

INTEGRATED DIGITAL FACTORY



Integrated Digital Factory Audit Form / ROI Calculator

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Confidential

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INTEGRATED DIGITAL FACTORY

Executive Summary

Logic Design Corporation is a Software Development and Technology Integration Company that specializes in innovative, leading edge software solutions that help Engineer-To-Order manufacturing companies transform engineering and manufacturing to design and build products better, faster and cheaper.

Integrated Digital Factory

In today's competitive global manufacturing environment, it is important for manufacturing companies to find innovative methods to improve efficiency and reduce labor costs. Most manufacturing companies maintain a competitive advantage in the marketplace with the homegrown processes and procedures that help set them apart from the competition. In many cases it does not make sense to completely throw out an existing software system and replace it with something new. An example of this is replacing your ERP system with new software that may provide marginal improvement to your business operations. Another example is throwing additional manpower at engineering and manufacturing workflow tasks when there can be more cost effective measures to automate specific workflow tasks. The goal of the **INTEGRATED DIGITAL FACTORY** is to provide an integrated factory solution that delivers the following results:

- ➔ **Increase Speed, Accuracy and Capacity of Quoting Process**
- ➔ **Increase Engineering Capacity and Reduce Labor Costs**
- ➔ **Integrate Sales, Engineering and ERP with Shop Floor**
- ➔ **Increase Shop Floor Capacity While Reducing Labor Costs**

A big challenge facing manufacturing companies is integrating existing and new software and hardware technologies. Not only does it require a level of understanding and expertise to integrate multiple technologies, it also requires determining how a manufacturing environment functions to determine the best course for improving the manufacturing environment. This is why we came up with the **INTEGRATED DIGITAL FACTORY** manufacturing environment. The **INTEGRATED DIGITAL FACTORY** is more than just hardware and software. It is methodology that brings hardware and software together to achieve an **INTEGRATED DIGITAL FACTORY** manufacturing environment to maximize efficiency and reduce labor costs.

To successfully achieve an **INTEGRATED DIGITAL FACTORY** manufacturing environment, it is important to first understand and analyze the Quoting, Design Engineering, Product Engineering, Manufacturing Engineering, Fabrication and Assembly workflow tasks to help identify potential engineering and manufacturing workflow improvements. This document is an audit form and a guide and explanation of an accompanying Excel Spreadsheet [**LDC Audit Form-ROI-Calculator (07-02-2010.xls)**]. Logic Design Corporation will work with your company remotely free of charge to help input information into the "**Integrated Digital Factory – Audit Form / ROI Calculator**". Once this process is completed, Logic Design Corporation will produce a report for your company referred to as a "**Strategic Automation Plan**".

Strategic Automation Plan

After working with Logic Design Corporation to complete the "**Integrated Digital Factory – Audit Form / ROI Calculator**", we will develop a report from the results of the audit process referred to as a "**Strategic Automation Plan**". This plan will serve as an automation roadmap for your company and provide you with a plan the outlines the recommended steps to increase productivity and reduce costs. As part of the process, we will work directly with machine tool and software vendors of your choice to help develop recommendations for your company. If we can help your company determine innovative methods to improve your business operations and build a solid business case, we would then welcome the future opportunity to help your company achieve its goals to better compete in today's competitive global manufacturing environment.

INTEGRATED DIGITAL FACTORY

Audit Form / ROI Calculator

Logic Design Corporation is a Software Development and Technology Integration Company that specializes in innovative, leading edge software solutions that help Engineer-To-Order manufacturing companies transform engineering and manufacturing to design and build products better, faster and cheaper. In order to illustrate the proven technology solutions provided by LDC, a methodology has been developed that allows a manufacturing company to analyze their existing engineering and manufacturing costs and then determine how much time and money can be saved utilizing the **Global Edge 11.0 – Productivity Suite** software to help achieve an **INTEGRATED DIGITAL FACTORY** manufacturing environment. This document is a guide and explanation of an accompanying worksheet. The Excel Worksheet associated with this document [[LDC Audit Form-ROI-Calculator \(07-02-2010.xls\)](#)] is comprised of the following Worksheet Tabs:

- **ROI-Audit (Workflow):** This worksheet tab is an audit form that allows you to enter company profile information including Work Schedule and Work Center profile information. In addition, this worksheet tab allows you to enter employee profile information for each applicable area / department and the workflow tasks performed in each of those areas / departments. This worksheet tab also allows you to enter improvement percentages that can be potentially achieved by implementing an **INTEGRATED DIGITAL FACTORY** manufacturing environment by utilizing the **Global Edge 11.0 – Productivity Suite** software. After defining workflow tasks, you can enter improvement percentages on any of the defined workflow tasks and immediately see what effect those savings have on manufacturing operations. This worksheet tab is comprised of the following sections:
 - **INTEGRATED DIGITAL FACTORY – AUDIT FORM**
 - **Section “A” – Work Schedule / Work Centers**
 - **Section “B” – Quoting**
 - **Section “C” – Product Engineering**
 - **Section “D” – Manufacturing Engineering**
 - **Section “E” – Fabrication**
 - **Section “F” – Assembly**

- **ROI-Audit (Shop Floor):** This worksheet tab is an audit form that allows you to enter Shop Floor profile information that includes a list of machines with their capacities, material usage and costs, nesting and blank count information, press brake programming and tool nesting information, and lost and hot part counts. After this information is entered, you can enter improvement percentages in areas such Press Brake Programming and Tool Nestings to immediately see what effect those savings have on manufacturing operations. This worksheet tab is comprised of the following sections:
 - **Section “G” – Machine List**
 - **Section “H” – Material Usage / Costs**
 - **Section “I” – Nesting / Blank Counts**
 - **Section “J” – Press Brake Programming / Tool Nestings**
 - **Section “K” – Lost / Hot Parts**

- **ROI-Sum:** This worksheet tab includes a summary of each of the sections and is comprised of the following:
 - **Global Edge – ROI Calculator Results / Payback**
 - **Total System Cost Savings**
 - **Estimated Engineering & Manufacturing Labor Costs**
 - **Estimated Engineering & Manufacturing Workflow Task Costs**
 - **Estimated Engineering & Manufacturing Workflow Task Savings**

- **ROI-Calc:** This worksheet tab is comprised of most of the spreadsheet formulas that drive the ROI Calculator spreadsheet. You can view this section, but there is nothing to edit in this section.

ROI-Audit (Workflow) – Worksheet Tab

Audit Form Header

The ROI Calculator starts with an Audit Form to enter profile information about a manufacturing company. The first section in the “ROI-Audit (Workflow)” worksheet tab is to enter general company information. **Section “A”** which is for entering the general work schedules for each of your departments such as Quoting, Product Engineering, Manufacturing Engineering, Shop Floor Fabrication, Shop Floor Assembly. This section will help determine how many shifts a department works, how many hours per shift, how many days per week, and weeks per year. This information will help calculate the labor costs of a department which will later illustrate how much many can be saved by reducing task time or even personnel. Within this tab are the following sections (the yellow cells allow you to enter values – what does not apply – leave blank):

INTEGRATED DIGITAL FACTORY – AUDIT FORM			
COMPANY:	LDC Manufacturing, Incorporated	MAIN PHONE:	222-333-4000
DIVISION:	Headquarters	FAX:	222-333-4005
ADDRESS 1:	1000 North Industrial Avenue	WEB SITE:	
ADDRESS 2:	-	TOTAL EMPLOYEES:	600
CITY/ST/ZIP:	Manufacturingville, WI 55555-4444	DIVISION EMPLOYEES:	225
COUNTRY:	USA	PRIMARY BUSINESS:	Sheet Metal Fabrication
PRODUCTS:	Sheet Metal Enclosures		
LOCATIONS:	Wisconsin, Illinois, Minnesota, Indiana		
KEY CONTACTS / TITLES			
KEY CONTACTS / TITLES	PHONE	EXT	E-MAIL
Mike Johnson, President	222-333-4000	1001	
Jason Meyer, V.P. Engineering & Mfg.	222-333-4000	1002	
Barbara Jones, Engineering Manager	222-333-4000	1003	
Brian Smith, Plant Manager	222-333-4000	1004	
John Johnson, Sales Manager	222-333-4000	1005	

Section “A” – Work Schedule / Work Centers

This section of the ROI Calculator is to enter the “**Number of Shifts**” in each area / department followed by the “**Hours Per Shift**”, “**Days Per Week**”, and “**Weeks Per Year**” worked. This includes entering the “**Number of Fabrication Work Centers**” and the “**Number of Assembly Work Centers**”. The yellow worksheet cells allow you to enter values. The departments that do not apply leave them blank. The values entered in this section will ripple through the ROI Calculator worksheet:

Section "A" - Work Schedule / Work Centers							
Schedule	Work Schedule	Quoting	Prod. Eng.	Mfg. Eng.	Fabrication	Assembly	Unit
Schedule-01	Number of Shifts:	1.00	1.00	1.00	2.00	2.00	Shifts
Schedule-02	Hours Per Shift:	8.00	8.00	8.00	8.00	8.00	Hours
Schedule-03	Days Per Week:	5.00	5.00	5.00	5.00	5.00	Days
Schedule-04	Weeks Per Year:	50.00	50.00	50.00	50.00	50.00	Weeks
WC	Work Center Profile			Count			Unit
WC-01	Number of Fabrication Work Centers:			1			W.C.
WC-02	Number of Assembly Work Centers:			8			W.C.
WC-03	Total Number of Work Centers:			9			W.C.

WC-01: Enter the Number of Fabrication Work Centers into the “**Count**” Cell.

WC-02: Enter the Number of Assembly Work Centers into the “**Count**” Cell.

WC-03: This Cell Automatically Calculates the Total Number of Work Centers.

Section “B” – Quoting

This section of the “**ROI-Audit**” worksheet tab is for entering the employees in your quoting department and the quoting workflow tasks they perform.

Section “B1” – Employee Profile (Quoting)

This section allows you to add employee types for your quoting department. After each employee type description, enter their hourly rate including overhead. In the “**Count**” column, enter the number of employees of each employee type:

Section "B1" - Employee Profile (Quoting)			
Section "B1"	Quoting Employee Profile	Rate	Count
Quoting-01	Quoter / Estimator:	\$40.00	3.00
Quoting-02	Sales Engineer:	\$50.00	4.00
Quoting-03	_____:	\$0.00	0.00
Quoting-04	_____:	\$0.00	0.00
Quoting-05	*** Total Quoting Employees:		7.00

Quoting-01 thru Quoting-04: Enter “**Quoting Employee Profile**” description followed by the hourly overhead “**Rate**” and the total “**Count**” per employee type.

Quoting-05: This Cell Row Sums the Total Number of Quoting Employees.

Section “B2” – Workflow Tasks / Task Improvement (Quoting)

This section is for listing the workflow tasks that apply to your quoting process. In the line labeled “**Quoting-10**” enter the percent of time your quoting employees spend quoting. If your quoting staff spends half their time generating Sales Quotes, enter 50 Percent. With each specific workflow task, enter the percent of time your staff spends on that task per day. In the “**Improvement %**” column, enter the percentage task time could be reduced with automation. Tasks you do not foresee improvement, enter Zero percent:

Section "B2" - Workflow Tasks (Quoting)					
Section "B2"	Quoting Workflow Tasks	Percent of Time	Total Hours	Improvements	
Quoting-10	Percent of Time (Quoting):	50.00%	28.000	Improvement %	Savings Hours
Quoting-11	Generate Proposal Drawings:	20.00%	5.600	15.00%	0.840
Quoting-12	Analyze Proposal / Cust. Drawings:	15.00%	4.200	10.00%	0.420
Quoting-13	Generate BOM / Routings:	20.00%	5.600	50.00%	2.800
Quoting-14	Proposal Cost Analysis / Roll-Ups:	10.00%	2.800	50.00%	1.400
Quoting-15	Prepare Proposal Documents:	10.00%	2.800	25.00%	0.700
Quoting-16	Review Proposals:	5.00%	1.400	20.00%	0.280
Quoting-17	Type Information into ERP System:	10.00%	2.800	75.00%	2.100
Quoting-18	_____:	0.00%	0.000	0.00%	0.000
Quoting-19	_____:	0.00%	0.000	0.00%	0.000
Quoting-20	_____:	0.00%	0.000	0.00%	0.000
Quoting-21	Percent / Time Balance:	10.00%	2.800	Savings Total:	8.540
Quoting-22	Number of Quotes Per Day:	10.00	Quotes		

Quoting-22: Enter the “**Number of Quotes Per Day**” that that your company generates per day.

Section “B3” – Quote Capacity

This section displays the Daily, Weekly, Yearly quoting capacity based on the task improvements defined in **Section “B2”**:

Quote Capacity				
Section "B3"		Daily	Weekly	Yearly
Quoting-52	Original Quote Capacity:	10.00	50.00	2,500.00
Quoting-53	New Quote Capacity:	14.39	71.94	3,597.12
Quoting-54	Additional Quote Capacity:	4.39	21.94	1,097.12

Quoting-52: This Cell Row Displays the Number of Quotes that are Currently Generated on a Daily, Weekly, and Yearly Basis Based on the Value Entered into Cell “**Quoting-22**”.

Quoting-53: This Cell Automatically Calculates the “**New Quote Capacity**” Based on the Quote Tasks Improvements Provided through Workflow Automation on a Daily, Weekly, and Daily Basis.

Quoting-54: This Cell Automatically Calculates the “**Additional Quote Capacity**” by Subtracting the Original Quote Capacity from the New Quote Capacity.

Section “C” – Product Engineering

This section of the “ROI-Audit” worksheet tab is for entering the employees in your product engineering department and the product engineering workflow tasks they perform.

Section “C1” – Employee Profile (Product Engineering)

This section allows you to add employee types for your product engineering department. After each employee type description, enter their hourly rate including overhead. In the “Count” column, enter the number of employees of each employee type:

Section "C1" - Employee Profile (Product Engineering)			
Section "C1"	Product Eng. Employee Profile	Rate	Count
Prod-Eng-01	Design Engineer:	\$50.00	5.00
Prod-Eng-02	Product Engineer:	\$60.00	3.00
Prod-Eng-03	_____:	\$0.00	0.00
Prod-Eng-04	_____:	\$0.00	0.00
Prod-Eng-05	*** Total Product Engineering Employees:		8.00

Prod-Eng-01 thru Prod-Eng-04: Enter “Product Engineering Employee Profile” description followed by the hourly overhead “Rate” and the total “Count” per employee type.

Prod-Eng-05: This Cell Row Sums the Total Number of Product Engineering Employees.

Section “C2” – Workflow Tasks / Task Improvement (Product Engineering)

This section is for listing the workflow tasks that apply to your product engineering process. In the line labeled “Prod-Eng-09” enter the percent of time your product engineering employees spend doing product engineering. If your product engineering staff spends half their time working on product engineering, enter 50 Percent. With each specific workflow task, enter the percent of time your staff spends on that task per day. Tasks you do not foresee improvement, enter Zero percent. In the “Improvement %” column, enter the percentage task time could be reduced with automation. Tasks you do not foresee improvement, enter Zero percent:

Section "C2" - Workflow Tasks (Product Engineering)					
Section "C2"	Product Eng. Workflow Tasks	Percent of Time	Total Hours	Improvements	
Prod-Eng-09	Percent of Time (Product Eng):	80.00%	51.200	Improvement %	Savings Hours
Prod-Eng-10	Drawing Search / Redraw:	5.00%	2.560	10.00%	0.256
Prod-Eng-11	Configure Product:	15.00%	7.680	25.00%	1.920
Prod-Eng-12	Custom Engineering Work:	15.00%	7.680	10.00%	0.768
Prod-Eng-13	Generate / Revise CAD Drawings:	20.00%	10.240	25.00%	2.560
Prod-Eng-14	Generate BOM / Routings:	20.00%	10.240	35.00%	3.584
Prod-Eng-15	Generate / Revise Eng. Documents:	0.00%	0.000	0.00%	0.000
Prod-Eng-16	Engineering Clerical Work:	10.00%	5.120	25.00%	1.280
Prod-Eng-17	Type Information into ERP System:	15.00%	7.680	75.00%	5.760
Prod-Eng-18	_____:	0.00%	0.000	0.00%	0.000
Prod-Eng-19	_____:	0.00%	0.000	0.00%	0.000
Prod-Eng-20	Percent / Time Balance:	0.00%	0.000	Savings Total:	16.128

Prod-Eng-10 through Prod-Eng-19: As an Improvement Percentage is Entered, the Amount of Hours that can be Saved is Displayed in the “Savings Hours” Column.

Prod-Eng-20: This Cell Displays the Total Workflow Savings Hours.

Section “D” – Manufacturing Engineering

This section of the “ROI-Audit” worksheet tab is for entering the employees in your manufacturing engineering department and the manufacturing engineering workflow tasks they perform.

Section “D1” – Employee Profile (Manufacturing Engineering)

This section allows you to add employee types for your manufacturing engineering department. After each employee type description, enter their hourly rate including overhead. In the “Count” column, enter the number of employees of each employee type:

Section "D1" - Employee Profile (Manufacturing Engineering)			
Section "D1"	Manufacturing Eng. Employee Profile	Rate	Count
Mfg-Eng-01	Manufacturing Engineer:	\$55.00	3.00
Mfg-Eng-02	_____:	\$0.00	0.00
Mfg-Eng-03	_____:	\$0.00	0.00
Mfg-Eng-04	_____:	\$0.00	0.00
Mfg-Eng-05	*** Total Manufacturing Engineering Employees:		3.00

Mfg-Eng-01 thru Mfg-04: Enter “Manufacturing Engineering Employee Profile” description followed by the hourly overhead “Rate” and the total “Count” per employee type.

Mfg-Eng-05: This Cell Row Sums the Total Number of Manufacturing Engineering Employees.

Section “D2” – Workflow Tasks / Task Improvement (Manufacturing Engineering)

This section is for listing the workflow tasks that apply to your manufacturing engineering process. In the line labeled “Mfg-Eng-09”, enter the percent of time your manufacturing engineering employees spend doing manufacturing engineering. If your manufacturing engineering staff spends three fourths of their time working on manufacturing engineering, enter 75 Percent. With each specific workflow task, enter the percent of time your staff spends on that task per day. Tasks you do not foresee improvement, enter Zero percent. In the “Improvement %” column, enter the percentage task time could be reduced with automation. Tasks you do not foresee improvement, enter Zero percent:

Section "D2" - Workflow Tasks (Manufacturing Engineering)					
Section "D2"	Mfg. Eng. Workflow Tasks	Percent of Time	Total Hours	Improvements	
Mfg-Eng-09	Percent of Time (Mfg. Eng):	75.00%	18.000	Improvement %	Savings Hours
Mfg-Eng-10	Generate Detailed Routings:	15.00%	2.700	25.00%	0.675
Mfg-Eng-11	Generate Work Instructions:	15.00%	2.700	25.00%	0.675
Mfg-Eng-12	Prepare Shop Floor Drawings:	20.00%	3.600	75.00%	2.700
Mfg-Eng-13	Generate Nestings:	15.00%	2.700	25.00%	0.675
Mfg-Eng-14	Generate Machine Programs:	0.00%	0.000	0.00%	0.000
Mfg-Eng-15	Production Scheduling:	0.00%	0.000	0.00%	0.000
Mfg-Eng-16	P.O. Expediting / Critical Path:	0.00%	0.000	0.00%	0.000
Mfg-Eng-17	Generate Shop Paper:	5.00%	0.900	10.00%	0.000
Mfg-Eng-18	Engineering Clerical Work:	15.00%	2.700	0.00%	0.000
Mfg-Eng-19	Type Information into ERP System:	10.00%	1.800	75.00%	1.350
Mfg-Eng-20	_____:	0.00%	0.000	0.00%	0.000
Mfg-Eng-21	_____:	0.00%	0.000	0.00%	0.000
Mfg-Eng-22	Percent / Time Balance:	5.00%	0.900	Savings Total:	6.165

Mfg-Eng-10 through Mfg-Eng-21: As an Improvement Percentage is Entered, the Amount of Hours that can be Saved is Displayed in the “Savings Hours” Column.

Mfg-Eng-22: This Cell Displays the Total Workflow Savings Hours.

Section “E” – Shop Floor Fabrication

This section of the “**ROI-Audit**” worksheet tab is for entering the employees in your shop floor fabrication department and the fabrication workflow tasks they perform.

Section “E1” – Employee Profile (Shop Floor Fabrication)

This section allows you to add employee types for your shop floor fabrication department. After each employee type description, enter their hourly rate including overhead. In the “**Count**” column, enter the number of employees of each employee type. Enter the number of employees you can reduce through automation by employee type in the “**Reduction**” Column. Simply leave as Zero if you expect no employee reduction for shop floor fabrication workers:

Section "E1" - Employee Profile (Shop Floor Fabrication)				Improvements	
Section "E1"	Fabrication Employee Profile	Rate	Count	Reduction	New Count
Shop-Fab-01	Shop Floor Fabrication Worker:	\$30.00	50.00	5.00	45.00
Shop-Fab-02	Material Handling Worker:	\$30.00	6.00	2.00	4.00
Shop-Fab-03	Laser Operator:	\$30.00	9.00	3.00	6.00
Shop-Fab-04	Turret Punch Operator:	\$30.00	12.00	2.00	10.00
Shop-Fab-05	Press Brake / Folder Operator:	\$35.00	30.00	6.00	24.00
Shop-Fab-06	Shear Operator:	\$30.00	3.00	1.00	2.00
Shop-Fab-07	Buffer Operator:	\$0.00	0.00	0.00	0.00
Shop-Fab-08	_____:	\$0.00	0.00	0.00	0.00
Shop-Fab-09	_____:	\$0.00	0.00	0.00	0.00
Shop-Fab-10	*** Total Shop Floor (Fabrication) Employees:		110.00	19.00	91.00

Shop-Fab-01 through Shop-Fab-09: Enter “**Fabrication Employee Profile**” description followed by the hourly overhead “**Rate**” and the total “**Count**” per employee type. Enter New Number of Employees Required to Reduce Work Force by Each Work Type with Automated System in the “**Reduction**” Cell.

Shop-Fab-10: This Cell Row Sums the Total Number of Shop Floor (Fabrication) Employees and Also Displays the Total Employee Counts for “**Employee Count Reduction**” and “**New Employee Count**” respectively.

Section “E2” – Workflow Tasks / Task Improvement (Shop Floor Fabrication)

This section is for listing the workflow tasks that apply to your shop floor fabrication process. In the line labeled “**Shop-Fab-14**” enter the percent of time your shop floor fabrication employees spend doing fabrication work. If your shop floor fabrication staff spends three fourths of their time working on fabrication, enter 75 Percent. With each specific workflow task, enter the percent of time your staff spends on that task per day. Tasks you do not foresee improvement, enter Zero percent. In the “**Improvement %**” column, enter the percentage task time could be reduced with automation. Tasks you do not foresee improvement, enter Zero percent:

Section "E2" - Workflow Tasks (Shop Floor Fabrication)					
Section "E2"	Fabrication Workflow Tasks	Percent of Time	Total Hours	Improvements	
Shop-Fab-14	Percent of Time (Fabrication):	80.00%	704.000	Improvement %	Savings Hours
Shop-Fab-15	Material Handling / Part Storage:	5.00%	35.200	10.00%	3.520
Shop-Fab-16	Searching for Parts:	5.00%	35.200	10.00%	3.520
Shop-Fab-17	Machine Programming:	20.00%	140.800	20.00%	28.160
Shop-Fab-18	Folder Programming:	10.00%	70.400	50.00%	35.200
Shop-Fab-19	Part Sorting:	0.00%	0.000	0.00%	0.000
Shop-Fab-20	Part Tracking / Data Collection:	5.00%	35.200	5.00%	1.760
Shop-Fab-21	_____:	0.00%	0.000	0.00%	0.000
Shop-Fab-22	_____:	0.00%	0.000	0.00%	0.000
Shop-Fab-23	_____:	0.00%	0.000	0.00%	0.000
Shop-Fab-24	_____:	0.00%	0.000	0.00%	0.000
Shop-Fab-25	Percent / Time Balance:	55.00%	387.200	Savings Total:	72.160

Shop-Fab-15 through Shop-Fab-24: As an Improvement Percentage is Entered, the Amount of Hours that can be Saved is Displayed in the “**Savings Hours**” Column.

Shop-Fab-25: This Cell Displays the Total Workflow Savings Hours.

Section “F” – Shop Floor Assembly

This section of the “ROI-Audit” worksheet tab is for entering the employees in your shop floor assembly department and the assembly workflow tasks they perform.

Section “F1” – Employee Profile (Shop Floor Assembly)

This section allows you to add employee types for your shop floor assembly department. After each employee type description, enter their hourly rate including overhead. In the “Count” column, enter the number of employees of each employee type. Enter the number of employees you can reduce through automation by employee type in the “Reduction” Column. Simply leave as Zero if you expect no employee reduction for shop floor assembly workers:

Section "F1" - Employee Profile (Shop Floor Assembly)				Improvements	
Section "F1"	Assembly Employee Profile	Rate	Count	Reduction	New Count
Shop-Asm-01	Shop Floor Assembly Worker:	\$30.00	30.00	2.00	28.00
Shop-Asm-02	Material Handling Worker:	\$30.00	9.00	2.00	7.00
Shop-Asm-03	Welder:	\$30.00	5.00	0.00	5.00
Shop-Asm-04	Painter:	\$30.00	9.00	0.00	9.00
Shop-Asm-05	Maintenance Worker:	\$30.00	2.00	0.00	2.00
Shop-Asm-06	Seasonal Shop Labor:	\$25.00	10.00	3.00	7.00
Shop-Asm-07	_____:	\$0.00	0.00	0.00	0.00
Shop-Asm-08	_____:	\$0.00	0.00	0.00	0.00
Shop-Asm-09	*** Total Shop Floor (Assembly) Employees:		65.00	7.00	58.00

Shop-Asm-01 through Shop-Asm-08: Enter “Assembly Employee Profile” description followed by the hourly overhead “Rate” and the total “Count” per employee type. Enter New Number of Employees Required to Reduce Work Force by Each Work Type with Automated System in the “Reduction” Cell.

Shop-Asm-09: This Cell Row Sums the Total Number of Shop Floor (Assembly) Employees and Also Displays the Total Employee Counts for “Employee Count Reduction” and “New Employee Count” respectively.

Section “F2” – Workflow Tasks / Task Improvement (Shop Floor Assembly)

This section is for listing the workflow tasks that apply to your shop floor assembly process. In the line labeled “**Shop-Asm-13**” enter the percent of time your shop floor assembly employees spend doing assembly work. If your shop floor assembly staff spends three fourths of their time working on assembly, enter 75 Percent. With each specific workflow task, enter the percent of time your staff spends on that task per day. Tasks you do not foresee improvement, enter Zero percent. In the “**Improvement %**” column, enter the percentage task time could be reduced with automation. Tasks you do not foresee improvement, enter Zero percent:

Section "F2" - Workflow Tasks (Shop Floor Assembly)					
Section "F2"	Assembly Workflow Tasks	Percent of Time	Total Hours	Improvements	
Shop-Asm-13	Percent of Time (Assembly):	80.00%	416.000	Improvement %	Savings Hours
Shop-Asm-14	Searching for Parts:	5.00%	20.800	5.00%	1.040
Shop-Asm-15	Material Handling / Part Storage:	5.00%	20.800	5.00%	1.040
Shop-Asm-16	Assemble Kits:	40.00%	166.400	10.00%	16.640
Shop-Asm-17	Part Sorting:	10.00%	41.600	10.00%	4.160
Shop-Asm-18	Part Tracking / Data Collection:	10.00%	41.600	10.00%	4.160
Shop-Asm-19	_____:	0.00%	0.000	0.00%	0.000
Shop-Asm-20	_____:	0.00%	0.000	0.00%	0.000
Shop-Asm-21	_____:	0.00%	0.000	0.00%	0.000
Shop-Asm-22	_____:	0.00%	0.000	0.00%	0.000
Shop-Asm-23	_____:	0.00%	0.000	0.00%	0.000
Shop-Asm-24	Percent / Time Balance:	30.00%	124.800	Savings Total:	27.040

Shop-Asm-14 through Shop-Asm-23: As an Improvement Percentage is Entered, the Amount of Hours that can be Saved is Displayed in the “**Savings Hours**” Column.

Shop-Asm-24: This Cell Displays the Total Workflow Savings Hours.

ROI-Audit (Shop Floor) – Worksheet Tab

Section “G” – Machine List

This section of the “ROI-Audit (Shop Floor)” worksheet tab allows you to list the applicable machines currently on your shop floor to provide a production profile. In the “**Machine List**” column, enter your specific machines by Machine Type. In the columns labeled “1st”, “2nd”, “3rd”, enter the number of hours that machine typically operates during a shift. In the “**Parts / Day**” column, enter the average number of parts that machine produces each day:

Shearing Machine List

Section "G" - Machine List						
Section "G"	Machine List	Mach. Type	1st	2nd	3rd	Parts / Day
Shear-01	Shearing Machine #: 01	SHEAR	8.00	8.00	8.00	0.00
Shear-02	Shearing Machine #: 02	SHEAR	8.00	8.00	0.00	0.00
Shear-03		SHEAR	0.00	0.00	0.00	0.00
Shear-04		SHEAR	0.00	0.00	0.00	0.00
Shear-05		SHEAR	0.00	0.00	0.00	0.00
Shear-Total	*** TOTAL SHEAR HOURS PER SHIFT:		16.00	16.00	8.00	
Shear-Total	*** TOTAL SHEAR HOURS PER DAY:		40.00			
Shear-Parts	*** TOTAL SHEAR PARTS PRODUCED PER DAY:		0.00			

Laser Cutter List

Section "G"	Machine List	Mach. Type	1st	2nd	3rd	Parts / Day
Laser-01	Laser #: 01	LASER	8.00	8.00	8.00	950.00
Laser-02	Laser #: 02	LASER	8.00	8.00	8.00	950.00
Laser-03		LASER	0.00	0.00	0.00	0.00
Laser-04		LASER	0.00	0.00	0.00	0.00
Laser-05		LASER	0.00	0.00	0.00	0.00
Laser-06		LASER	0.00	0.00	0.00	0.00
Laser-07		LASER	0.00	0.00	0.00	0.00
Laser-08		LASER	0.00	0.00	0.00	0.00
Laser-09		LASER	0.00	0.00	0.00	0.00
Laser-10		LASER	0.00	0.00	0.00	0.00
Laser-Total	*** TOTAL LASER HOURS PER SHIFT:		16.00	16.00	16.00	
Laser-Total	*** TOTAL LASER HOURS PER DAY:		48.00			
Laser-Parts	*** TOTAL LASER PARTS PRODUCED PER DAY:		1,900.00			

Turret Punch List

Section "G"	Machine List	Mach. Type	1st	2nd	3rd	Parts / Day
Turret-01	Turret Punch #: 01	TURRET	8.00	8.00	8.00	400.00
Turret-02	Turret Punch #: 02	TURRET	8.00	8.00	8.00	400.00
Turret-03	Turret Punch #: 03	TURRET	4.00	4.00	0.00	225.00
Turret-04	Turret Punch #: 04	TURRET	4.00	4.00	0.00	200.00
Turret-05		TURRET	0.00	0.00	0.00	0.00
Turret-06		TURRET	0.00	0.00	0.00	0.00
Turret-07		TURRET	0.00	0.00	0.00	0.00
Turret-08		TURRET	0.00	0.00	0.00	0.00
Turret-09		TURRET	0.00	0.00	0.00	0.00
Turret-10		TURRET	0.00	0.00	0.00	0.00
Turret-Total	*** TOTAL TURRET HOURS PER SHIFT:		24.00	24.00	16.00	
Turret-Total	*** TOTAL TURRET HOURS PER DAY:		64.00			
Turret-Parts	*** TOTAL TURRET PARTS PRODUCED PER DAY:		1,225.00			

Deburring Machine List

Section "G"	Machine List	Mach. Type	1st	2nd	3rd	Parts / Day
Deburr-01	Deburring Machine #: 01	DEBURR	8.00	8.00	8.00	0.00
Deburr-02	Deburring Machine #: 02	DEBURR	8.00	8.00	8.00	0.00
Deburr-03	Deburring Machine #: 03	DEBURR	8.00	4.00	0.00	0.00
Deburr-04	Deburring Machine #: 04	DEBURR	8.00	4.00	0.00	0.00
Deburr-05		DEBURR	0.00	0.00	0.00	0.00
Deburr-06		DEBURR	0.00	0.00	0.00	0.00
Deburr-07		DEBURR	0.00	0.00	0.00	0.00
Deburr-08		DEBURR	0.00	0.00	0.00	0.00
Deburr-09		DEBURR	0.00	0.00	0.00	0.00
Deburr-10		DEBURR	0.00	0.00	0.00	0.00
Deburr-Total	*** TOTAL DEBURR HOURS PER SHIFT:		32.00	24.00	16.00	
Deburr-Total	*** TOTAL DEBURR HOURS PER DAY:		72.00			
Deburr-Parts	*** TOTAL DEBURR PARTS PROD. PER DAY:		0.00			

Press Brake List

Section "G"	Machine List	Mach. Type	1st	2nd	3rd	Parts / Day
Pr-Brake-01	Press Brake #: 01	PR. BRAKE	8.00	8.00	8.00	500.00
Pr-Brake-02	Press Brake #: 02	PR. BRAKE	8.00	8.00	8.00	500.00
Pr-Brake-03	Press Brake #: 03	PR. BRAKE	8.00	8.00	4.00	300.00
Pr-Brake-04	Press Brake #: 04	PR. BRAKE	8.00	8.00	4.00	300.00
Pr-Brake-05	Press Brake #: 05	PR. BRAKE	4.00	4.00	0.00	325.00
Pr-Brake-06	Press Brake #: 06	PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-07		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-08		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-09		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-10		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-11		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-12		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-13		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-14		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-15		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-16		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-17		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-18		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-19		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-20		PR. BRAKE	0.00	0.00	0.00	0.00
Pr-Brake-Total	*** TOTAL PRESS BRAKE HOURS PER SHIFT:		36.00	36.00	24.00	
Pr-Brake-Total	*** TOTAL PRESS BRAKE HOURS PER DAY:		96.00			
Pr-Brake-Parts	*** TOTAL PR. BRK. PARTS PROD. PER DAY:		1,925.00			

Folder-Bender Machine List

Section "G"	Machine List	Mach. Type	1st	2nd	3rd	Parts / Day
Fold-Bend-01	Folder-Bender #: 01	FOLD-BEND	8.00	8.00	8.00	600.00
Fold-Bend-02	Folder-Bender #: 02	FOLD-BEND	8.00	8.00	8.00	600.00
Fold-Bend-03		FOLD-BEND	0.00	0.00	0.00	0.00
Fold-Bend-04		FOLD-BEND	0.00	0.00	0.00	0.00
Fold-Bend-05		FOLD-BEND	0.00	0.00	0.00	0.00
Fold-Bend-06		FOLD-BEND	0.00	0.00	0.00	0.00
Fold-Bend-07		FOLD-BEND	0.00	0.00	0.00	0.00
Fold-Bend-08		FOLD-BEND	0.00	0.00	0.00	0.00
Fold-Bend-09		FOLD-BEND	0.00	0.00	0.00	0.00
Fold-Bend-10		FOLD-BEND	0.00	0.00	0.00	0.00
Fold-Bend-Total	*** TOTAL FOLDER-BENDER HOURS PER SHIFT:		16.00	16.00	16.00	
Fold-Bend-Total	*** TOTAL FOLDER-BENDER HOURS PER DAY:		48.00			
Fold-Bend-Parts	*** TOTAL FOLD-BEND PARTS PROD. PER DAY:		1,200.00			

Other Machine List

Section "G"	Machine List	Mach. Type	1st	2nd	3rd	Parts / Day
Other-01	Other Machine #: 01	OTHER	0.00	0.00	0.00	0.00
Other-02	Other Machine #: 02	OTHER	0.00	0.00	0.00	0.00
Other-03	Other Machine #: 03	OTHER	0.00	0.00	0.00	0.00
Other-04	Other Machine #: 04	OTHER	0.00	0.00	0.00	0.00
Other-05		OTHER	0.00	0.00	0.00	0.00
Other-06		OTHER	0.00	0.00	0.00	0.00
Other-07		OTHER	0.00	0.00	0.00	0.00
Other-08		OTHER	0.00	0.00	0.00	0.00
Other-09		OTHER	0.00	0.00	0.00	0.00
Other-10		OTHER	0.00	0.00	0.00	0.00
Other-Total	*** TOTAL OTHER MACHINE HOURS PER SHIFT:		0.00	0.00	0.00	
Other-Total	*** TOTAL OTHER MACHINE HOURS PER DAY:		0.00			
Other-Parts	*** TOTAL OTHER MACH. PRODUCED PER DAY:		0.00			

Machine List: Enter the Description of Each Machine by Machine Type that Matches Your Shop Floor.

1st, 2nd, 3rd Columns: Enter Total Number of Machine Hours Per Shift Per Machine.

Section “H” – Material Usage / Costs

This section of the “ROI-Audit (Shop Floor)” worksheet tab is for entering how much sheet metal that is consumed on a daily basis by your shop floor. Enter a range of sheets and the worksheet will calculate the average. Enter the average number of pounds per sheet and the average cost per pound. If applicable, enter a range of the number of kits produced and the average number of parts per kit. These figures will help calculate average material cost through your fabrication process.

Section "H" - Material Usage / Costs			
Section "H"	Material Usage / Costs	Count	Unit
Material-01	Daily Sheets Consumed - (From):	150.00	Sheets
Material-02	Daily Sheets Consumed - (To):	200.00	Sheets
Material-03	Average Pounds Per Sheet:	75.00	Pounds
Material-04	Average Cost Per Pound (Sheet):	\$2.50	Dollars
Material-05	Daily Kits Produced - (From):	50.00	Kits
Material-06	Daily Kits Produced - (To):	75.00	Kits
Material-07	Average Number of Parts Per Kit:	50.00	Parts
Material-08	Daily Sheets Consumed - (Average):	175.00	Sheets
Material-09	Average Cost Per Sheet:	\$187.50	Dollars
Material-10	Daily Kits Produced - (Average):	62.50	Kits
Material-11	Avg. Daily # of Parts Produced:	3,125.00	Parts
Material-12	Average Part Material Cost:	\$10.50	Dollars
Material-13	Average Part Fabrication Cost:	\$8.83	Dollars
Material-14	Average Daily Material Cost:	\$32,812.50	Dollars
Material-15	Avg. Part Cost (thru Fabrication):	\$19.33	Dollars

Material-01: Enter the Low End Number of Daily Sheets Consumed into the “Count” Cell.

Material-02: Enter the High End of the Number of Daily Sheets Consumed into the “Count” Cell.

Material-03: Enter the Average Pounds Per Sheet into the “Count” Cell.

Material-04: Enter the Average Cost Per Pound of Metal into the “Count” Cell.

Material-05: Enter the Low End Number of Daily Kits Produced into the “Count” Cell.

Material-06: Enter the High End Number of Daily Kits Produced into the “Count” Cell.

Material-07: Enter the Average Number of Parts Per Kit into the “Count” Cell.

Material-08: This Cell Calculates the Average Daily Sheets Consumed by Dividing the Total of “Material-01” (Daily Sheets Consumed – [From]) Plus of “Material-02” (Daily Sheets Consumed – [To]) Divided by Two.

Material-09: This Cell Calculates the Average Cost Per Sheet by Multiplying “Material-03” (Average Pounds Per Sheet) times “Material-04” (Average Cost Per Pound).

Material-10: This Cell Calculates the Average Daily Kits Produced by Dividing the Total of “Material-05” (Daily Kits Produced – [From]) Plus of “Material-06” (Daily Kits Produced – [To]) Divided by Two.

Material-11: This Cell Calculates the Average Daily Number of Parts Produced by Multiplying “Material-10” (Daily Kits Produced – Average) times “Material-07” (Average Number of Parts Per Kit).

Material-12: This Cell Calculates the Average Part Material Cost by Dividing “**Material-14**” (Average Daily Material Cost) by “**Material-11**” (Average Daily Number of Parts Produced).

Material-13: This Cell Calculates the Average Part Fabrication Cost Dividing “**Shop-Fab-15**” (Total Daily Shop Floor Fabrication Employee Cost) by “**Material-11**” (Average Daily Number of Parts Produced).

Material-14: This Cell Calculates the Average Daily Material Cost by Multiplying “**Material-08**” (Daily Sheets Consumed – [Average]) by “**Material-09**” (Average Cost Per Sheet).

Material-15: This Cell Calculates Average Part Cost (through Fabrication) by Summing “**Material-12**” (Average Part Material Cost) and “**Material-13**” (Average Part Fabrication Cost).

Section “I” – Nesting / Blank Counts

This section of the “**ROI-Audit (Shop Floor)**” worksheet tab is for entering the number of laser and turret nestings produced by your shop floor each day, and the number of shearing blanks per day. Enter only what is applicable to your operation:

Section "I" - Nesting / Blank Counts			
Section "I"	Nesting / Blank Counts	Count	Unit
Nest-01	Laser Nestings Per Day:	175.00	Day
Nest-02	Avg. # of Parts Per Laser Nest:	35.00	Parts
Nest-03	Turret Nestings Per Day:	100.00	Day
Nest-04	Avg. # of Parts Per Turret Nest:	5.00	Parts
Nest-05	# of Shearing Blanks Per Day:	0.00	Blanks

Nest-01: Enter the Total Number of “**Laser Nestings Per Day**” into the “**Count**” Cell.

Nest-02: Enter the Average Number of Parts Per Laser Nest into the “**Count**” Cell.

Nest-03: Enter the Total Number of “**Turret Nestings Per Day**” into the “**Count**” Cell.

Nest-04: Enter the Average Number of Parts Per Turret Nest into the “**Count**” Cell.

Nest-05: Enter the Total Number of “**Shearing Blanks Per Day**” into the “**Count**” Cell.

Section “J” – Press Brake Programming / Tool Nestings

This section of the “ROI-Audit (Shop Floor)” worksheet tab is to help determine how much it costs your company to program a press brake and perform tool changes. The purpose of automated press brake programming is to reduce this time. The number of Press Brake Parts Bent Per Day is pulled in from Section “J”. Enter the percent of parts that require a new program for a press brake including the press brake programs your shop floor staff can currently program an hour. Also enter the number of parts that require a tool change and number of tool changes performed per hour. You can also enter a percentage that reflects the expected improvement percentage with automated press brake nesting software:

Section "J" - Press Brake Programming / Tool Nestings			
Section "J"	Press Brake Prog. / Tool Nestings	Count	Unit
Press-01	# of Press Brake Parts Bent Per Day:	1,925.00	Parts
Press-02	# of New Press Brake Programs:	577.50	Programs
Press-03	Daily Press Brake Hours:	96.00	Hours
Press-04	Daily Press Brake Programming Time:	28.875	Hours
Press-05	Cost Per Press Brake Program:	\$1.75	Dollars
Press-06	# of Press Brake Tool Changes:	288.75	Day
Press-07	Daily Tool Change Time:	9.625	Hours
Press-08	Cost Per Tool Change:	\$1.17	Dollars
Press-09	Avg. Time Per Press Brake Program:	3.00	Minutes
Press-10	Avg. Time Per Tool Change:	2.00	Minutes
Press-11	% of Parts Requiring New Program:	30.00%	Percent
Press-12	% of Parts Requiring Tool Change:	50.00%	Percent
Press-13	Press Brake Program Improvement:	70.00%	Percent
Press-14	Press Brake Tool Change Improvement:	50.00%	Percent

Press-01: This Cell Displays the Number of Press Brake Part Bent Per Day by Linking to “Pr-Brake-Total” (TOTAL PRESS BRAKE HOURS PER SHIFT).

Press-02: This Cell Calculates the Number of New Press Brake Programs Required Per Day by Multiplying “Press-01” (Number of Press Brake Parts Bent Per Day) times “Press-11” (Percent of Parts Requiring New Program).

Press-03: This Cell Displays the Total Press Brake Production Hours as Entered in Section “G” of the “ROI-Audit (Shop Floor)” worksheet tab.

Press-04: This Cell Calculates the “Total Daily Press Brake Programming Time” by Multiplying “Press-02” (# of New Press Brake Programs) by “Press-09” (Average Time Per Press Brake Program) Divided by 60.

Press-05: This Cell Calculates the “Cost Per Press Brake Program” by Multiply “Shop-Fab-09” (Press Brake / Folder Operator Hourly Rate) by “Press-09” (Average Time Per Press Brake Program).

Press-06: This Cell Calculates the Number of Press Brake Tool Changes Per Day by Multiplying “Press-01” (Number of Press Brake Parts Bent Per Day) times “Press-12” (Percent of Parts Requiring Tool Change).

Press-07: This Cell Calculates the “Total Daily Press Brake Tool Change Time” by Multiplying “Press-02” (# of New Press Brake Programs) by “Press-10” (Average Time Per Tool Change) Divided by 60.

Press-08: This Cell Calculates the “Cost Per Tool Change” by Multiply “Shop-Fab-09” (Press Brake / Folder Operator Hourly Rate) by “Press-10” (Average Time Per Tool Change) Divided by 60.

Press-09: Enter the “Average Time Per Press Brake Program” into the “Count” Cell.

Press-10: Enter the “Average Time Per Tool Change” into the “Count” Cell.

Press-11: Enter the “Percent of Parts Requiring New Press Brake Program” into the “Count” Cell.

Press-12: Enter the “Percent of Parts Requiring Tool Change” into the “Count” Cell.

Press-13: Enter into this Cell the Press Brake Program Improvement Percentage that Can Be Attained with Automated Press Brake Programming Software.

Press-14: Enter into this Cell the Press Brake Tool Change Improvement Percentage that Can Be Attained with Automated Press Brake Tool Nesting Software.

Section “K” – Lost / Hot Parts

This section of the “ROI-Audit (Shop Floor)” worksheet tab applies if your company has an issue with lost parts and/or hot parts that need to be manufactured as replacements. Enter the number of Lost / Hot parts per day including the time it currently takes to reproduce a Hot / Lost part. Also enter an improvement percentage of Lost / Hot parts with an automated system to track parts throughout the shop floor:

Section "K" - Lost / Hot Parts			
Section "K"	Lost / Hot Parts	Count	Unit
Lost-Hot-01	Number of Lost / Hot Parts Per Day:	25.000	Parts
Lost-Hot-02	Lost / Hot Part Time Per Part:	0.250	Hours
Lost-Hot-03	Lost / Hot Part Time Per Day:	6.250	Hours
Lost-Hot-04	Lost / Hot Part Labor Cost Per Day:	\$187.50	Dollars
Lost-Hot-05	Lost / Hot Part Cost Per Day:	\$483.30	Dollars
Lost-Hot-06	Total Lost / Hot Part Cost Per Day:	\$670.80	Dollars
Lost-Hot-07	Lost / Hot Part Improvement:	50.00%	Percent

Lost-Hot-01: Enter the Number of Lost / Hot Parts Per Day into the “Count” Cell.

Lost-Hot-02: Enter the Time Lost Per Lost / Hot Part (Hour Factor) into the “Count” Cell.

Lost-Hot-03: This Cell Calculates the Time Lost Per Day for Lost / Hot Parts by Multiplying “Lost-Hot-01” (Number of Lost / Hot Parts Per Day) times “Lost-Hot-02” (Time Lost Per Lost / Hot Part).

Lost-Hot-04: This Cell Calculates the Cost of Lost Time Per Day for Lost / Hot Parts by Multiplying “Shop-Fab-05” (Shop Floor Fabrication Worker Rate) times “Lost-Hot-03” (Time Lost Per Day for Lost / Hot Parts).

Lost-Hot-05: This Cell Calculates the Lost / Hot Part Cost Per Day by Multiplying “Material-15” (Average Part Cost [Through Fabrication]) times the Average of “Lost-Hot-01” (Number of Lost / Hot Parts Per Day).

Lost-Hot-06: This Cell Calculates the Total Daily Lost / Hot Part Cost by Summing “Lost-Hot-04” (Lost / Hot Part Labor Cost Per Day) and “Lost-Hot-05” (Lost / Hot Part Cost Per Day).

Lost-Hot-07: Enter into this Cell the Lost / Hot Part Improvement Percentage that Can Be Attained with Automated Workflow Software.

ROI-Summary

The ROI Calculator Results are displayed on top of the “ROI-Audit (Workflow)”, “ROI-Audit (Shop Floor)”, and “ROI-Sum” worksheet tabs. As values are entered into each of the cells throughout the worksheet that ROI Calculator Results will be immediately updated which will provide you with an opportunity to see how changing certain values will affect the overall return on investment of the **Global Edge 11.0 – Productivity Suite** software.

ROI Calculator Results / Payback

The following is the ROI Calculator Results / Payback Form that is displayed on top of the “ROI-Audit”, and “ROI-Summary” worksheet tabs:

Integrated Digital Factory - ROI Calculator Results / Payback			
	Base Option	Average	Full Option
*** INTEGRATED DIGITAL FACTORY System Cost (3 Year Total):	\$0	\$0	\$0
Weeks Until Payback:	0.00	0.00	0.00
Three Year Payback	Savings Amt	Expenditure	+ / -
Year 1 - Return On Investment (Includes 6 Month Start-Up):	\$1,527,654	\$0	\$1,527,654
Year 2 - Return On Investment:	\$3,055,308	\$0	\$3,055,308
Year 3 - Return On Investment:	\$3,055,308	\$0	\$3,055,308
*** TOTAL THREE YEAR - SAVINGS / EXPENDITURE / NET GAIN:	\$7,638,269	\$0	\$7,638,269

INTEGRATED DIGITAL FACTORY System Cost (3 Year Total): This Row Displays the “**Base Option**” Amount of the **INTEGRATED DIGITAL FACTORY** System, and the “**Full Option**” Amount with an “**Average**” of the Two Amounts Displayed Between Them.

Weeks Until Payback: This Row Displays the Number of Weeks Until the **INTEGRATED DIGITAL FACTORY** System Pays for Itself Listed by the “**Base Option**” Amount of the **INTEGRATED DIGITAL FACTORY** System, and the “**Full Option**” Amount with an “**Average**” of the Two Amounts Displayed Between Them.

Savings Amount: This Column Displays the Calculated Savings Amount for Three Years that Can be Potentially Achieved with the **INTEGRATED DIGITAL FACTORY** System. Year 1 Includes a Six Month Start-Up Period Assuming No Cost Savings for the First Six Months.

Expenditure: This Column Displays the Amount of Money Expended for Each of the Three Years Broken Down by Each Year.

+ / -: This Column Displays the Total Savings / Loss that is Projected to be Achieved for Each of the Three Years. Each Amount is Calculated by Subtracting the “**Expenditure**” Amount by the “**Savings Amount**”.

TOTAL THREE YEAR – SAVINGS / EXPENDITURE / NET GAIN: This Row Displays the Total “**Savings Amount**”, “**Expenditure**”, “**+ / -**” Amount for Each of These Columns. The Cell in the Lowest-Right Corner is the Potential Three Year Net Gain that Can be Achieved with the **INTEGRATED DIGITAL FACTORY** System.

Total System Cost Savings

The following is a Workflow Task Savings Summary including Labor Reduction Savings from each of the sections in the ROI Calculator:

Total System Cost Savings	Daily	Weekly	Yearly
Total Workflow Task Savings (Quoting) - Section "B3":	\$390.40	\$1,952.00	\$97,600.00
Total Workflow Task Savings (Product Engineering) - Section "C3":	\$866.88	\$4,334.40	\$216,720.00
Total Workflow Task Savings (Manufacturing Engineering) - Section "D3":	\$339.08	\$1,695.38	\$84,768.75
Total Workflow Task Savings (Shop Floor Fabrication) - Section "E3":	\$2,263.20	\$11,316.00	\$565,800.00
Total Worker Reduction Savings (Shop Floor Fabrication) - Section "E4":	\$4,800.00	\$24,000.00	\$1,200,000.00
Total Workflow Task Savings (Shop Floor Assembly) - Section "F3":	\$790.40	\$3,952.00	\$197,600.00
Total Worker Reduction Savings (Shop Floor Assembly) - Section "F4":	\$1,560.00	\$7,800.00	\$390,000.00
Total Workflow Task Savings (Press Brake Programming) - Section "IA":	\$707.44	\$3,537.19	\$176,859.38
Total Workflow Task Savings (Press Brake Tool Change) - Section "IB":	\$168.44	\$842.19	\$42,109.38
Total Workflow Task Savings (Lost / Hot Parts) - Section "J":	\$335.40	\$1,677.00	\$83,850.00
*** TOTAL SYSTEM COST SAVINGS:	\$12,221.23	\$61,106.15	\$3,055,307.50

Section "B3" through Section "J": These Cell Rows Display the Total Workflow Cost Savings by Each Workflow Task and Labor Reduction for Daily, Weekly, and Yearly Totals.

TOTAL SYSTEM COST SAVINGS: This Cell Row Displays the Total System Cost Savings that Can Be Achieved with an Automated System by Daily, Weekly, and Yearly Totals.

Estimated Engineering & Manufacturing Labor Costs

The following is a summary of the Labor Costs from each of the sections in the ROI Calculator:

Estimated Engineering & Manufacturing Labor Costs		Daily	Weekly	Yearly
Section "B1"	Estimated Quoting Labor Costs:	\$2,560.00	\$12,800.00	\$640,000.00
Section "C1"	Estimated Product Engineering Labor Costs:	\$3,440.00	\$17,200.00	\$860,000.00
Section "D1"	Estimated Manufacturing Engineering Labor Costs:	\$1,320.00	\$6,600.00	\$330,000.00
Section "E1"	Estimated Shop Floor Fabrication Labor Costs:	\$27,600.00	\$138,000.00	\$6,900,000.00
Section "F1"	Estimated Shop Floor Assembly Labor Costs:	\$15,200.00	\$76,000.00	\$3,800,000.00
*** Total Estimated Engineering & Manufacturing Costs:		\$50,120.00	\$250,600.00	\$12,530,000.00

Estimated Engineering & Manufacturing Workflow Task Costs

The following is a summary of the Workflow Task Costs from each of the sections in the ROI Calculator:

Estimated Engineering & Manufacturing Workflow Task Costs		Daily	Weekly	Yearly
Section "B2"	Estimated Quoting Workflow Task Costs:	\$1,152.00	\$5,760.00	\$288,000.00
Section "C2"	Estimated Product Engineering Workflow Task Costs:	\$2,752.00	\$13,760.00	\$688,000.00
Section "D2"	Estimated Manufacturing Eng. Workflow Task Costs:	\$940.50	\$4,702.50	\$235,125.00
Section "E2"	Estimated Shop Floor Fabrication Workflow Task Costs:	\$9,936.00	\$49,680.00	\$2,484,000.00
Section "F2"	Estimated Shop Floor Assembly Workflow Task Costs:	\$8,512.00	\$42,560.00	\$2,128,000.00
*** Total Estimated Engineering & Manufacturing Workflow Task Costs:		\$23,292.50	\$116,462.50	\$5,823,125.00

Estimated Engineering & Manufacturing Workflow Task Savings

The following is a Workflow Task Savings from each of the sections in the ROI Calculator:

Estimated Engineering & Manufacturing Workflow Task Savings		Daily	Weekly	Yearly
Section "B3"	Estimated Quoting Workflow Task Savings:	\$390.40	\$1,952.00	\$97,600.00
Section "C3"	Estimated Product Engineering Workflow Task Savings:	\$866.88	\$4,334.40	\$216,720.00
Section "D3"	Estimated Mfg. Engineering Workflow Task Savings:	\$339.08	\$1,695.38	\$84,768.75
Section "E3"	Est. Shop Floor Fabrication Workflow Task Savings:	\$2,263.20	\$11,316.00	\$565,800.00
Section "F3"	Est. Shop Floor Assembly Workflow Task Savings:	\$790.40	\$3,952.00	\$197,600.00
*** Total Estimated Engineering & Manufacturing Workflow Task Savings:		\$4,649.96	\$23,249.78	\$1,162,488.75

Total Employee Count / Cost

The following is a Total of the Employees and Daily, Weekly and Yearly Costs from each of the sections in the ROI Calculator:

Employee Count / Cost	Count	Daily	Weekly	Yearly
*** TOTAL EMPLOYEE COUNT / COST:	193.00	\$50,120.00	\$250,600.00	\$12,530,000.00