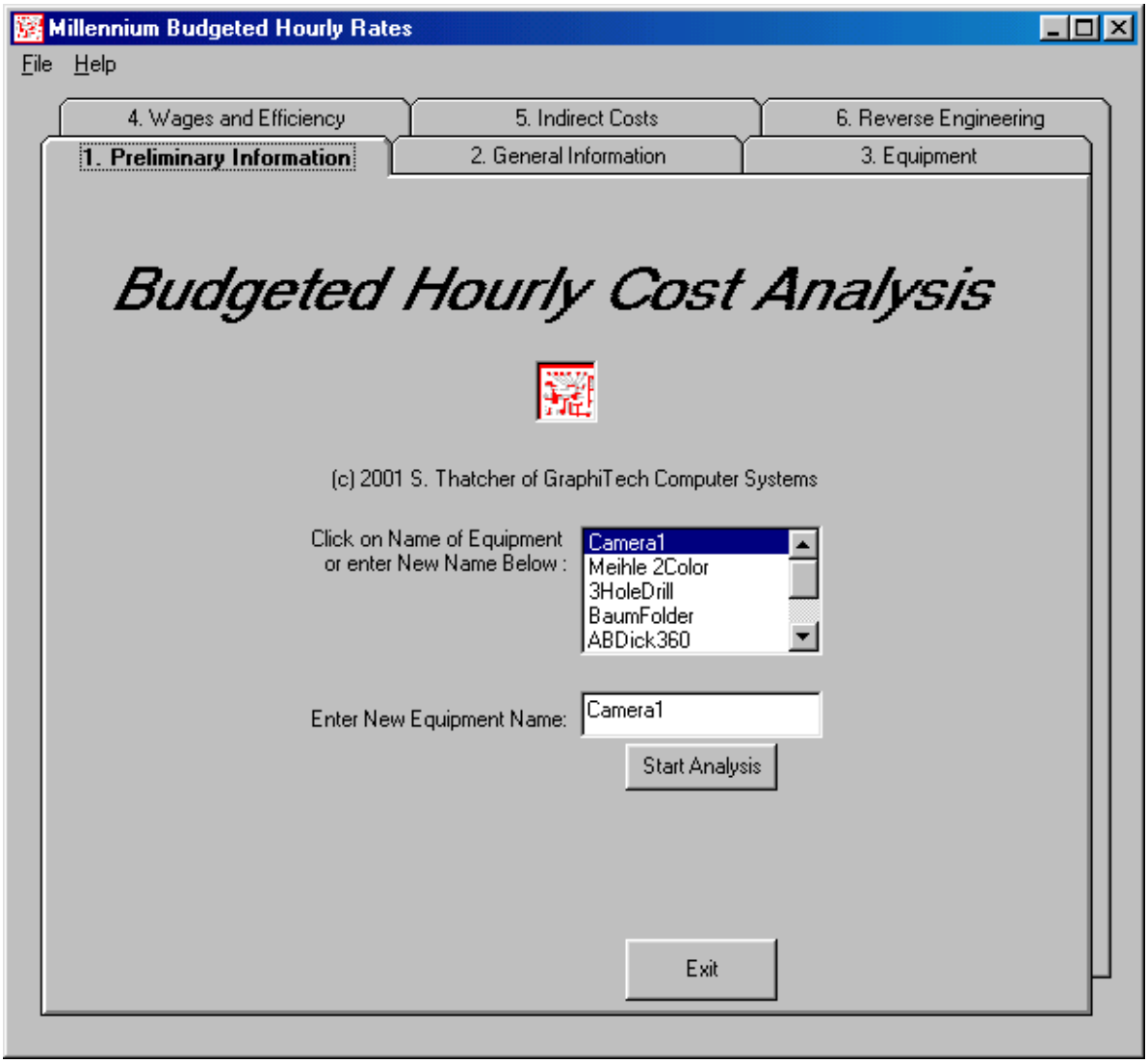
Guide to Using

Budgeted Hourly Costs



By GraphiTech Computer Systems

Contents

Overview 3

What's Inside 3
Data Files 3
Register Features 3
Workstation 4
Network 4
Splash Screen 4
Installing Budgeted Hourly Rates 4
Select Installation and Program Folder 5
Program Folder 5
Progress Bar 6
Technical Support 6

Running Budgeted Hourly Cost 7

Start-Up 7
Accessing the Program 7
Creating an Icon on Desktop 8
Splash Screen 8
Importing Existing BHR Data 8
Running BHR 8
Budgeted Hourly Cost & Reverse Engineering 8
Password 9
Preliminary Information 9
General Information 10
Equipment 10
Wages and Efficiency 11
An Arc Burner 12
Total Wattage of Lighting 12
Efficiency 12
Sample Efficiency Calculation 13
Your Responsibility 13
Indirect Costs 13
Conclusion of Budgeted Hourly Cost Analysis 14
The Print Out 15
Selecting Your Efficiency 16
Reverse Engineering of Known Cost Centers 16
Introduction 16
Reverse Engineering 17
The Truth and Nothing but the Truth! 17

Glossary of Terms 20

Index 21

Overview

What's Inside

General

The GraphiTech Budgeted Hourly Cost Analysis program (also referred to as BHR or Budgeted Hourly Rates) has been designed to provide an informative and easy to use system for the efficient analysis of Individual or group equipment cost centers. The basic concept revolves around the methods of Burdened Equipment. Using the Burdened approach, all equipment accepts its fair share of costs such as inventory storage, office help, parties for clients, etc. This is all done on the basis of history.

Historically, each company is aware of the cost of operation and the installed cost of the equipment used in production. Utilization of the figures derived from an historical standpoint will yield statistically accurate equipment costs when used with some generalized forms of filters, such as employee efficiency, vacation times, replacement costs, etc.

Data Files

If you have a previous version of the "Professional Estimator" from GraphiTech, there may be many files that you have already created for the DOS version of the BHR (Budgeted Hourly Rates) program, however the data files associated with our Windows version are loaded to the C:\Project Files\BHR" folder.

If you would prefer to start off using the files you have created earlier, then you will need to copy the ***primary.bud*** from the EST folder along with all other files that have no extension and that end in either a 2, 3 or 4 such as ***abdick32***, ***abdick33***, and ***abdick34***. They need to then be pasted into the C:\Program Files\BHR folder.

Register Features

If you are installing the program for the first time, you will need to obtain a license code from GraphiTech prior to using the BHR portions of the program. See installation.

Workstation

The PC required for use with Budgeted Hourly Cost Analysis may be minimally configured as follows:

- 133 MHz Pentium – 200 MHz desired
- 16 MB of Ram -- 64 Meg desired
- 1-3 GB Hard Drive

Network

Various networks may be used with BHR however, each workstation processes it's own set of data and that data is not shared with others on the network. In addition, each workstation is loaded with its own version of BHR.

Splash Screen

The screen shown below (Figure 1) is the first to appear when you start to load Budgeted Hourly Cost.

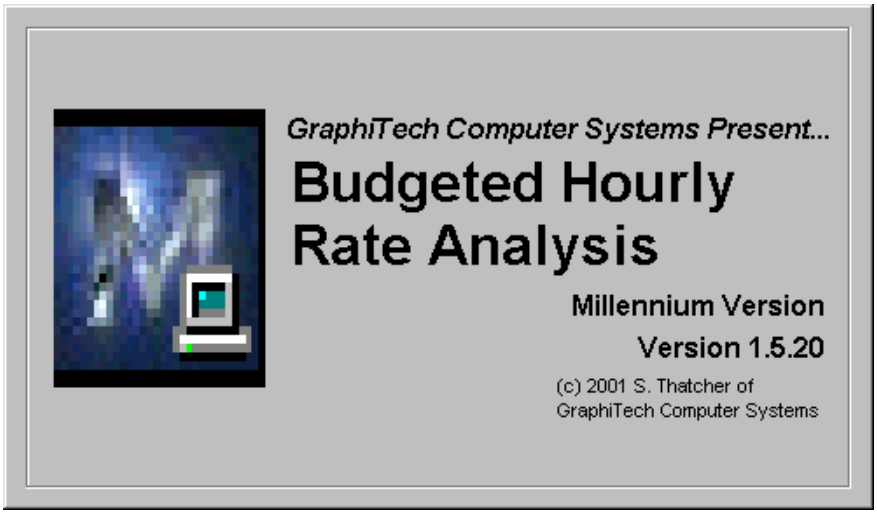


Figure 1 – Splash Screen

Installing Budgeted Hourly Rates

To load *Budgeted Hourly Cost Analysis*, insert the CD into your drive and close the door. If the CD includes other programs from GraphiTech, you will either be presented with a menu of items from which to select your choice, or a group of folders. If you see the selection menu, chose Budgeted Hourly Cost. If you see a group of folders, double-click the folder entitled BudgetedHourlyRates (All One Word).

The following should clarify the screens you will encounter during the installation process. Please follow these steps.

Select Installation and Program Folder

Once you have passed by the first screen of the installation Figure 2 appears.

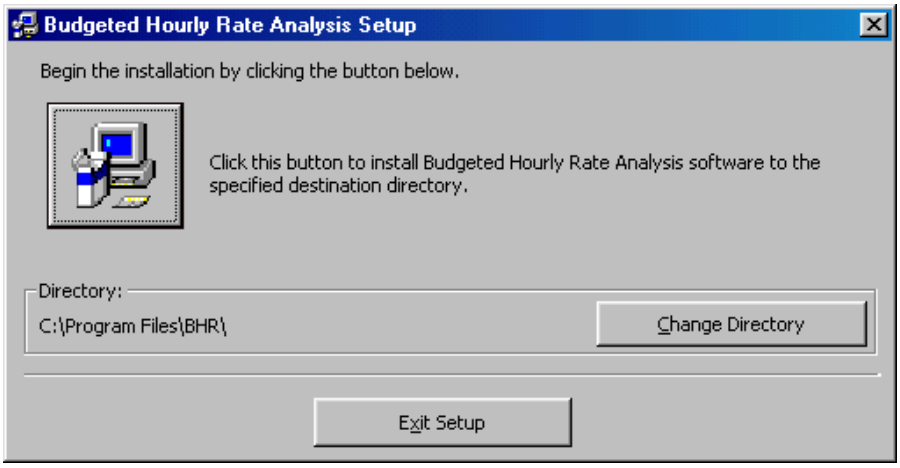


Figure 2 – Installation Folder

In general, you will always install the program into the folder shown (C:\Program Files\BHR). This is because the program is hard coded to look into this location to find files it will use for analysis.

Program Folder

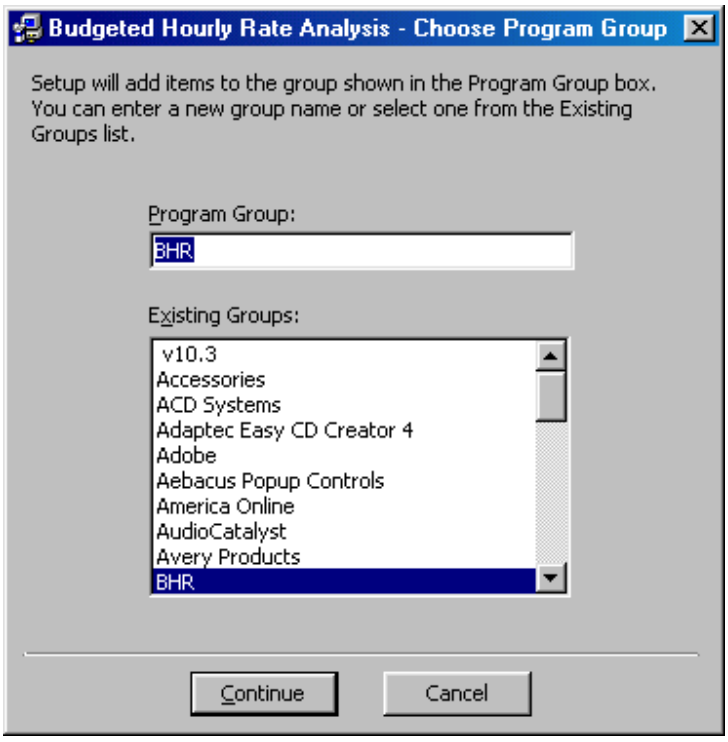


Figure 3 – Program Group

This will specify the program folder name where you want the application icons to reside when you click the Windows Start button on the Windows taskbar. This is normally your Station's Hard Drive, and *NOT* the Network Drive.

The default name for the Program Folder will appear at the top of the list box (***BHR***). Click ***Continue*** to proceed without making any changes.

Progress Bar

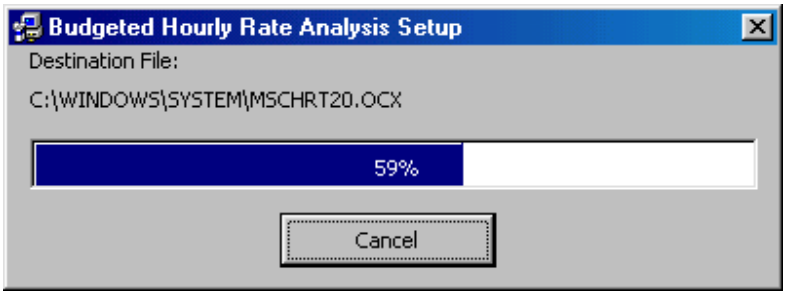


Figure 4 – Progress Bar

As files are placed into various folders, the progress bar will identify the time remaining. If it does not move for a long period of time (more than 5 minutes) you may need to press CTRL-ALT-DELETE and click End Task in order to exit the program. Reboot your computer and try the installation again.

Occasionally, you will see that a particular file is about to replace another file with a version number that is higher than the one being installed. You are generally asked if you wish to keep the older version and you should always answer by clicking Yes.

Print & Help Routines Using Vista or Higher Operating Systems

Help Routines: This version of the BHR program will probably warn you if you try to use the help menu that a file is missing that allows the use of help. Please follow the directions from Microsoft for installing the Winhlp32 file at http://www.microsoft.com/kb/917607.

Print Routines: Vista and higher operating systems do not permit the display of print routines with this program. As a result, you must print the results directly to your printer or, if you wish to view the file first, print the file with an XPS extension to your desktop. Then dbl-click the XPS file to view it on screen as well as print it.

Technical Support

If you need further assistance, please call our technical support hotline at **800-634-TECH**. Send written documentation of problems to support@graphitech.com and both Scott Thatcher and/or Nelson Wiscovitch will receive the document. Or visit our web site at www.graphitech.com for the latest news, updates, questions and answers.

Running Budgeted Hourly Cost

Start-Up

Accessing the Program

After installation, you may usually find the program by clicking on Start, Programs and looking at the end of the Program List for the last installed program. It will be called BHR. If you find that the executable program is Empty, you will need to place the shortcut into the folder manually.

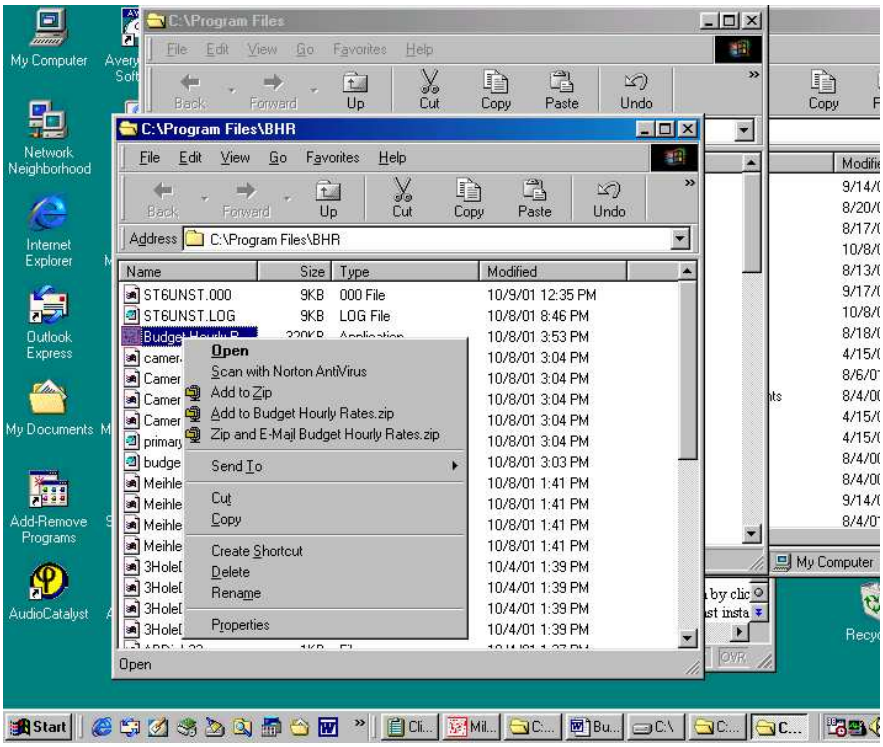


Figure 5 – Creating Shortcut

With Explorer, open the folder called Program Files on the C drive. Then open the folder called BHR. Change the View to Details so that you can more easily find the

executable program called Budgeted Hourly Rates.exe Right Click on the file name icon and then right click on the Create Shortcut that appears in the list. A shortcut will immediately be placed into the folder called BHR and will be called Shortcut to Budgeted… etc. Place the cursor over the Shortcut, right click and left click the word CUT.

Now open the folder called C:\Windows\Start Menu\Programs\BHR and right click in the blank area of the window. Left click the word Paste.

Now edit the name to remove the word "Shortcut To" and the ".exe" which will leave just the name Budgeted Hourly Rates for the file name.

Creating an Icon on Desktop

You may now access the program right from the Start menu. If you wish to have an icon on the desktop, simply go to the start and program screen, select BHR and right click on the Budgeted Hourly Rate program that now appears there and select Create Shortcut. You will be told that "…you cannot do this, do you want to have it appear on the Desktop instead?" Answer Yes.

Splash Screen

The first window that appears when running the program initially is the Splash Screen. See Figure 1.

Importing Existing BHR Data

In order to import your existing data (assuming you used the previous GraphiTech Dos Program) you will need to get to the EST folder of the Server. Locate the following files:

Primary.bud

All files with the extension of 2, 3 and 4 as in abdick32, abdick33, and abdick34

Budget.fyl

Now copy these files into the C:\Program Files\BHR folder which will over write the existing files. When you start the new BHR program, you will be able to use the old files with the newer BHR program.

Running BHR

Budgeted Hourly Cost & Reverse Engineering

There are two programs contained within this installation. The first is the BHR program that is the primary method used to evaluate the cost associated with each piece of equipment in the plant.

The second program is called Reverse Engineering. In this program, the user identifies the various retail prices they are currently charging for a given production cycle and are then provided with the setup up cost and speed for that piece of equipment.

Password

Prior to running the program, you must obtain a password from GraphiTech. This is done by clicking on the Help Menu located at the top of the form. See Figure 6.

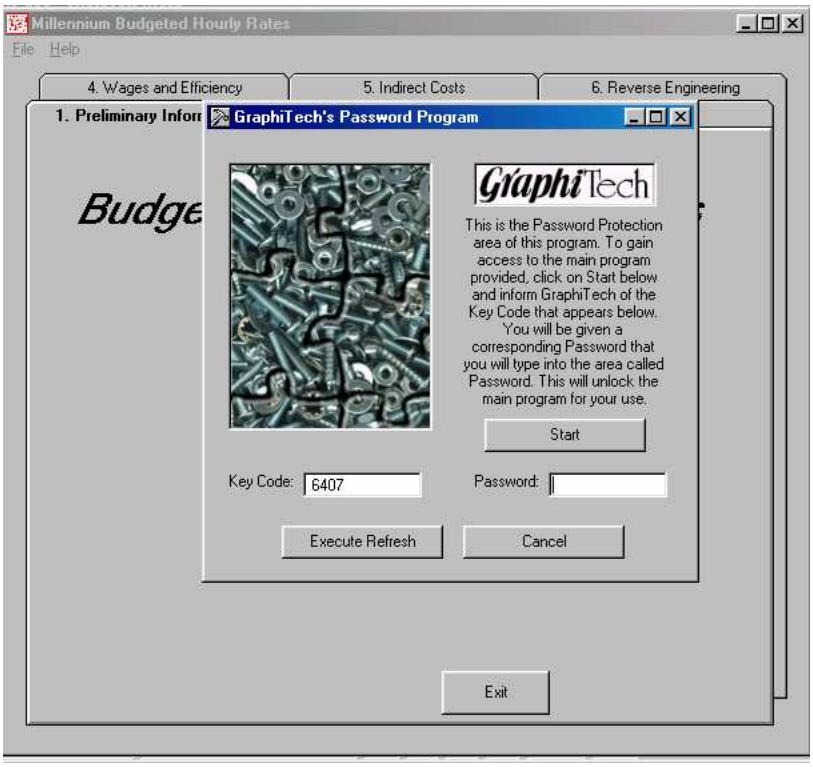


Figure 6 – Password

Call GraphiTech at 1-800-634-8324 and ask for the Password to your Budgeted Hourly Cost program. We will want to know what your Key Code is and that is obtained by clicking on the Start button below the paragraph. Once you have the correct Password entered, click on Execute Refresh. If the password is accepted, you will be told that it worked. Since this area is not protected, do not access the password again or you will be required to get another password. You will be warned several times however.

Preliminary Information

The figure on the cover of this documentation consists of the names of each piece of equipment that is being analyzed in an itemized list. If the list is empty, or you need to add additional names, then enter the new piece of equipment at the bottom of the second window. When ready, click the command button identified as “Start Analysis.” The “General Information” screen then appears as shown in Figure 7. The information contained here represents items that normally apply to any equipment in the plant, and should generally be changed only once to reflect those values. Once identified, they do not need to be changed unless your business practices change or costs increase such as Utility Rates.

Most of the information is self explanatory. The name of the file created is PRIMARY.BUD and is located in the \Program Files\BHR folder.

General Information

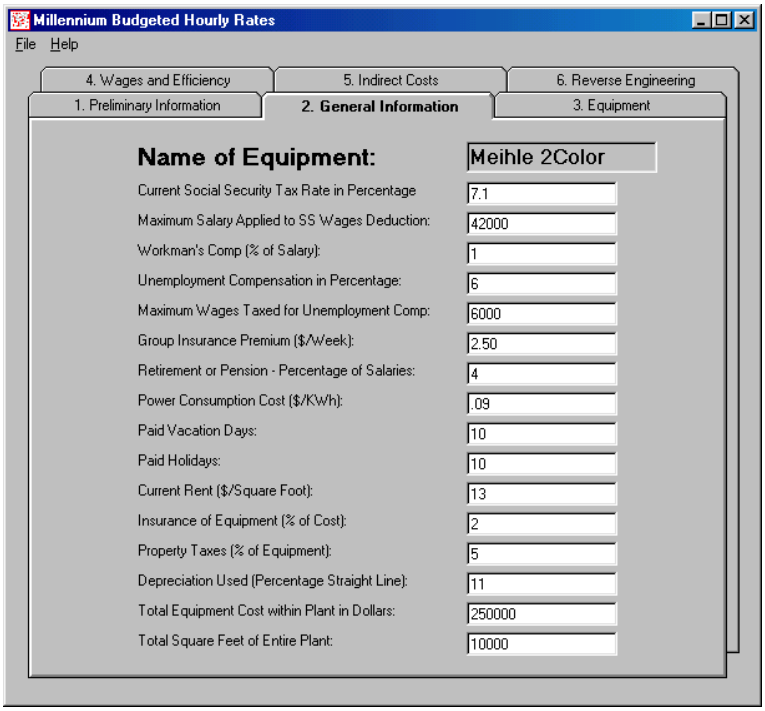


Figure 7 -- General Information

The last two line of the General Information include the Total Cost of all equipment and the Total Square Footage of the plant. These two pieces of information are used to create the “Occupation” burden of each piece of equipment. Because the costs of the area that is occupied by the equipment is based less on physical footprint than on the a burdened value, we use the “Occupation Burden” to capture a more reflective cost of business for this equipment.

Equipment

Once the General Information is complete, click on the tab identified as Equipment and you will then enter the information required as shown in Figure 8.

Identify the total cost of the equipment plus the cost of installation and other incidentals. Remember that even if you buy the equipment used, you may not be able to replace the equipment without making a new purchase, so in general, be sure to use the new, replacement costs along with all installed valuations.

Also, look over the equipment manual and enter all known motors and their horsepower along with the expected usage during the day or during the actual production cycle. The number of motors and horsepower requirements along with % of usage is not generally a significant amount of the annualized costs however, to be as accurate as possible it is requested you enter these values.

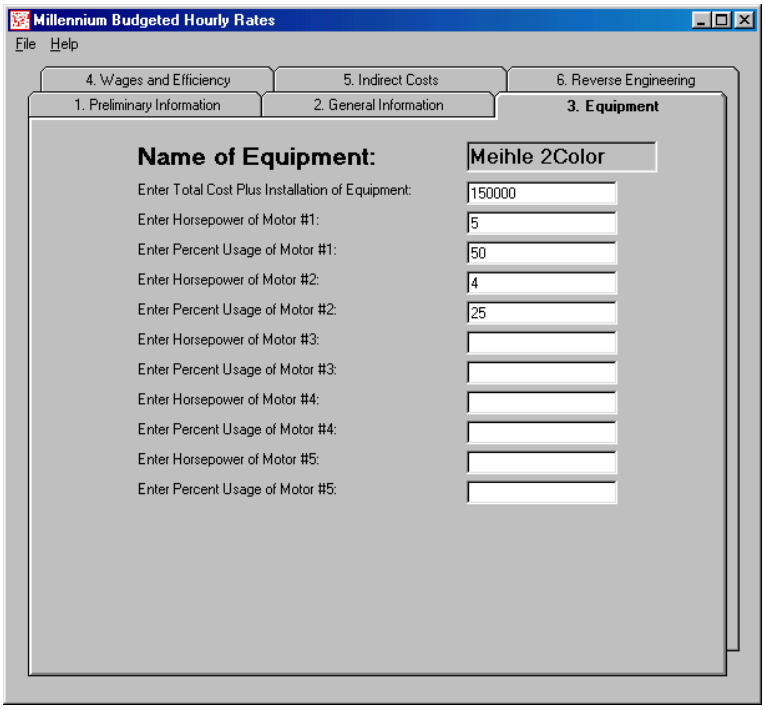


Figure 8 – Equipment

Wages and Efficiency

In this section, we will enter the number of employees, space requirements, wattage and efficiency levels. The screen appears as shown in Figure 9.

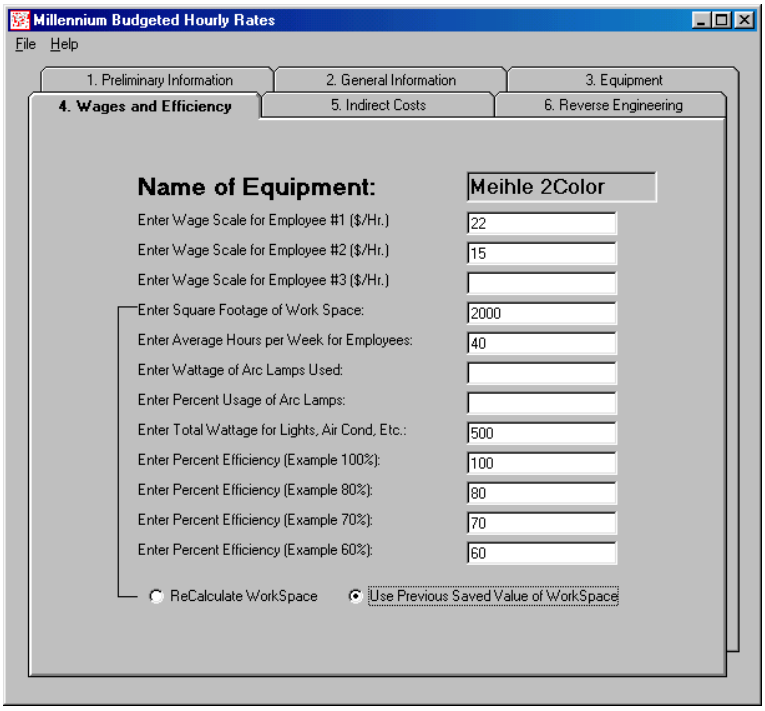


Figure 9 – Wages and Efficiency

Number of Employees: Up to three employees may be added to each piece of equipment. If you have more employees using the equipment than you have room for, combine the wages onto a single line.

Square Footage of Workspace: The square footage of workspace should represent the "Occupation Burden" which is defined as the ratio of the installed cost of this equipment divided by the total cost of all equipment multiplied times the total square footage in the plant. Note that the total square footage includes non-productive areas such as warehouse, reception area, etc.

Occupation Burden of Square Footage: If you select the recalculate button to determine your burdened square footage, then the calculation will be done for you. If you change your mind and wish to use whatever value you had there previously, you may do so up until you actually click on the calculate button. Then the previous square footage used is overwritten by the new value. Later versions of this software will include this ratio for this piece of equipment to help in calculations later on.

Average Hours Per Week for Employees: It is the consensus of this company that you should never analyze your equipment using a value greater than a normal 37-40 hour work week, even though you may have more than one shift. Even though the result of more hours is to lower your costs, this approach will result in financial disaster should you ever need to cut back to a single shift.

However, if you have a history of maintaining a multi-shift environment for this piece of equipment, then it is an acceptable risk to increase the number of hours from 40 to 80 for example. This would be the equivalent of operating the equipment for two shifts on a daily basis.

An Arc Burner

Why we have included this piece of archaic equipment into this program is beyond me. If you are analyzing an arc burner, then enter the wattage and % of usage for the equipment. This was really meant to be the nostalgic area of analysis.

Total Wattage of Lighting

This is another area of possible burdened costs. Although we don't make this calculation automatically, you may perform it using the same equation as mentioned previously. This again should be based on your total wattage for the plant multiplied time the ratio of installed equipment divided by total equipment In this way, you will again recover all of your costs for the entire plant. However, because these costs are fairly insignificant, a guess in this area may be sufficient.

Efficiency

The efficiency of the plant is based entirely on your type of operation. In general, 70% is the expected efficiency level of employees. Simply enter in 4 values, 1 or 2 of which you feel describes the efficiency level of your operation. The sample shown identifies 4 levels of efficiency; 100, 80, 70 and 60%. The higher efficiency you use, the less cost per hour for each piece of equipment. Remember to be objective when choosing an efficiency level. Look at the time your employees spend reading job tickets, going to the restroom, coffee breaks, etc. The amount of time an employee spends in non-productive areas divided by the total time available for production represents an approximate efficiency level for that employee.

Sample Efficiency Calculation

Let's look at an example. Your company pays for the time an employee spends on lunch as well as 10 vacation days per year plus 10 paid sick days. In addition, 15 minutes two times a day are spent on coffee breaks. If we also allocate 30 minutes for the restroom, 15 minutes for talking, and about 45 minutes reading work orders, etc. per day, we have the following allocation of time;

If the work day is based on 8 hours per day, 5 days per week, then a total of 2080 hours per year are available (52 weeks x 8 hours x 5 days). The amount of time allocated to non-production or non-chargeable items will be:

20 days x 8 hrs	160 Hrs
30 minutes lunch x 52 x 5/60	130
30 minutes coffee x 52 x 5/60	130
30 minutes restroom x 52 x 5/60	130
15 minutes talk x 52 x 5/60	65
45 minutes work order x 52 x 5/160	195
Total non-productive time	**810 hrs**

The equation to determine efficiency would then be as follows;

2080 hrs - 810 hrs = 1270 hrs;

Efficiency = 1270 / 2080 = 0.61 or 61% efficiency

Thus, in this example, it would be wise to either cut down on the time each employee uses for non-productive activity or face the possibility of having to accept lower than normal profitability.

Your Responsibility

Since productivity is the responsibility of management, you must weigh the ultimate effect of having a low efficiency for your plant. In some cases, because of the nature of the business, efficiency does not have to be as high as 70%.

As you can see, efficiency drops rapidly even though it appears the employee is working continuously. But remember, profit is based on efficiency and current retail pricing structure. Therefore, if you offer time off benefits that exceed the norm, you may need to watch the amount of time used by employees for breaks, restroom, etc.

Indirect Costs

It is in this section you will be able to enter indirect types of labor and costs. See Figure 10. This screen enables us to enter items that would normally slip by in the normal course of events.

Indirect Wages: For example, the first question asks for the indirect wages such as management, janitor, accounting, inventory control, etc. The method of allocating is basically similar to the “Occupation Burden” previously discussed. Using the ratio previously calculated for equipment costs, simply multiply this ratio times the total cost of the indirect wages used.

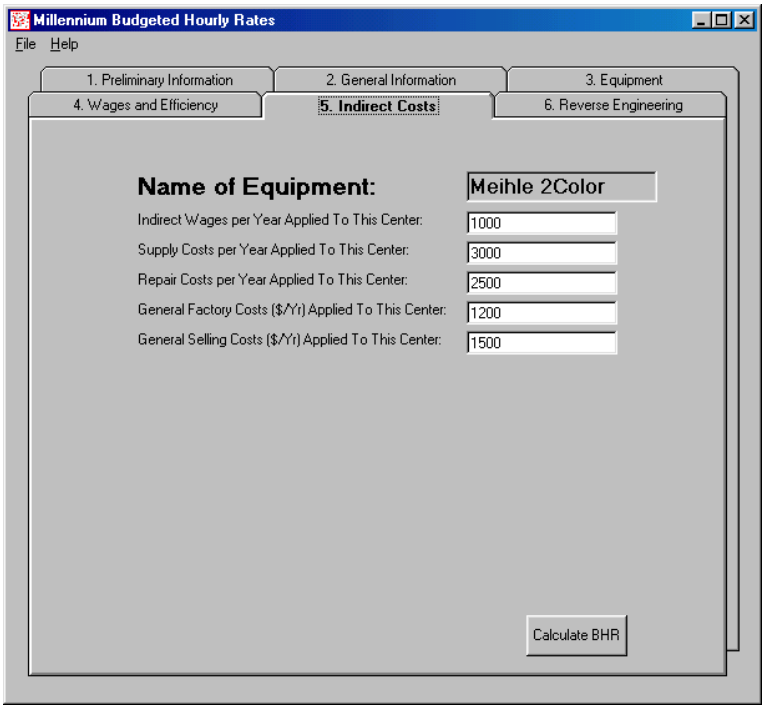


Figure 10 – Indirect Costs

Supplies are handled basically on the basis of actual costs. However, you may elect to use the burdened approach here as well. Simply add up all costs associated with supplies over the past year, and then multiply times the ratio previous calculated. This latter method has some disadvantages however, because some equipment may be very expensive to maintain while simultaneously being used very little, thus producing a very high operating cost.

Repairs: Repairs are also evaluated the same as supplies. Either method will provide sufficient cost distribution.

General Factory Expense: General Factory Expense is a type of catch-all category. Items such as repairs to the plant, installing new air-conditioning, etc. represent costs of doing business and need to be allocated. Add up all such costs and multiply times the ratio previously calculated

Additional Costs Applied to Selling Overhead: This is an often-neglected area. Sales people, for whom you provide a draw or salary, may be entered here. Obtain the total amount paid in this category and multiply times the ratio previously used.

Conclusion of Budgeted Hourly Cost Analysis

The Budgeted Hourly Cost Analysis program does not load information to any files. This is done so that you may analyze equipment without destroying any data you may wish to preserve in your current file structure.

The program will generate multiple files for each piece of equipment you evaluate. They can be identified with the same name as you entered at the beginning of this chapter. They will have numbers associated with them that reflect the tab data used.

Once you obtain the Budgeted Hourly Cost for your equipment, you may either enter that value into your data files in Order Entry or Job Costing, or continue with your analysis by reviewing the Reverse Engineering section next.

The Print Out

Once we have the data filled out, simply click on the button at the bottom of the screen identified as Calculate BHR. The following report is then issued which is a basic accounting of what was entered.

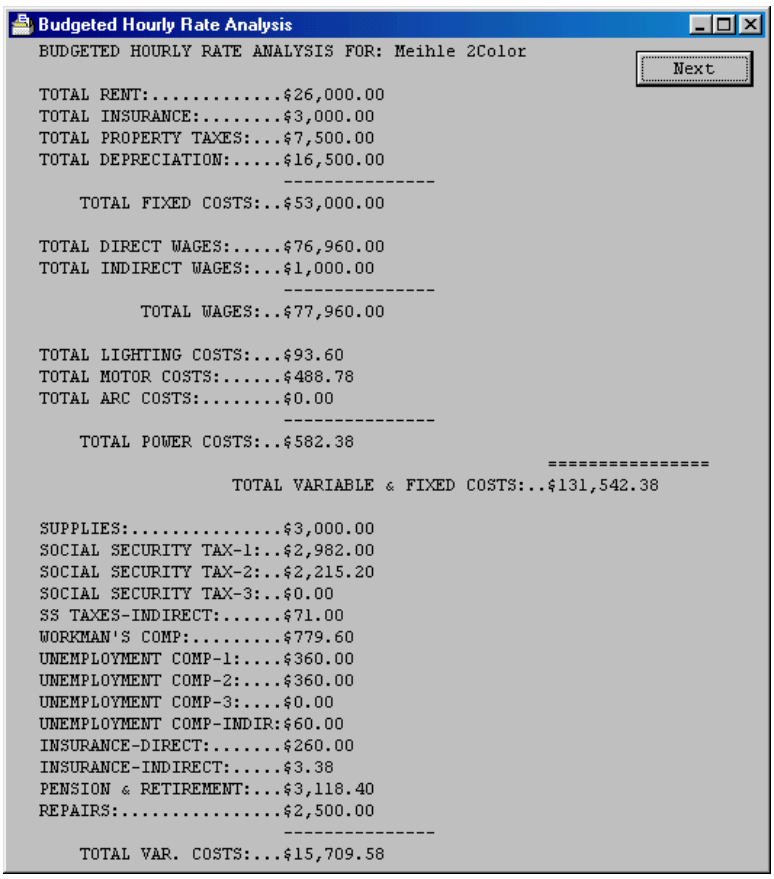


Figure 11 – Summary Costs

After you have reviewed the information, click on the button at the top entitled Next.

The second screen of data provides us with our first look at what the Budgeted Hourly Costs are for this piece of equipment.

In the middle of the form of Figure 12, we note that the Total Annual Costs are identified for this center. And just below that item is the true Budgeted Hourly Costs. Now here is where the Efficencies really come into play.

Note the difference between running the shop at 100% efficiency and at 60% efficiency. Now, there is not a company existing that can operate at 100% efficiency. But our goal is to attempt to achieve that rate. Because when we do, our costs are lowered to such an extent, that we will most often get the bid.

Printing out the Report

The button at the top of the page of Figure 12 will permit you to print the report to your default printer. It is printed on a single 8.5x11 sheet.

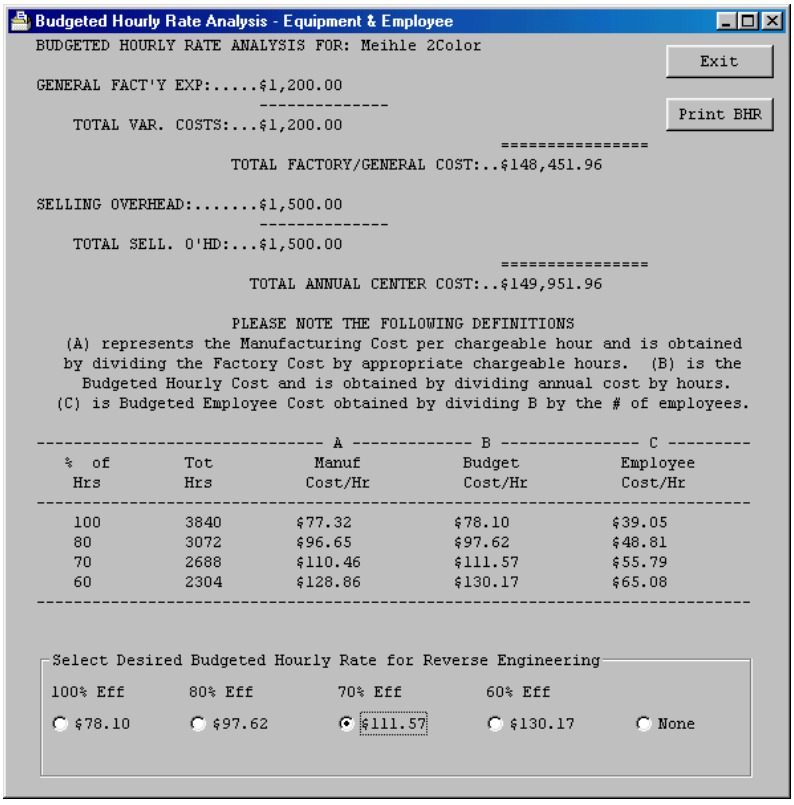


Figure 12 – Actual Budgeted Hourly Rates

Selecting Your Efficiency

At the bottom of Figure 12 you may select the appropriate efficiency for this equipment. As mentioned previously, a value between 60-70% is generally considered to be the normal range for most companies. The value selected will be used in the next section entitle “Reverse Engineering of Known Cost Centers”. Click on the button identified as Exit.

Reverse Engineering of Known Cost Centers

Introduction

In the case that we are working on, we now know the hourly cost for this piece of equipment, but how do we determine the speed of the equipment and the set-up time in order to fully load the data into our press file in estimating?

We have two ways really. The first is to look at the operating manual for the equipment and plug in the values designated for both speed and setup time. The second method available to us is what we will look at next.

Reverse Engineering

It is known as reverse engineering because it basically takes what we think is true (or hope to be true as we'll discover later on) and backs out the speed and setup times from a set of known pricing values.

Now this isn't such a stretch to try and work at the problem this way. After all, we are faced with competition, and we also need a method of estimating that provides answers that closely resemble what the competition may be charging.

The Truth and Nothing but the Truth!

But Reverse Engineering does more than just provide you with speed and setup times. It provides you with the truth!

A quick example is in order. Let's say that we discovered our small press needs to be priced at $45 per hour cost as a result of our BHR analysis. We also know that the manual states the maximum speed for this press is 8000 iph and the minimum speed is 3500 iph. In addition, we know the setup time to be about 5 minutes. Let's further assume that we want to have a 30% markup applied to our costs.

The competition charges $45 for 1000 flyers and $300 for 10,000 flyers, using 20# bond. We know that the retail cost for the paper is $4/M and the retail cost of the Plate is $6. That leaves the following: $45 – 4 – 6 = $35 for one thousand and $300 – 40 – 6 = $254 for 10,000.

So we fill out the Reverse Engineering form as shown in Figure 13 and obtain the report shown in Figure 14.

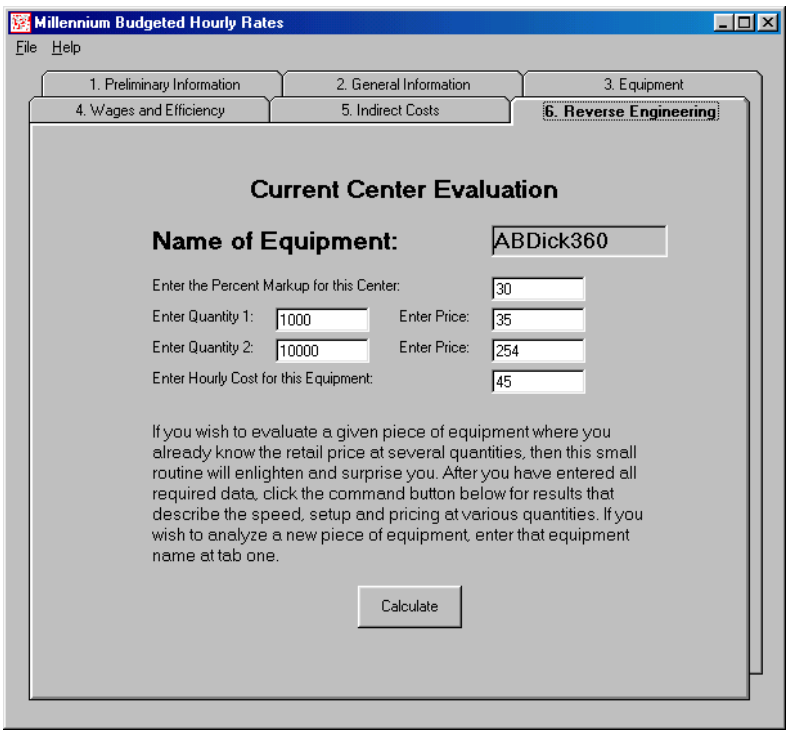


Figure 13 – Reverse Engineering of Small Press

Interestingly, we find that this press must be operated below its minimum operating speed and requires more than two times the amount of setup. Since we know that

cannot be the case, even allowing for a reduced speed during start up, we elect to

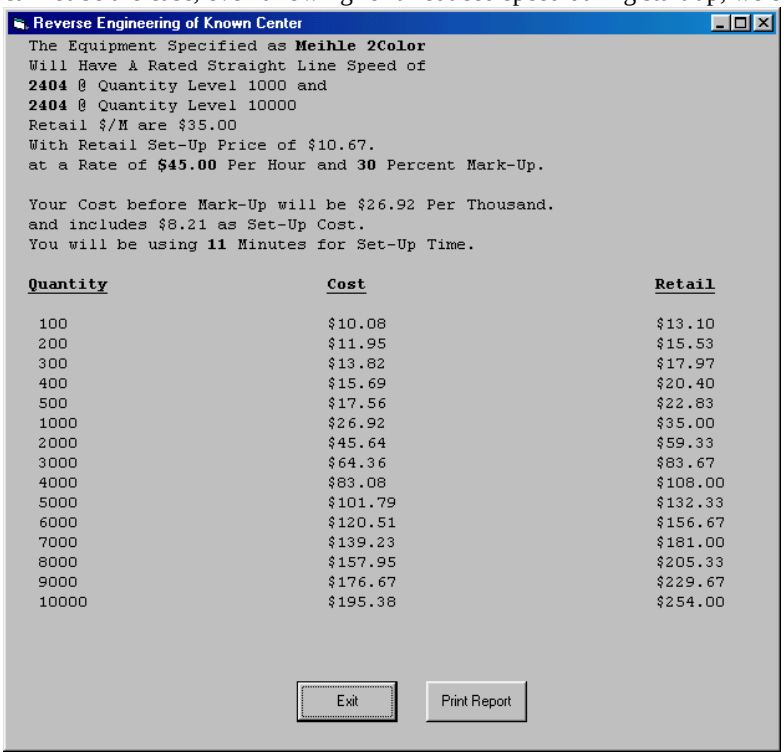


Figure 14 – Reality Check

increase the markup to see if that makes a difference in this reality! Figure 15 now shows a much different picture. Rather than accepting only 30% Markup, we see that we can actually obtain 200% markup if we are able to charge the kind of rates that our competition does. In other words, if are are able to accept less than $200%, then we should be able to win ever bid that comes our way!

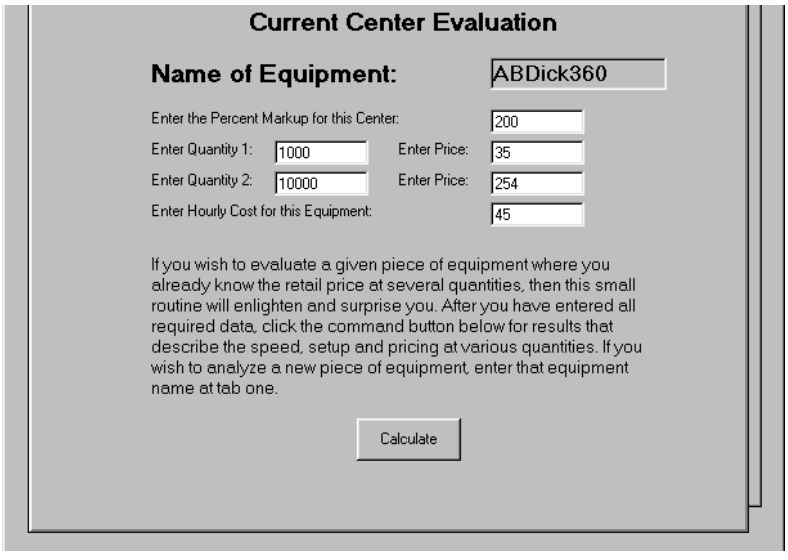


Figure 15 – Now That's a MarkUp

Now reviewing Figure 16 shows the incredible truth of the competition's pricing structure.

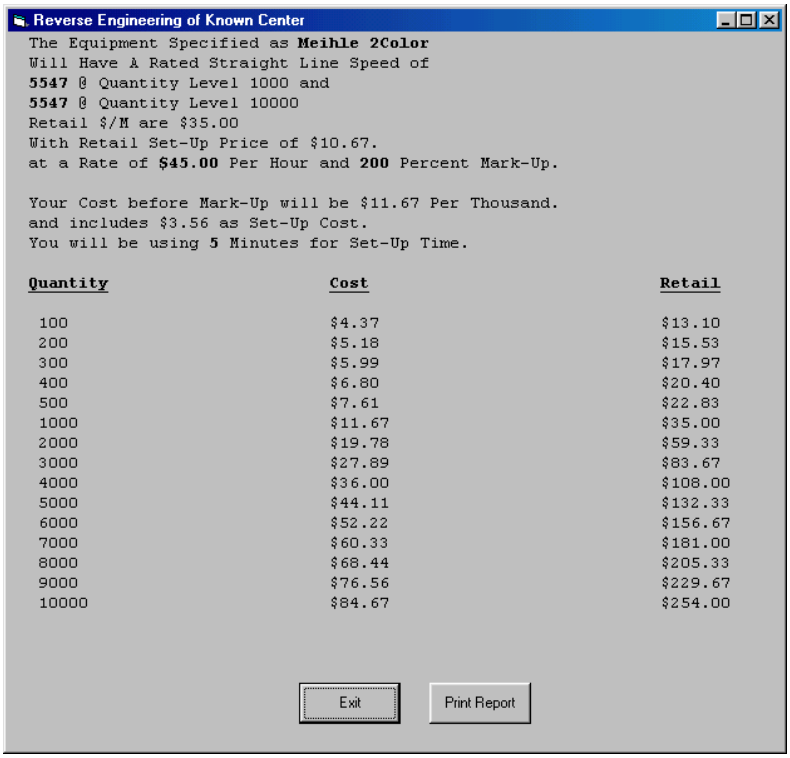


Figure 16 – Speed and Setup Time Right On

With the report now showing a speed of 5547 and a setup time of 5 minutes, we know the values are correct. A quick check for 1000 shows the cost of the press run to be (1000/5547*60 + 5)/60 * 45 = 11.86 which matches closely with the value calculated above.

In addition, we also know that based on the speed and setup times shown, out cost for this job is $11.67 for a 1000 and $84.67 for 10,000. That in itself gives us a lot of latitude in determining where we want to be when the final price is given to the customer. With a 200% MarkUp, we have an incredible amount of flexibility in determing what the final price will be.

And we can give that price without feeling like we just gave away the entire farm!

Glossary of Terms

Occupation Burden

The Occupation Burden is calculated by using the cost of the installed equipment divided by the cost of all equipment multiplied times the total square footage of the plant.

Burdened Equipment

A general method of allocation that distributes non-productive costs such as office personnel, estimators, clerical help, etc., to various productive methods within a company.

U

Up 7

Index

D

Data Files 3

I

import 14–19
Installing 3, 4–5

M

Menu 4

N

Network 4

O

Order Entry 7–14

P

Professional Estimator 3
Program Folder 5

R

Register Features 3

S

Splash Screen 4, 8
Start-Up 7

T

Technical Support 6