

Embroidery Simulator v.3.4.

and

Visualization of ROI Results

Table of Contents

Introduction.....	1
Embroidery Simulator Version 3.4:	2
User Input and Equation Explanation	2
Setting Top Machine Properties.....	4
Setting Bottom Machine Properties	6
Main Screen	7
Displaying ROI information	8
Displaying Crossover Information.....	9
Visualizing of ROI Results	10
Samples USA	10
Sample China	12

Introduction

With the updated Embroidery Simulator it is now possible to calculate Return on Investment, based on equipment price, operation expenses, etc.

The spread sheet 'AMAYA vs. Conventional.xls' can be used to visualize the results to the prospect.

Languages currently Supported: Simplified Chinese, Traditional Chinese, Czech, French, German, Italian, Japanese, Portuguese, Russian and Spanish.

Please note that the Embroidery Simulator, the Excel Sheet mentioned above, and this documentation are not finalized yet. They are drafts, for review purpose only!

Embroidery Simulator Version 3.4:

User Input and Equation Explanation

User Inputs:

- Machine cost
- Profit per piece
- Profit per 1000 stitches
- Hours per day
- Days per week
- Weeks per year
- Revenue per 1000 stitches
- Hourly rate per operator
- Number of operators
- Monthly overhead
- Thread cost per 1000 meters
- Average thread consumption (meters) per 1000 stitches

Note: Typical thread consumption values can be between 2.5 and 6.0 meters depending on the design.

Return On Investment (Time) is When:

Profit = Machine Cost

Profit Crossover (Time) is When:

$(\text{Top Machine Total Profit} - \text{Top Machine Cost}) = (\text{Bottom Machine Total Profit} - \text{Bottom Machine Cost})$

Total Profit has 3 calculation methods:

- Method 1 = profit per piece (input) x number of pieces
- Method 2 = profit per 1000 stitches (input) x (total stitches / 1000)
- Method 3 = profit per 1000 stitches (calculated) x (total stitches / 1000)

Calculated Profit:

- Total Profit = total income - total expenses
- Total Income = (revenue per 1000 stitches) x (total stitches / 1000)
- Total Expenses = overhead + operator cost + thread cost

Profit Per 1000 Stitches = total profit / (total stitches / 1000)

Differences:

- Stitch Difference = (top machine total stitches) - (bottom machine total stitches)
- Piece Difference = (top machine total pieces) - (bottom machine total pieces)
- Profit Difference = (top machine total profit) - (bottom machine total profit)

Projected Profit Differences:

- Profit Difference Per Second = total profit difference / total seconds
- Daily Profit Difference = profit difference per second / seconds per day
- Weekly Profit Difference = daily profit difference / days per week
- Annual Profit Difference = weekly profit difference / weeks per year

Please note that the above can be retrieved by pushing the Equations button on the main screen of the Embroidery Simulator.

Setting General Parameters

The screenshot shows the 'Setup' dialog box with the following settings:

- Design Properties:**
 - Design Stitch Count: 8000
 - Number Of Colors: 3
 - Profit Per Piece: 0
 - Profit Per 1000 Stitches: 0
 - Use Calculated Profit Per 1000 Stitches:
- Time In Operation:**
 - Hours Per Day: 8
 - Days Per Week: 5
 - Weeks Per Year: 50
- Expenses:**
 - Revenue Per 1000 Stitches: 0.2
 - Hourly Rate Per Operator: 13.2
 - Monthly Overhead: 500
 - Thread Cost Per 1000 Meters: 1.8
 - Average Thread (meters) Per 1000 Stitches: 4.7
- Display:**
 - Show All Controls:

Buttons: OK, Cancel, Apply, Help, Defaults

- The three radio buttons define the basis for all calculations (Profit per Piece, or Profit per 1000 Stitches, or Use Calculated Profit Per 1000 Stitches). It is important to know that the Operating Expenses, such as Hourly Rate per Operator, Thread Cost, etc. will only get calculated if **Use Calculated Profit Per 1000 Stitches** is turned on.
- You can reset the parameters to the initial values if you press the Defaults button
- There is a new check box **Display, Show All Controls**: if unchecked most of the controls on the main page, such as profit fields disappear. This is useful for an initial sales demo to explain the principle, to catch the attention of a prospect.

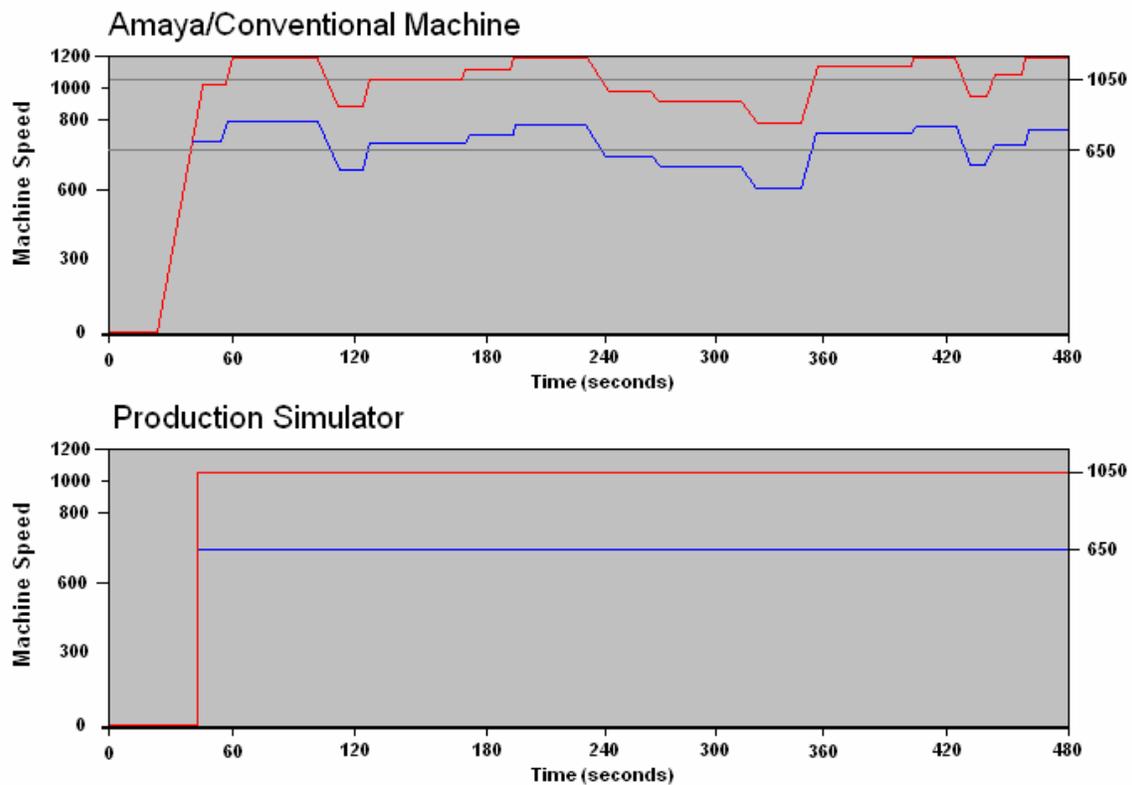
Setting Top Machine Properties

The screenshot shows a 'Setup' dialog box with three tabs: 'General', 'Top Machine Properties', and 'Bottom Machine Properties'. The 'Top Machine Properties' tab is active. It contains three sections: 'Machine Definition', 'Event Frequencies', and 'Event Delays'. The 'Machine Definition' section includes a 'Machine Type' dropdown set to 'Amaya Flex', 'Machine Cost' (50495), 'Number of Operators' (1), 'Number of Heads' (6), and 'Average Sewing Speed' (1050 spm). The 'Event Frequencies' section includes 'Thread Break' (50000 Stitches), 'Bobbin Break' (500000 Stitches), 'Maintenance' (500000 Stitches), 'Cone Change' (1000000 Stitches), and 'Bobbin Change' (25000 Stitches). The 'Event Delays' section includes 'Thread Break' (45 Seconds), 'Bobbin Break' (45 Seconds), 'Cone Change' (60 Seconds), 'Bobbin Change' (30 Seconds), 'Hoop Change' (30 Seconds), 'Maintenance' (180 Seconds), and 'Color Change' (5 Seconds). A 'Defaults' button is located at the bottom right of the dialog. At the very bottom of the dialog are 'OK', 'Cancel', 'Apply', and 'Help' buttons.

- In order to get the profit difference results to show as a positive number it is recommended to set the AMAYA system as the TOP MACHINE.
- Please note that you can now set the number of operators [a table of recommendations, based on applications, stitch count, etc., will follow].
- Of particular interest is the setting of the speed (see following page)

Setting the speed for both AMAYA and Conventional systems:

- If you set the max speed on a machine it will limit the speed to that number, however, if there are long stitches, the speed will drop below the maximum – on both the AMAYA system and on any conventional machine (see illustration below).
- As a good rule of thumb please set the average speed that is used for calculating the production to 150spm below the set max speed.
- Sample:
 - AMAYA max. speed set to 1,200 spm results in an average of 1,050spm
 - Conventional max. speed set to 800 spm results in average of 650 spm

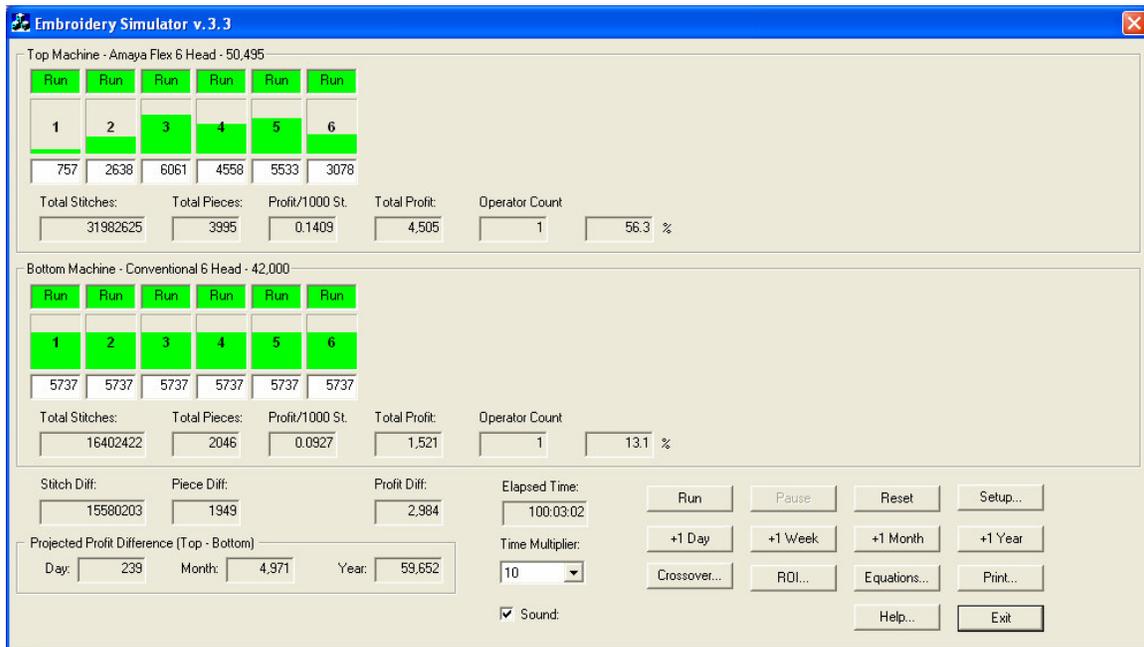


Setting Bottom Machine Properties

The screenshot shows the 'Setup' dialog box with the 'Bottom Machine Properties' tab selected. The 'Machine Definition' section includes a 'Machine Type' dropdown set to 'Conventional', 'Machine Cost' (42000), 'Number of Operators' (1), 'Number of Heads' (6), and 'Average Sewing Speed' (650 spm). The 'Event Frequencies' section includes 'Thread Break' (50000 Stitches), 'Cone Change' (1000000 Stitches), 'Bobbin Break' (500000 Stitches), and 'Bobbin Change' (25000 Stitches). The 'Event Delays' section includes 'Thread Break' (45 Seconds), 'Hoop Change' (30 Seconds), 'Bobbin Break' (45 Seconds), 'Maintenance' (180 Seconds), 'Cone Change' (60 Seconds), and 'Color Change' (5 Seconds). A 'Defaults' button is located at the bottom right of the dialog. At the very bottom are 'OK', 'Cancel', 'Apply', and 'Help' buttons.

- In order to get the profit difference results to show as a positive number it is recommended to set the Conventional system as the Bottom MACHINE.
- Please note that you can now set the number of operators [a table of recommendations, based on applications, stitch count, etc., will follow].
- Remark: the Thread Break Interval on a conventional multi-head machine defines the intervals per individual head

Main Screen



General:

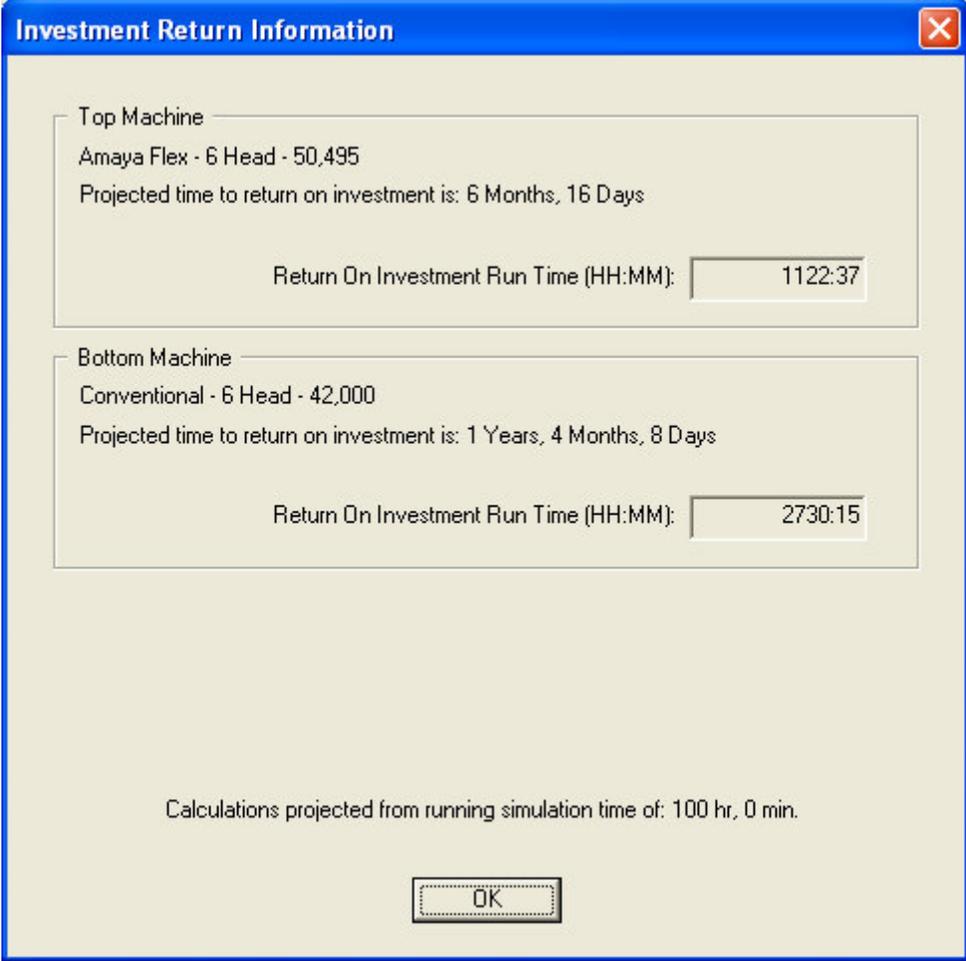
- Buttons like Setup, Reset, Pause, and Run work like they did in previous versions.
- Display fields for Stitches, Profit, etc. are the same.

New:

- **Time Accelerators buttons:** +1 Day, + 1 Week, + 1 Month, + 1 Year
- **ROI (Return on Investment)**
- **Crossover:** calculates the point when AMAYA system produces more profit than Conventional system (is 0 if AMAYA system is less expensive; is a positive number if initial purchase of AMAYA system is more expensive than Conventional system but out-produces the conventional system)
- **Printing of Results:** pushing the Print button results in printing:
 - a.) a snapshot of the current status of the production simulation
 - b.) if ROI button was pushed the ROI info for both systems
 - c.) if Crossover button was pushed the Crossover information
- Display of **Number of Operators** with average **Utilization** (e.g. a utilization of 60% means that the operator(s) are busy 60 % of the time on the machines).

Displaying ROI information

Press ROI button to get to the following screen:



The image shows a software dialog box titled "Investment Return Information". It contains two sections for machine data. The first section, "Top Machine", lists "Amaya Flex - 6 Head - 50,495" and a "Projected time to return on investment is: 6 Months, 16 Days". Below this, a text field shows "Return On Investment Run Time (HH:MM):" with the value "1122:37". The second section, "Bottom Machine", lists "Conventional - 6 Head - 42,000" and a "Projected time to return on investment is: 1 Years, 4 Months, 8 Days". Below this, a text field shows "Return On Investment Run Time (HH:MM):" with the value "2730:15". At the bottom of the dialog, it states "Calculations projected from running simulation time of: 100 hr, 0 min." and includes an "OK" button.

Machine Type	Head Count	Price	Projected ROI Time	ROI Run Time (HH:MM)
Top Machine	6	50,495	6 Months, 16 Days	1122:37
Bottom Machine	6	42,000	1 Years, 4 Months, 8 Days	2730:15

- Please use this information (ROI time) for entering into spread sheet 'AMAYA vs. Conventional.xls'.
- Note: the ROI information can be printed by pushing the Print button after exiting this screen.

Displaying Crossover Information

Press Crossover button to get to the following screen:

Investment Return Information

Top Machine
Amaya Flex - 6 Head - 50,495
Projected time to return on investment is: 6 Months, 16 Days
Return On Investment Run Time (HH:MM): 1121:28

Bottom Machine
Conventional - 6 Head - 42,000
Projected time to return on investment is: 1 Year, 4 Months, 13 Days
Return On Investment Run Time (HH:MM): 2764:01

Profit Crossover
Projected time when machine profits are equal: 1 Months, 15 Days
Profit Crossover Time (HH:MM): 284:46

Calculations projected from running simulation time of: 100 hr, 0 min.

OK

- ROI information gets displayed again
- Crossover time is ...
 - ... zero (0) if AMAYA system is less expensive;
 - ... is a positive number if initial purchase of AMAYA system is more expensive than Conventional system but out-produces the conventional system.

Visualizing of ROI Results

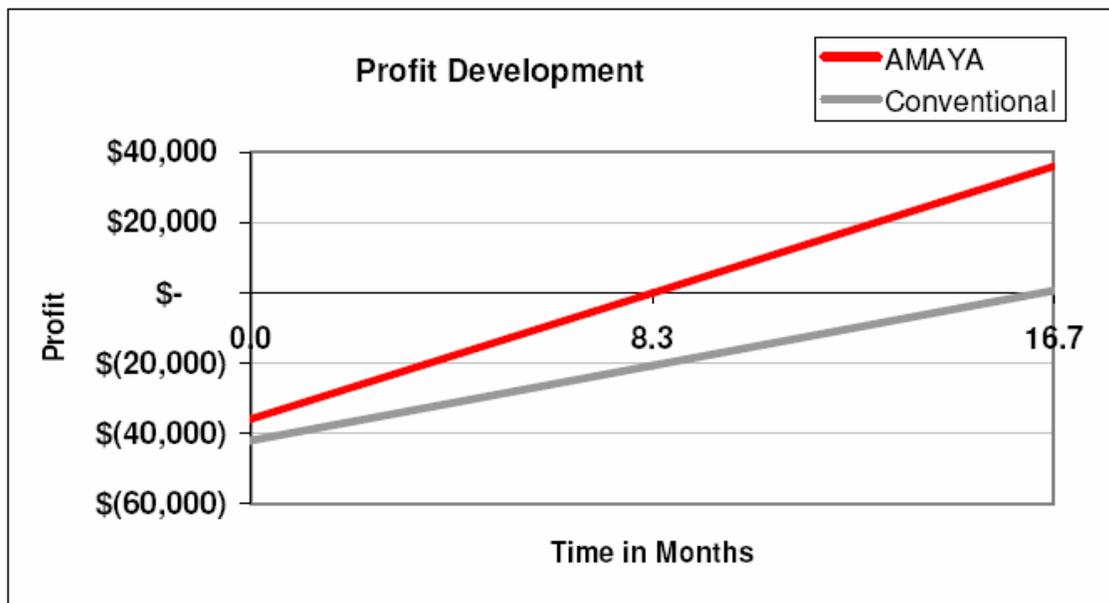
Steps:

1. Open up spread sheet
2. Enter Data, based on the Embroidery Simulator run, as following:
 - a. Head Numbers
 - b. System Prices
 - c. ROI numbers (split in years, months, and days)
3. Print Result

Samples USA

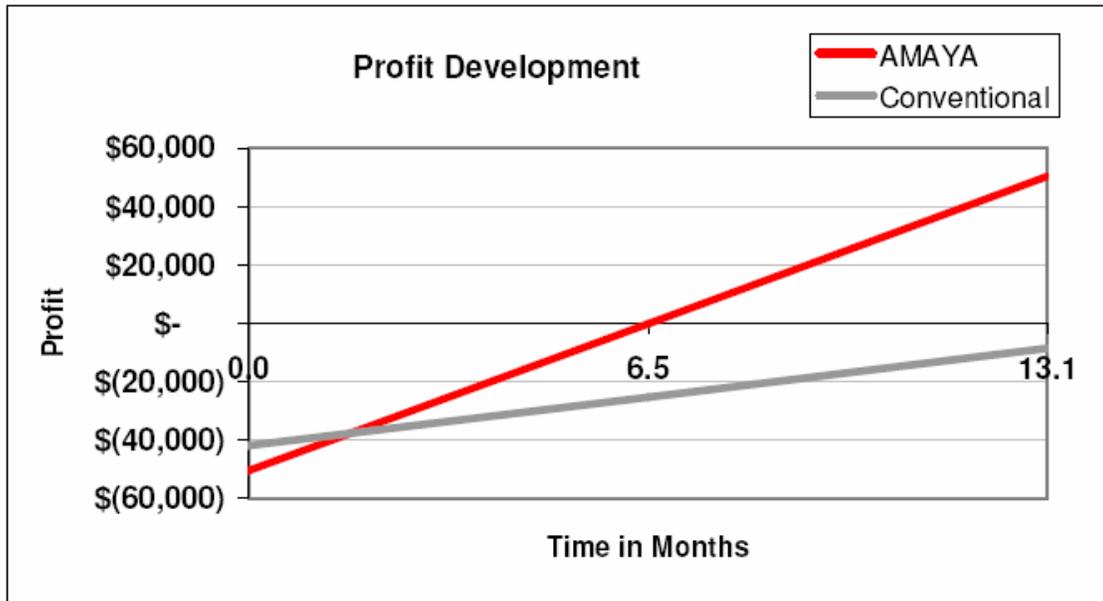
Result:

	No. of Heads	System Price	ROI Years	ROI Months	ROI Days
AMAYA System	4	\$ 35,995		8	10
Conventional	6	\$ 42,000		16	13



Print of Alternative Sample:

	No. of Heads	System Price	ROI Years	ROI Months	ROI Days
AMAYA System	6	\$ 50,495		6	16
Conventional	6	\$ 42,000		16	13



Investment Return Information ✖

Top Machine
 Amaya Flex - 6 Head - 50,495
 Projected time to return on investment is: 6 Months, 16 Days
 Return On Investment Run Time (HH:MM):

Bottom Machine
 Conventional - 6 Head - 42,000
 Projected time to return on investment is: 1 Years, 4 Months, 13 Days
 Return On Investment Run Time (HH:MM):

Profit Crossover
 Projected time when machine profits are equal: 1 Months, 15 Days
 Profit Crossover Time (HH:MM):

Calculations projected from running simulation time of: 100 hr, 0 min.

Sample China

6HD Tajima, assembled in China, vs. 6HD AMAYA.

General Parameters (all numbers in US\$):

Setup

General | Top Machine Properties | Bottom Machine Properties

Design Properties

Design Stitch Count: 8000

Number Of Colors: 3

Profit Per Piece: 0

Profit Per 1000 Stitches: 0

Use Calculated Profit Per 1000 Stitches:

Time In Operation

Hours Per Day: 24

Days Per Week: 7

Weeks Per Year: 50

Expenses

Revenue Per 1000 Stitches: 0.036

Hourly Rate Per Operator: 1.14

Monthly Overhead: 100

Thread Cost Per 1000 Meters: 0.73

Average Thread (meters) Per 1000 Stitches: 4.7

Display

Show All Controls

Defaults

OK Cancel Apply Help

AMAYA 6HD, max. speed set to 1,200 spm, average around 1,050:

Setup

General | Top Machine Properties | Bottom Machine Properties

Machine Definition

Machine Type: Amaya Flex

Machine Cost: 50495 Number of Operators: 1

Number of Heads: 6 Average Sewing Speed: 1050 spm

Event Frequencies

Thread Break: 50000 Stitches Cone Change: 1000000 Stitches

Bobbin Break: 500000 Stitches Bobbin Change: 25000 Stitches

Maintenance: 500000 Stitches

Event Delays

Thread Break: 45 Seconds Hoop Change: 30 Seconds

Bobbin Break: 45 Seconds Maintenance: 180 Seconds

Cone Change: 60 Seconds Color Change: 5 Seconds

Bobbin Change: 30 Seconds

Defaults

OK Cancel Apply Help

Tajima 6HD, max. speed set to 900 spm, average around 750:

Setup

General | Top Machine Properties | Bottom Machine Properties

Machine Definition

Machine Type: Conventional

Machine Cost: 25455 Number of Operators: 1

Number of Heads: 6 Average Sewing Speed: 850 spm

Event Frequencies

Thread Break: 50000 Stitches Cone Change: 1000000 Stitches

Bobbin Break: 500000 Stitches Bobbin Change: 25000 Stitches

Maintenance: 500000 Stitches

Event Delays

Thread Break: 45 Seconds Hoop Change: 30 Seconds

Bobbin Break: 45 Seconds Maintenance: 180 Seconds

Cone Change: 60 Seconds Color Change: 5 Seconds

Bobbin Change: 30 Seconds

Defaults

OK Cancel Apply Help

Embroidery Simulator v.3.4

Top Machine - Amaya Flex 6 Head - 50,495

Run	Run	Run	Run	Run	Run
1	2	3	4	5	6
6606	666	3521	4480	6606	2241

Total Stitches: 31864120 Total Pieces: 3980 Profit/1000 St.: 0.0285 Total Profit: 909.59 Operator Count: 1 56.3 %

Bottom Machine - Conventional 6 Head - 25,455

Run	Run	Run	Run	Run	Run
1	2	3	4	5	6
1148	1148	1148	1148	1148	1148

Total Stitches: 18054888 Total Pieces: 2256 Profit/1000 St.: 0.0255 Total Profit: 459.75 Operator Count: 1 14.4 %

Stitch Diff: 13809232 Piece Diff: 1724 Profit Diff: 449.84 Elapsed Time: 100:00:00

Projected Profit Difference (Top - Bottom)

Day: 108 Month: 3,149 Year: 37,787

Time Multiplier: 10

Buttons: Run, Pause, Reset, Setup..., +1 Day, +1 Week, +1 Month, +1 Year, Crossover..., ROI..., Equations..., Print..., Help..., Exit

Sound

Investment Return Information

Top Machine
Amaya Flex - 6 Head - 50,495
Projected time to return on investment is: 7 Months, 28 Days

Return On Investment Run Time (HH:MM): 5551:25

Bottom Machine
Conventional - 6 Head - 25,455
Projected time to return on investment is: 7 Months, 27 Days

Return On Investment Run Time (HH:MM): 5536:45

Calculations projected from running simulation time of: 100 hr, 0 min.

OK

Interestingly enough ROI is almost the same for both machines, however, AMAYA will generate much more revenue on a going forward basis!

	No. of Heads	System Price	ROI Years	ROI Months	ROI Days
AMAYA System	6	\$ 50,495		7	28
Conventional	6	\$ 25,455		7	27

