

Danshui Plant 2

Problem at Hand

The Danushi Plant 2 is being used to manufacture and ship the new iPhone 4. However, this plant has never manufactured phones before – it was setup originally for computer manufacturing and so the factory workers do not have a strong background in the manufacturing processes for phones. Due to that, along with some manufacturing issues, the plant is producing and shipping on average about 20k fewer phones per month than budgeted. Alongside the reduction in production, some expected costs were increased – specifically labor expenses, supervision, and one of the required chips. Additionally, the anticipated revenue transfer was decreased. Exhibit 1, the preliminary report for August 2010, shows these issues and has the factory running at a monthly deficit of just over 600k versus the anticipated profit of 100k. Leadership at this factory needs to evaluate the budget to understand the authenticity of the deficit, and to determine what can be done to ensure continued profitability.

Analysis Summary

Though exhibit 1 is technically accurate, it is much like comparing apples to oranges. Many of the budgeted expenses, and the budgeted revenue, have changed. As such, we need to take a deeper look into the actual impact of these changes in expenses. Most of the fixed costs (rent, utilities, etc.) remain static between the anticipated and actual budget, with the exception of supervision. However, Exhibit 2 shows the budgeted per-unit production expenses of each phone as compared to the actual per-unit costs (derived from the details the actual expenses of exhibit 1). This exhibit demonstrated that even with the increase in labor and chip costs, other decreases more than made up the difference and the actual per-unit production rate is almost \$0.50 less than budgeted.

With that adjustment, we can then use Exhibit 3 to see the breakeven point on the original budget with a 200k production versus the actual costs and revenue with 180k monthly production. This exhibit shows that when using actual costs, the number of units required to break even is almost 60k fewer than required using the budgeted numbers, and the needed revenue to break even is almost \$13mil less than required for the original budget. Overall, the original report, which tried to compare a budget for 200k unit production to an actual budget for a plant that's producing 180k units monthly, skews the expense report in such a way that the plant appears less profitable than it is in reality. This is extra apparent when we review exhibit 4 which compares the budgeted per-unit and fixed costs to the actual per-unit and fixed costs on an expected 180k production. Had Danushi planned for a 180k unit production vs a 200k production, the total costs would have been immediately apparent.

Recommended Next Steps

The first step this plant needs to take is to accept the fact that due to the unfamiliar production process, Danushi Plant 2 will set its budget on a 180k monthly unit production, rather than 200k monthly production. Provided that sets the standard, the plant will simply by default get a more accurate picture of its profitability. One other recommendation would be to consider moving labor expenses into an ABC costing method. Since each unit goes through over 100 steps in the labor process and is touched by over 300 people, that is a lot of nuanced costing information being missed in the bulk "assembly and packaging" line item. It is likely that supervision should also be included in the ABC costing method for

labor, since those two tasks are intrinsically tied together. With these changes, Danushi Plant 2 should have a better picture of its profitability.

Exhibit 1 – August 2010 Preliminary Report on Operations

August 2010 Preliminary Report on Operations Results		
	Monthly Budget	Actual
Units	200,000	180,000
Revenue (transfer from Shenzhen)	\$ 41,240,000	\$ 37,476,000
Variable Costs		
Materials		
Flash memory	\$ 5,400,000	\$ 5,249,000
Application Process	\$ 2,150,000	\$ 1,935,000
Chips - Phone	\$ 2,810,000	\$ 2,529,000
Gyroscope	\$ 520,000	\$ 468,000
8 Other Chips	\$ 14,190,000	\$ 12,643,000
<i>Total: chips</i>	<i>\$ 25,070,000</i>	<i>\$ 22,824,000</i>
Variable Supplies & Tools	\$ 12,507,000	\$ 11,305,000
<i>Materials Subtotal</i>	<i>\$ 37,577,000</i>	<i>\$ 34,129,000</i>
Labor: Assembly and Packaging	\$ 2,622,000	\$ 3,092,000
Shipping	\$ 212,000	\$ 191,000
<i>Total Variable Costs</i>	<i>\$ 40,411,000</i>	<i>\$ 37,412,000</i>
Fixed Costs		
Factory Rent	\$ 400,000	\$ 400,000
Machine Depreciation	\$ 150,000	\$ 150,000
Utility Fee & Taxes	\$ 52,000	\$ 52,000
Supervision	\$ 127,000	\$ 134,000
<i>Total Fixed Costs</i>	<i>\$ 729,000</i>	<i>\$ 736,000</i>
<i>Total Costs</i>	<i>\$ 41,140,000</i>	<i>\$ 38,148,000</i>
Net Income	\$ 100,000	\$ (672,000)

Exhibit 2– Per-Unit Costs for iPhone 4

Per-Unit Costs for iPhone 4		
	<u>Budgeted</u>	<u>Actual</u>
Purchased Chips		
Flash Memory	\$ 27.00	\$ 29.16
Application Processor	\$ 10.75	\$ 10.75
Chip for Phone Calls	\$ 14.05	\$ 14.05
Gyroscope	\$ 2.60	\$ 2.60
8 other purchased chips	\$ 70.95	\$ 70.24
<i>Total purchased chips</i>	<i>\$ 125.35</i>	<i>\$ 126.80</i>
Labor: Assembly & Packaging	\$ 13.11	\$ 17.18
Shipping	\$ 1.06	\$ 1.06
<i>Total Fixed Costs</i>	<i>\$ 139.52</i>	<i>\$ 145.04</i>
Variable Tools & Supplies	\$ 62.54	\$ 56.53
<i>Total cost per unit</i>	<i>\$ 202.06</i>	<i>\$ 201.57</i>

Exhibit 3 – Contribution Margin & Break-Even Point

Contribution Margin & Break-Even Point		
	<u>Budgeted</u>	<u>Actual</u>
Monthly Revenue	\$ 41,240,000	\$ 37,476,000
Monthly Unit Production	200,000	180,000
Expected Income Per Unit	\$ 206.20	\$ 208.20
Per-Unit Production Costs	\$ 202.06	\$ 201.57
Contribution Margin per Unit	\$ 4.14	\$ 6.63
Fixed Monthly Costs	\$ 729,000	\$ 736,000
<i>Breakeven point by Unit</i>	<i>176,087</i>	<i>110,973</i>
<i>Breakeven point in \$</i>	<i>\$ 36,309,130</i>	<i>\$ 23,104,654</i>

Exhibit 4 – Production Costs Based on 180k Production

August 2010 Cost Report - Based on 180k Unit Production		
	Monthly Budget	Actual
Units Produced	180,000	180,000
Variable Costs		
Materials		
Flash memory	\$ 4,860,000	\$ 5,249,000
Application Process	\$ 1,935,000	\$ 1,935,000
Chips - Phone	\$ 2,529,000	\$ 2,529,000
Gyroscope	\$ 468,000	\$ 468,000
8 Other Chips	\$ 12,771,000	\$ 12,643,000
Total: chips	\$ 22,563,000	\$ 22,824,000
<i>Variable Supplies & Tools</i>	<i>\$ 11,257,200</i>	<i>\$10,175,400</i>
<i>Materials Subtotal</i>	<i>\$ 33,820,200</i>	<i>\$32,999,400</i>
Labor: Assembly and Packaging	\$ 2,359,800	\$ 3,092,000
Shipping	\$ 190,800	\$ 190,800
<i>Total Per-Unit Costs</i>	<i>\$ 36,370,800</i>	<i>\$36,282,200</i>
Fixed Costs		
Factory Rent	\$ 400,000	\$ 400,000
Machine Depreciation	\$ 150,000	\$ 150,000
Utility Fee & Taxes	\$ 52,000	\$ 52,000
Supervision	\$ 127,000	\$ 134,000
<i>Total Fixed Costs</i>	<i>\$ 729,000</i>	<i>\$ 736,000</i>
Total Costs	\$ 37,099,800	\$37,018,200