	(4)	100	\$ (25,000)	\$250	(4)	100	\$ (25,000)	\$250		
					(5)		\$ (5,000)	\$50		
		100	\$ (25,000)	\$250		100	\$ (30,000)	\$300	\$ (5,000)	\$50
Uninvoiced Purchases	(1)		\$100,000		(1)		\$100,000			
	(5)		\$ (100,000)		(5)		\$ (100,000)			
			-				-			
Accounts Payable	(5)		\$120,000		(5)		\$120,000			
General Ledger	(5)		\$20,000						\$ (20,000)	

Accurately Allocating Burden Cost

A practice prevalent in many manufacturing environments is to apply burden cost—machinery and engineering costs, for example—based on a direct labor denominator. The hourly application cost rate is based on projected labor hours, and the application of this rate to a production job is based on the direct labor hours charged to that job. Although, at the aggregate level, this allocation method may result in a full application of burden cost over the fiscal year, as the following illustrations demonstrate, this method will result in a misstatement of the actual burden cost that should be applied at the project and item level. As a result, the true cost of a produced item will be skewed or masked. Such misstatement can negatively impact the manufacturer and may lead to:

- Misunderstanding of the true cost and contribution of a produced item
- Making wrong decisions in regards to sales, sales mix, marketing, and customer relationship priorities
- Making wrong production resources allocation decisions
- Losing bid opportunities to win work

The following illustrations demonstrate how allocating burden cost based on a resource’s own unique projected hours and actual hours charged to a job will result in a more accurate allocation of their cost to the project and the produced item.

ALLOCATING MACHINE COST BURDEN –

<i>Annual Production Budget</i>					
				Application Rate	
	Cost Type	Annual Costs	Annual Hours	Based on Labor Hrs	Based on Mach Hrs
Labor 1	Direct	\$28,320	1,888	\$15.00	
Labor 1	Indirect	\$9,445	1,888	\$5.00	
Machine 1					
	Indirect	\$12,950	1,000	\$6.86	\$12.95
Machine 2					
	Indirect	\$18,500	1,000	\$9.80	\$18.50
Machine 3					
	Indirect	\$35,150	1,000	\$18.62	\$35.15
Machine 4					
	Indirect	\$7,400	1,000	\$3.92	\$7.40
		\$74,000			

ALLOCATING MACHINE COST BURDEN (CONTINUED) –

Production Floor Activity - Day X														
Shift Times														
	Start	7:00	7:15	7:30	7:45	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45	10:00
	End	7:15	7:30	7:45	8:00	8:15	8:30	8:45	9:00	9:15	9:30	9:45	10:00	10:45
Resources Cost Flow														
JOB 1	LABOR 1	100%	100%	100%	50%									
	MACH 1	100%	100%	100%	100%									
JOB 2	LABOR 1				50%	100%	50%	50%	33%					
	MACH 2				100%	100%	100%	100%	100%					
JOB 3	LABOR 1						50%	50%	33%	50%	50%			
	MACH 3						100%	100%	100%	100%	100%			
JOB 4	LABOR 1								33%	50%	50%	100%	100%	100%
	MACH 4								100%	100%	100%	100%	100%	100%

Cost Application Methods Comparison							
			Burden Allocation Based on Direct Labor		Burden Allocation Based on Distinct Resource		Delta
Job	Resource	Cost Type	Hours	Cost \$	Hours	Cost \$	Cost \$
Job 1	Labor 1	Direct	0.875	\$13.13	0.875	\$13.13	-
		Indirect	0.875	\$4.38	0.875	\$4.38	-
	Machine 1	Indirect	0.875	\$6.00	1.000	\$12.95	\$ (6.95)
				\$23.51		\$30.46	\$ (6.95)
Job 2	Labor 1	Direct	0.7075	\$10.61	0.7075	\$10.61	-
		Indirect	0.7075	\$3.54	0.7075	\$3.54	-
	Machine 2	Indirect	0.7075	\$6.93	1.25000	\$23.13	\$ (16.20)
				\$21.08		\$37.28	\$ (16.20)
Job 3	Labor 1	Direct	0.5825	\$8.74	0.5825	\$8.74	-
		Indirect	0.5825	\$2.91	0.5825	\$2.91	-
	Machine 3	Indirect	0.5825	\$10.84	1.25000	\$43.94	\$ (33.10)
				\$22.49		\$55.59	\$ (33.10)
Job 4	Labor 1	Direct	1.0825	\$16.24	1.0825	\$16.24	-
		Indirect	1.0825	\$5.42	1.0825	\$5.42	-
	Machine 4	Indirect	1.0825	\$4.24	1.50000	\$11.10	\$ (6.86)
				\$25.90		\$32.76	\$ (6.86)

In this illustration, the cost-per-hour application rate is based on the projected annual hours for each machine (1,000 hours), instead of the projected annual hours for the laborer running those machines (1,888 hours). Also, this application rate is applied to each job based on its actual machine hours incurred, and not the direct labor hours charged to the job. In this example, using a labor allocation denominator will result in an understatement of the true production costs incurred. (See Delta column – Cost Application Methods Comparison)

ALLOCATING PRE-PRODUCTION ENGINEERING COST BURDEN –

Annual Production Budget					
				Application Rate	
	Cost Type	Annual Costs	Annual Hours	Based on Labor Hrs	Based on Mach Hrs
PRODUCTION LABOR	Direct	\$28,320	1,888	\$15.00	
	Indirect	\$9,445	1,888	\$5.00	
		\$37,765			
PRE-PRODUCTION ENGINEERING	Direct	\$45,000	1,500	\$23.83	\$30.00
	Indirect	\$15,008	1,500	\$7.95	\$10.01
		\$60,008			

Cost Application Methods Comparison						
		Burden Allocation Based on Direct Labor		Burden Allocation Based on Distinct Resource		Delta
Resource	Cost Type	Hours	Cost \$	Hours	Cost \$	Cost \$
Production Labor	Direct	20.00	\$300.00	20.00	\$300.00	\$ -
	Indirect	20.00	\$100.00	20.00	\$100.00	\$ -
			\$400.00		\$400.00	\$ -
Engineering Labor	Direct	20.00	\$476.60	8.00	\$240.00	\$236.60
	Indirect	20.00	\$159.00	8.00	\$80.08	\$78.92
			\$635.60		\$320.08	\$315.52
	All Costs		\$1,035.60		\$720.08	\$315.52

As with the previous Machine Burden allocation example, the engineering cost burden application rate is determined by using its own projected annual hours and not that of direct labor (1,500 vs 1,888). The burden applied is based on the actual engineering hours charged to the project (8 hours) and not based on the direct labor hours charged (20 hours). Therefore, a cost misstatement of \$316 is avoided.

Summary

Inaccurate and untimely capturing, recording, and allocating your costs has a cascading, domino effect on your manufacturing business. It leads to a variety of inaccurate decisions, including incorrect pricing, poor resource management, and placing priority on the wrong orders and sales mix.

The best practice disciplines we've referenced here demonstrate the positive impact an insightful understanding of your underlying costs can have on your business. They focus on collecting production costs seamlessly, efficiently, expeditiously, and accurately—seeing clearly into the production process and precisely allocating cost burdens. Applying those disciplines will help your organization properly set pricing, win more bids, and make smarter sales and business planning decisions. Which, in turn, will lead to higher profitability.

Earnest & Associates goes way beyond setting up efficiency software for distributors and manufacturers. As true business partners, our responsibilities extend to intensive profitability plans and ongoing education. It's why our ERP implementations are so successful. Learn more about us at www.earnestassoc.com.