

USING THE PALLET COSTING SYSTEM TO DETERMINE COSTS AND STAY COMPETITIVE IN THE PALLET INDUSTRY

A. Jefferson Palmer, Jr.
Bruce G. Hansen
USDA Forest Service
Northeastern Research Station
Princeton, WV

ABSTRACT

In order to stay competitive and keep production costs at a minimum, wood pallet manufacturers must plan, monitor, and control their various production activities. Cost information on pallet manufacturing operations, must be gathered and analyzed so that the plant manager can determine whether certain activities are efficient and profitable. The Pallet Costing System (PCS) has been designed to compute the cost of fulfilling a pallet order by focusing on major activity centers and cost items. This paper presents PCS and describes how the program can be used to help determine pallet manufacturing costs. Alternatively, PCS may be used as a "what if" tool, wherein the manager can adjust various factors such as species mix, yield, and labor and machine costs to examine their impacts on total production cost.

INTRODUCTION

PCS is designed to aid decision-making in that the resulting cost information, when used in conjunction with external economic influences, may be used as input to the pricing decision. It is important to understand that PCS is not a pricing tool. It is designed to compute the cost of producing an order of wooden pallets only.

Perhaps one of the most important functions of the PCS is its ability to calculate input wood requirements by considering the yield information specified by the user. Pallet part yields are defined as the material volume that remains after grade loss due to cutup, resawing, and other manufacturing processes (waste and kerf). The yields are entered into the program as percentages, and are used to calculate the total material volume (in board feet), and material cost per pallet.

PCS was developed to operate in a Microsoft Windows environment and works much like any other Windows-based program. The user interface contains a system of indexing tabs that allow for easy navigation from window to window. An onboard help facility exists to explain various sections of the program. Other standard interface objects include a menu bar, tool bar, status bar, and calculator. The Pallet Costing System also contains an example file that demonstrates how the application works. The file is listed as Example.pcs.

ORGANIZATION AND FUNCTION

In order to make PCS user-friendly, we have designed a simple and well-organized user interface. PCS is divided into three sections: mill profile, pallet order, and cost report. The mill profile and pallet order sections are arranged in a series of pages which require data entry from the user. The cost report section functions as an output window that displays summarized and detailed cost information.

THE MILL PROFILE SECTION

The first step in using PCS is for the user to enter the mill profile section and input information about their pallet manufacturing operation (Figure 1).

Figure 1. The Mill Profile section with the machine information page selected.

Pallet Costing System - [Mill Profile]

File Display Options Help

Mill Profile Pallet Order Cost Report

Company Information Processes Material Usage Labor Costs **Machine Information** Overhead Costs

Enter or edit information on the machines generally used to manufacture pallets.

Machine description	Initial cost (\$)	Salvage value (\$)
HOLTEC Transcut II Station	20000.00	15500.00

Primary use: Estimated useful life (yrs.): 15.00 Daily operating hours: 8.00

☒ Cross-cutting ☐ Ripping ☐ Notching ☐ Chamfering ☐ Assembly ☐ Marking ☐ Drying

Operating days/yr.: 275.00 Maintenance cost/yr. (\$): 1000.00

Additional information about this machine
Our company saw this machine in the November 1999 issue of AMERICAN PALLET.

Machine 1 of 7: Cost per hour = \$59

Ready

Once this information is entered, the user will not have to reenter mill data for additional pallet orders unless changes are made to the mill setup. These changes may include the purchase of new equipment, disposal of obsolete machinery, and/or changes in the number of employees working at the mill. There are six data-entry pages in the mill profile section that are visually organized as a series of tabbed file folders: Company, Information, Processes, Material Usage, Labor Costs, Machine Information, and Overhead Costs.

COMPANY INFORMATION

Company information about the mill is entered on this page. This includes the mill's name, address, city, state, zip code, telephone number, fax number, and email address. PCS uses the information only to label the printed cost reports. This information is not used in computing production costs. Therefore, the entry of data on this page is optional.

PROCESSES

PCS focuses on seven manufacturing processes: cross-cutting, ripping, notching, chamfering, assembly, marking, and drying. The user must provide detailed information on those processes that pertain to his/her operation.

MATERIAL USAGE

The total volume (in board feet) of wood consumed in the previous 12 months is used to derive a manufacturing overhead rate based on volume of cant and/or lumber input. A single numeric figure representing total wood use is requested.

LABOR COSTS

Information on production employees who are involved directly in pallet manufacturing is entered on this page. PCS requests the number of employees, hourly wage, and fringe benefits (expressed as a percentage of hourly wage) for each manufacturing process defined by the user. Other earnings such as management and office salaries should be included in the Overhead Costs section.

MACHINE INFORMATION

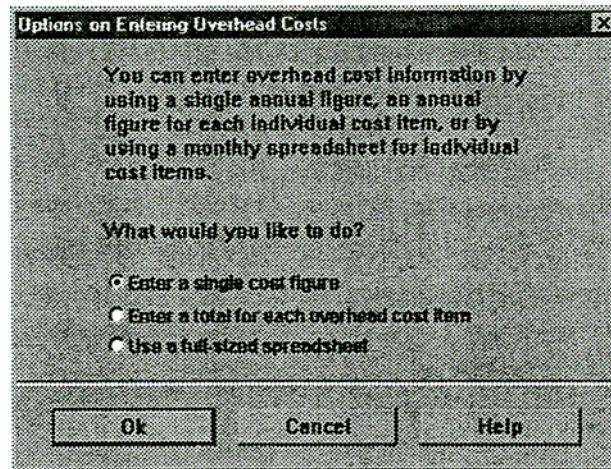
The user is asked to define the machines used in pallet production. PCS allows the user to define up to 50 machines. Each machine must be given a description and a primary use (e.g., cross cutting, ripping, assembly).

For each machine, the following also is requested from the user: initial cost, estimated salvage value, estimated useful life in years, average daily operating hours, days to be operated per year, annual maintenance cost, and optional comments or notes for the machine.

The machine information is subsequently used to allocate machine cost on an hourly basis.

OVERHEAD COSTS

Figure 2: Dialog that displays the options for entering overhead costs into PCS.

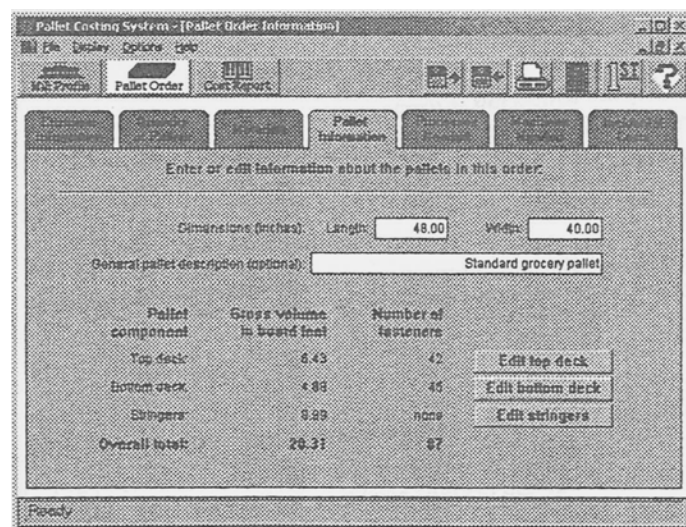


PCS provides three options for entering overhead costs not directly related to pallet manufacturing, such as administration and advertising (Figure 2):

- as a single, total figure for the previous 12 months
- as the previous 12-month costs summarized by item
- as itemized costs for each month in the previous 12 months

THE PALLET ORDER SECTION

Figure 3: The Pallet Order section with the Pallet Information page.



After the Mill Profile section has been completed, PCS is ready to accept information about a specific pallet order. There are seven data-entry pages in the Pallet Order section that are arranged as a series of tabbed file folders: Customer Information, Quantity of Pallets, Materials, Pallet Information, Processes Needed, Machines Needed, and Incidentals Costs (Figure 3).

CUSTOMER INFORMATION

The first page of the Pallet Order section is very similar to the Company Information page in the Mill Profile section, but questions relate to the customer and includes the customer's name, address, city, state, zip code, order number, fax number, email address, internet address or other information. Entering customer information into PCS is optional since it is not used in computing production costs. However, the information may become useful for identifying a specific cost report when multiple reports are being printed.

QUANTITY OF PALLETS

The number of pallets of a particular kind to be produced is entered as a single figure on this page. If the user does not indicate the number of pallets, PCS cannot calculate the cost of raw materials. If more than one pallet type is included in the order, a separate PCS run must be made for each pallet type.

MATERIALS

The user can specify the wood, fasteners, and marking «)t treating)'materials that are to be used in filling this order.

- Wood - the user may define up to four species (including mixed), their form (cant or lumber), and the average cost per thousand board feet (MBF).
- Fasteners - the user may define up to three types, the quantity of fasteners per unit (i.e., the number of fasteners in a package), and the cost per unit or package.
- Marking or treating material - PCS asks for the estimated gallons of material used to mark, treat or fumigate 100 pallets and the cost per gallon.

PALLET INFORMATION

With each pallet order, the user must define the pallet's actual length, width, height, and the following characteristics of the top and bottom decks:

- actual board thickness
- actual board width (user can define up to four widths)
- number of boards of each specific width
- species
- number of fasteners (of a specific type) used to fasten each board
- yield factor (the ratio of the volume of use able deckboards produced per board foot volume of input wood). The default value for deckboards is 81 percent.

The stringers are defined by entering the following information:

- actual stringer height (which corresponds with the width of the stringer board)
- actual stringer width (user can define up to three widths; corresponds with thickness of stringer board)
- number of stringers of each specific width species
- yield factor (the ratio of the volume of stringers coming out and the volume of wood going in). The default value for stringers is 73 percent.

PROCESSES NEEDED

PCS assumes that all pallet-manufacturing processes identified by the user in the Mill Profile section, will be used for every order. However, some of the processes (defined in the Mill Profile section as cross-cutting, ripping, notching, chamfering, assembly, marking, and drying) might not be required for certain pallet orders. For those not required, the user can deselect a process. By doing so, associated machine and labor costs for each deselected process are not considered in computing the cost of production.

MACHINES NEEDED

Some pallet manufacturers might have more than one machine per department (or process). Depending on the situation, a mill might choose one or more machines to process an order. PCS allows the user to enable or disable any machine defined in the Mill Profile section. When a machine is activated, its hourly cost is used in assigning

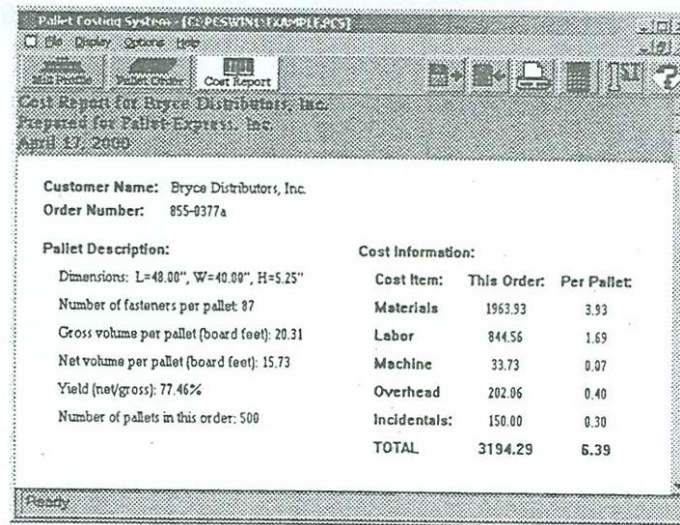
a final cost for the pallet order. When disabled, hourly cost is not used in figuring production costs. By default, all machines defined in PCS are enabled.

INCIDENTAL COSTS

Some users might want to consider other costs such as transportation, heat sterilization, and storage. The Incidental Costs page provides space for the user to enter any incidental costs not defined elsewhere. Any cost figure entered on this page represents an incidental cost for the entire pallet order and will be divided by the number of pallets produced to obtain a cost per pallet. You must enter the total for all incidental costs. Use the calculator to help if necessary.

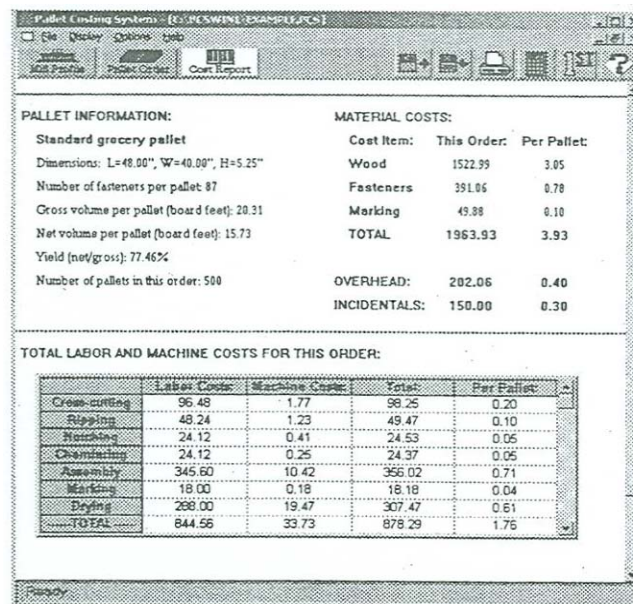
COST REPORT SECTION

Figure 4: The summarized cost report section with the pallet description on the left, and itemized costs on the right.



After the Mill Profile and Pallet Order sections have been completed, PCS creates a report section that displays the total production cost by item (materials, labor, machine, overhead, and incidentals if applicable). The cost report can be viewed as a summary (Figure 4), or as a detailed description of manufacturing costs (Figure 5). The user has the option of printing the summarized or detailed onscreen report.

Figure 5: The detailed Cost Report section with labor and machine costs for each manufacturing process.



SYSTEM REQUIREMENTS

The minimum computer system requirements for the Pallet Costing System are:

- IBM® compatible PC
- 486 processor or higher
- Microsoft Windows® version 3.11 or higher
- At least 8 megabytes of random access memory (RAM) . 5 megabytes of available hard disk space
- 3.5-inch floppy disk drive

OBTAINING A COPY OF THE PCS SOFTWARE

PCS is free of charge and can be obtained by contacting Jeff Palmer or Bruce Hansen at the following:

USDA Forest Service
Northeastern Research Station
241 Mercer Springs Road
Princeton, WV 24740
Phone: (304) 431-2739
FAX: (304) 431-2772
E-mail: bghansen@fs.fed.us

Proceedings of the 29th Annual Hardwood Symposium

Sustaining Natural Resources on Private Lands in the Central Hardwood Region

2001 NHLA Annual Symposium
French Lick Springs Resort & Spa
French Lick, Indiana May 16 -19,
2001



Proceedings of the 30th Annual Hardwood Symposium

Current Topics in the Processing and Utilization of Hardwood Lumber

2002 NHLA Annual Symposium
Fall Creek Falls State Resort Park
Fall Creek Falls, Tennessee May
30 - June 1, 2002

Proceedings of the 29th Annual Hardwood Symposium

**Sustaining Natural Resources
on Private Lands in the
Central Hardwood Region**

Proceedings of the 30th Annual Hardwood Symposium

**Current Topics in the
Processing and Utilization
of Hardwood Lumber**

Edited by Bryan Smalley National
Hardwood Lumber Association
Memphis, Tennessee

