

ON THE CUTTING EDGE

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A WORK ORDER MANAGEMENT SYSTEM HAS ELIMINATED THE NEED FOR MANUAL DATA COLLECTION AND REPORTING IN A ROLL CONVERTING OPERATION.

ROLLSOURCE, A DIVISION OF UNISOURCE, WITH head-quarters in Des Plaines, IL, partners with manufacturers to produce custom cut paper rolls for companies specializing in high speed web printing for commercial printing, business forms, publishing, and stationery products. Rollsource purchases paper stock from mills as large parent rolls, 60 or 72 in. wide, weighing more than 2000 lb. They are converted into narrower, customer specific rolls that can produce as many as 24,000 sheets of paper.

Rollsource decided to review its ordering, labeling, and delivery procedures to look for ways to streamline the process. "Our goal was to simplify, modernize, and improve our converted roll ordering and labeling system," says Jim Fricke, vice president of technology. Responsiveness to customer needs and accurate stock tracking procedures were central themes for the upgrade process. Many Rollsource customers have computerized receiving systems that require bar coded information on each roll; some require advance ship notices via EDI, and some need a unique roll identifier that Rollsource assigns to each roll.

Rollsource also required an efficient way to electronically track the master roll ID numbers of paper rolls that moved through their converting facilities. Electronic collection of parent and converted roll weight information was also necessary.

Once the system requirements were defined, Rollsource contacted Don Hildebrand, executive vice president, sales and marketing manager, of ViaTech Systems, Inc., Olympia, WA. ViaTech worked with Rollsource to develop a specification that dealt with order entry, order distribution to remote locations, high quality label printing, and information collection in order to address the new customer service requirements. A review of the process of converting rolls, from taking the order to shipping the roll, revealed the need for a comprehensive Work Order Management System (WOMS) to eliminate the need for manual data collection and reporting.

ViaTech developed a functional specification for the WOMS. After it was approved by Rollsource, ViaTech contracted with Bob Schraufnagel, president of Peregrine Systems, Eau Claire, WI, to put together the computer hardware and custom software necessary to implement the new system. Peregrine Systems and ViaTech worked together to identify the best equipment to get the Rollsource system up and running.

IMPLEMENTATION

The development team decided to implement the system in phases. Phase one was the largest task. Here the entire framework of the system was put in place at the Rollsource corporate office in Des Plaines. Peregrine Systems worked with Rollsource staff to create database management software. Existing data were converted and entry of new information was completed. The operational system was beta tested at Des Plaines before it was installed at the remote sites.

During phase two the shipping, labeling, and manifesting system was implemented at all six converting plants. EDI was implemented in phase three, with one of the remote plants providing EDI services to customers.

Phase 1: WOMS development

Rollsource determined that creating a direct, real-time link to the UNIVIS Legacy System from the new PC network was not practical, so the WOMS became a stand-alone system that would simplify work in conjunction with UNIVIS. Dial-up modems would be used to share information among the five remote plants. Each plant would have a standalone system, and its database would be updated nightly from the master computer's database in Des Plaines. Product order, label, and customer information would be stored and updated on the master computer.

Peregrine Systems designed the initial WOMS application framework based on information collected during several site visits and the ViaTech functional specification document. Periodic site visits were held to verify that the emerging framework would meet the project's goals. Once the framework was completed, Peregrine Systems converted the existing product and customer database tables into the WOMS database format.

The new PC network was installed in the Des Plaines facility, and the system was put into operation. After a brief training session, the system went live. During the next few weeks, the system was fine-tuned based on actual conditions encountered while working in conjunction with the UNIVIS system.

"I can't tell you that the system came together like clockwork," says Jon Reintjes, quality assurance manager at Rollsource. "But we realized that we were breaking new ground in the roll conversion industry. Dealing with professionals who were able to work with us to meet our needs has made the process very rewarding."

Once the WOMS system was operational in Des Plaines, five identical systems were installed at Rollsource converting facilities in Windsor, CT; Columbus, OH; Kansas City, KS; Atlanta, GA; and Los Angeles, CA.

Phase 2: Mini-label/manifest system

Phase two uses customer and product information stored in the WOMS database to create customer-specific bar code labels for application to stock rolls of paper. Rollsource doesn't convert every roll of paper it ships. Most standard sizes of paper are stocked at each plant, and customer orders are filled using stock rolls. The mini-label subsystem was designed to create labels for customers with custom bar code requirements.

A Percon Top Gun™ portable data terminal (PDT), shown in **Fig. 1**, is used to collect the master roll ID number, roll weight, and Rollsource stock number from all stock rolls to be shipped. The collected information is downloaded into the mini-label subsystem PC. This computer is connected to the WOMS computer via an Ethernet network. The operator verifies the accuracy of the collected information and enters the customer's ID number, PO number, and other shipment specific information. Information from converted orders can be imported as well to allow one continuous manifest for a customer's order. The operator can then print manifests and mini-labels. A Zebra Stripe 500™ printer is used to print mini-labels on 4 in. x 9 in. label stock. The default mini-label template satisfies most customers' requirements, but like the converted roll labels, each customer can have a specific label template if necessary.

With the mini-label system, it is now possible to provide the same level of roll detail information as in the converting system. In the past, if part of a customer's order had to be converted and the other part was a stock order, the customer would get two separate manifests for the same order. The mini-label system works with the converting system to combine the two separate orders on one shipping manifest. It is only necessary to collect the information on the stock rolls. The system will retrieve the converted information and combine the manifests automatically.



1. A portable data terminal is used to collect information from stock rolls waiting to be shipped.

Phase 3: EDI

Phase three was initiated when one of Rollsource's largest customers requested advance ship notices transmitted via EDI. The mini-label subsystem already collected all the information necessary for this advance ship notice. The mini-label software was modified to export the collected information through Windows automation to St. Paul Software's EDI Easy module. Each day, after all orders requiring EDI are processed, operators go into the EDI Easy module and transmit the day's EDI transactions.

Previously, when customers received the rolls, they had to enter manually the information from manifests and labels into their computer systems. With the advent of EDI, all roll information is sent to the customer's computer system before the rolls arrive. When the rolls do arrive, it is a simple matter of scanning the unique identifying number on each roll to receive the rolls into inventory.

HOW THE SYSTEM OPERATES

Roll converting orders are taken by customer service representatives. The orders are then given to the WOMS data entry personnel. In the past, this staff manually created roll labels from the work orders and routed or faxed the labels to the appropriate facility. Now the orders are entered directly into the WOMS master computer. During

Enter Customer Information

ID: 100232 Phone: 800 555-5555

Customer ID: SAMPLE Contact: JIM

Name: ROLLSOURCE SAMPLE CUSTOM Title: VP TECHNOLOGY

Ship Address 1: 2392 SOUTH WOLF ROAD Mini Label Format: DGMAIN.LBL

Ship Address 2: Label Format: DBMINI.LBL

Ship City: DES PLAINES Single Wrap Rolls: ☐

Ship State: IL Ship Zip: 60018 Max Package Width: 10

Bill Address 1: 2392 SOUTH WOLF ROAD Customer Specific Line 1:

Bill Address 2: Customer Specific Line 2:

Bill City: DES PLAINES Customer Specific Line 3:

Bill State: IL Bill Zip: 60018 Customer Specific Line 4:

Location: Chicago Customer Specific Line 5:

Customers: Customer Specific Line 6:

 Customer Specific Label 1: PO NUMBER

 Customer Specific Label 2: BIN NUMBER

Customer Specific Label 3: CARRIER

Customer Specific Label 4: RELEASE NUMBER

Customer Specific Label 5:

Customer Specific Label 6:

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2. Customer information screen for Work Order Management System.

Create Mini Labels

 Scheduled Ship Date: 06/26/1997

Roll Source Order Number: TEST Carrier Name: 2534ZY76

Customer Number: 119262 Trailer Number: W2354

ADAMS BUSINESS FORMS Extra Customer Information 3:

2ND JACKSON-WEST BLDG Extra Customer Information 4:

TOPEKA, KS 66601 Extra Customer Information 5:

Customer PO Number: R54678 Extra Customer Information 6:

Stock	Width	Description	Wgt	Order Num	RS PO	Lin.	Extra1	Extra2	Parent Roll ID
274142	15	100# WHITE BERLIN	733	30821	R6716				7149207405
274229	12	100# WHITE ST.	733	30821	R6716				7149207405
224155	19	24# WHITE MOCR	735	30821	R6716				7149207505
224155	19	24# WHITE MOCR	735	30821	R6716				7149207505
224155	19	24# WHITE MOCR	735	30821	R6716				7149207505

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3. Information to appear on mini-labels can be input on this screen.

nightly communications, newly entered work orders are sent to the designated plant, and collected roll information is returned to Des Plaines. If an urgent order is entered, data entry personnel can have the new system communicate immediately with any one of the plants.

A crucial requirement of the system was the enhancement of roll labels to provide customers with bar coded information. Peregrine Systems worked with Roll-

source to create a standard roll label template that includes enough bar coded information to satisfy most customer requirements. The system also uses label design capabilities to satisfy customers requiring specific bar coded information. Unique label templates are designed at Des Plaines when required and transmitted to all the remote sites. LabelView™ Gold, label design software produced by Teklynx, Troy, OH, is used for the design and printing of all roll stock labels. LabelView Gold runtime is installed at each Rollsource site.

"My primary goal in designing the system was to provide maximum flexibility," says Bob Schraufnagel of Peregrine Systems. LabelView permits Rollsource staff to format custom labels without the need for a programmer to change the system, he explains. The WOMS software uses dynamic data embedding (DDE) automation to communicate with LabelView. During the printing process, commands are sent to LabelView to load the label format, select the printer, assign values to label fields, and print a label. The result is a very high quality roll label, printed on a PaperMill laser label printer manufactured by Lotz Industrial Printer Co., Harleysville, PA. This label is functional, attractive, and easily read by Rollsource customers.

The WOMS has the ability to map a customer's internal product numbers to each Rollsource product number. These customer product numbers are included on customer labels and EDI transactions. When customers receive roll stock, the bar-coded information can be used

quickly to enter products into their own automated receiving systems. Figures 2-4 illustrate some of the computer screen displays used by the system.

Each converting work center is equipped with an IBM compatible computer and a 15 in. touch-screen monitor mounted in an industrial pedal-based enclosure. The enclosures are necessary to protect the equipment from the hazards associated with a manufacturing environment.

Roll converting orders are displayed on the touch-screen monitor. The operator simply touches the work order number to be converted, as shown in Fig. 5. The rewind operator scans the master roll ID number on the mill label of the parent roll and enters the weight and splice information. Once the order has been rewound and slit, it is labeled and wrapped.

The operator rolls each paper roll onto the horizontal traverse stretch film wrapping machine. The HTW wrapper rollers are mounted on top of an electronic scale that is connected to the WOMS via an RS-232 cable. The operator touches the appropriate roll on the screen and presses "print" on the scale indicator. The scale weight is stored in the WOMS data files, and a 10 in. x 14 in. roll label is printed by the label printer. The label contains the master roll ID number of the parent roll and customer and product information. Once all converted rolls are weighed, labeled, and wrapped, a shipping manifest is automatically created. The converted rolls are then staged for shipping.

All collected information is transmitted to the master computer in Des Plaines nightly, and a summary report is printed. If there is a paper stock quality problem, the master roll ID number can be obtained from the WOMS system by searching the work order database. Work orders can be searched by customer, product, date of production, customer PO number, or work order number. Most searches can now be avoided because all necessary information is printed on the new labels.

BENEFITS

Rollsource was having trouble keeping up with the paperwork involved in processing orders before the WOMS system was implemented. The company would have needed to hire two or three more full-time staff members to process growing order information on a daily basis. The system has greatly improved the efficiency of its converting operations.

The WOMS system has made it possible to track stock from parent rolls to the finished roll. If the original stock is bad, it is now possible to find its origin so Rollsource can be credited for the unusable stock. This allows Rollsource to ship a replacement roll to its customers quickly.

WO #: S1704 - Convert and Weigh Rolls

Customer	AVEEL	AVEEL	AVEEL	AVEEL	AVEEL
Item No.	461176	461176	461176	461176	461176
Width-Diameter	08 1/2-40"/6"	08 1/2-40"/6"	08 1/2-40"/6"	08 1/2-40"/6"	08 1/2-40"/6"
RS Order No.	18168	18168	18168	18168	18168
Weight	924				

Customer	AVEEL	AVEEL	AVEEL
Item No.	461176	461176	461176
Width-Diameter	08 1/2-40"/6"	08 1/2-40"/6"	08 1/2-40"/6"
RS Order No.	18168	18168	18168
Weight			

Parent Roll Info

ID #: IP124549785

Stock

Weight: 2497

Side Out ☒ Wire ☐ Felt

R/S PO#: W2549

Splices

☒ None ☐ 1 ☐ 2

Unwind Dir ☐ Right ☒ Left

Done

Enter Weight

4. Work order information can be input on this screen.

Rollsource's main goal has always been to ship a customer's order the day it is received. The WOMS system helps to maintain that goal by allowing orders to be instantly transmitted to any remote site from the customer service center. TJ

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5. An operator selects a work order number to be converted by using a touch-screen monitor.