

RCA at Clopay

Here's innovation in
management accounting with
Resource
Consumption
Accounting.

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An emerging cost method, Resource Consumption Accounting (RCA) produces more accurate results compared to traditional cost methods and provides more detailed information. But is dealing with more details worth it? Is the view worth the climb? Based on the results from a pilot application at Clopay Plastics Products Company, we think it is, especially in light of the recent economic downturn where paying closer attention to resources and properly accounting for their consumption are more important. Because of the accurate and detailed information RCA provides, decision makers have the information they

need to help them fulfill company strategies.

Based in German cost management principles as found in Grenzplankostenrechnung (GPK), RCA works well with enterprise resource planning (ERP) systems, capturing information at the lowest level (such as the manufacturing point) to accurately determine costs. It digs down to the resource level—for instance, costs related to the machine the product is manufactured on, the laborers on the line, electricity to run the machine, etc.—to provide high-quality underlying information in the system. Traditional systems typically provide distorted cost data and just don't produce the kind of detail available with RCA. When a manager faces a special decision, such as whether to outsource or to make a product, they should feel confident that RCA is providing accurate data to support the decision. The most recent survey information we have (the 2003 IMA/E&Y study, published in the July 2003 issue of *Strategic Finance*) tells us that 98% of managers don't trust the underlying data in their current management accounting system. Something has to change.

Here we highlight Clopay's real-world experience with an RCA cost management system on a pilot basis. The RCA pilot data provides increased product cost accuracy and facilitates capacity management, among others. Let's begin with a quick look at the company and what RCA does.

CLOPAY PLASTICS COMPANY

Headquartered in Cincinnati, Ohio, Clopay has U.S. film manufacturing operations in Augusta, Ky., and Nashville, Tenn., as well as others in Germany and Brazil. The company manufactures plastic products, such as film, that are sold to consumer product companies for use in hygiene and healthcare products. In addition to providing innovation in the plastic film industry, Clopay has pursued progressive cost accounting methods that led to their involvement during the first quarter of 2002 in the Resource Consumption Accounting Interest Group in the Consortium for Advanced Manufacturing-International (CAM-I). This group meets quarterly to discuss and produce white papers and other "deliverables" regarding applications of advances in managerial accounting tools and concepts in manufacturing and other industries. (You can visit www.cam-i.org for more information on this not-for-profit, cooperative membership organization.) As a result of these discussions, Clopay agreed to provide a pilot application of RCA principles in their Augusta, Ky., operations.

The Clopay Augusta plant manufactures 200 products in 60 product families that have historically resulted in

approximately \$70 million in annual revenue from the healthcare and personal hygiene markets. Beyond the manufacturing area, there are five departments that support the Augusta operations, including shipping, materials management, quality assurance, plant maintenance, and administration.

Before the RCA pilot, the Augusta Clopay plant used a traditional standard costing system and generally based their standard product costs on planned machine hours and sales in pounds. They allocated support department costs to the production departments using the direct method based on various allocation bases including machine hours, pounds produced, purchased pounds, and headcount in each production department. These costs consisted of indirect labor, support labor, office supplies, and other depreciation. Production departments then added their own overhead costs to the fully absorbed support costs in creating a standard cost for overhead.

RESOURCE CONSUMPTION ACCOUNTING

As RCA is rooted in German cost methods and quantity-based activity-based costing (ABC), it uses a comprehensive management accounting information systems approach that allows the integration of both resource and activity analysis. It is fundamentally resource based, providing cost assignment from resources to cost objects as properly attributable based on causality. Drivers used for cost assignment, however, can be either traditional (e.g., labor hours) or activity based. RCA doesn't force an activity-based assignment where deemed inappropriate, but it uses the cost assignment logic necessary to achieve properly attributable costs.

Cost management methods have developed differently in the U.S. than in German-speaking countries. Their evolution has developed on the strength of the American capital markets system giving more emphasis to financial accounting and external reporting. Because of this, U.S. management accounting systems aren't as sophisticated as those in some other developed countries of the world. Thus, American cost management could benefit from integrating some German systems best practices with those of their own. In fact, many of the best practices are evidenced by RCA. Table 1 shows a list of some important RCA benefits, a brief summary of how some of those benefits were realized specifically by Clopay, and a comparison to the common features of U.S. cost management systems.

Major RCA concepts include important features in three central areas: resources, quantity-based cost assignment, and the nature of costs. Although it's difficult to

Table 1: Important Benefits of RCA Over Traditional Cost Management Systems

RCA	TRADITIONAL
Attributes the cost of excess/idle capacity to the person or level responsible for influencing the resource but doesn't allocate it to products.	Excess/idle capacity isn't identified and thus can't be associated with the appropriate person or level and is routinely allocated to products.
Facilitates capacity analysis by using theoretical volume for cost rates and making excess/idle capacity visible to managers.	Obscures capacity analysis by using master-budget volume for cost rates and not accounting for excess/idle capacity.
Uses replacement cost depreciation to provide useful internal cost decision support information.	Uses depreciation prescribed by the external reporting system that often does not reflect economic reality.
Pulls cost of resources consumed to cost objects by using nondollar, quantified output-consumption relationships based on causality.	Pushes cost of resources supplied to cost objects by spreading all costs incurred over finished goods units produced.
Identifies and assigns costs as innately fixed or variable (proportional) at the resource level, accurately specifying the nature of costs.	Identifies and assigns costs as innately fixed or variable at the product level, obscuring true cost consumption patterns.
Recognizes that innately proportional costs can be consumed in a fixed manner and provides required treatment.	Provides no recognition of cost consumption patterns at the resource level.
Provides decision makers the ability to track and group cost information at virtually any level—from the resource level to the organization level.	Groups costs at a department or product level with little or no provision for tracking or accessing costs at lower levels.
Facilitates operations management with quantified actual nonfinancial information to compare to planned or standard quantities.	Nonfinancial information is often sparse or unavailable since costs are frequently allocated based on percentage relationships without tracking resource quantity consumption.

RCA BENEFITS CLOPAY REALIZED

- ◆ Properly attributing costs to specific production processes and their outputs resulted in more accurate cost assignment and a better understanding of resource consumption patterns.
- ◆ The achievement of more accurate cost assignment provided the ability to conduct resource planning using only relevant costs.
- ◆ The use of replacement cost depreciation eliminated the issue of unequal cost assignment for similar products that consumed the same resources and support activities.
- ◆ Product costs included only the cost of resources used.
- ◆ The amount of excess/idle capacity was made available to managers based on unconsumed theoretical capacity.
- ◆ Cost assignment based only on causality eliminated costs that were previously assigned based on unrelated changes to other products.
- ◆ Incentive to nonstrategically lower selling prices to artificially manipulate cost allocation amounts to specific products was eliminated.
- ◆ Properly identifying resource consumption based on the innate nature of particular costs enhanced managers' ability to understand resource interrelationships and use the underlying information to support incremental decision making.

quickly explain all RCA principles, the sidebar on p. 24 provides a snapshot of them, and you can find a general description in “Resource Consumption Accounting: The Next Generation of Cost Management Systems” at www.focusmag.com in *Focus* magazine’s Volume 5, 2002, edition.

PROBLEMS WITH CLOPAY’S PREEXISTING PRODUCT COSTING METHOD

Clopay’s preexisting costing system was a classic example of a full-absorption method creating the potential for fixed-cost death spiral effects where, for instance, if there’s idle capacity, the costs are spread over fewer units, making the cost per unit artificially higher. Related to this cost assignment mechanism were three main costing issues: impacts of unrelated changes on product cost, depreciation, and customer influences. The primary issue was that costs for individual products changed based on unrelated changes to other products or resource costs associated with other products. The treatment of rubber rollers was an example of this. Their direct cost under the preexisting Clopay product costing method was initially assigned to maintenance as a part of overhead. This cost was then allocated to all types of machines used in the extrusion and converting lines—rather than to the extrusion lines only—even though rubber rollers were just used on products going through an extrusion process. Similarly, given the method of fully absorbed support department cost assignment, changes from other, unrelated areas of production or support costs could change a product’s cost.

The second costing issue related to assigning depreciation costs based on financial accounting. Where two machines differ in terms of age and cost, the preexisting Clopay system allocates higher costs to products made on the new machine, even though the products made on the old machine could be very similar. In some cases, the actual cost of maintenance on older machines could result in a higher product lifecycle cost to the company than replacing them with new machines, but cost assignment doesn’t reflect this. That’s why marketing managers selling products made in departments using old, fully depreciated machines appeared more profitable. To the degree that incentive compensation is tied to profitability or cost, this potential for cost distortion can result in counterproductive behavior on the part of managers.

Third, cost assignment affects customer and market issues as well. When product managers realized Clopay was going to eliminate or phase out a product, they lowered the selling price on alternate products or increased

RCA Principles

RCA is resource centric, looks closely at quantity of the resources consumed, and takes into account that the nature of costs will change. Here’s a snapshot look at the basic principles of RCA.

The focus on resource principles:

- ◆ Recognizes multiple and reciprocal relationships.
- ◆ Attempts to include all attributable costs in cost assignment.
- ◆ Provides a framework for capacity management.

The quantity structure principle:

- ◆ Bases the cost flows from the sender to receiver on quantity relationships.
- ◆ Decouples cost value from relationships defining resource consumption.

The RCA principle of recognizing the innate and potentially changing nature of costs focuses on two aspects:

- ◆ Determining the innate nature of an item’s cost at acquisition based on management’s decision or plan regarding how the resource will be consumed.
- ◆ Changing costs that are initially proportional by nature from proportional to fixed based on consumption patterns.

the volume of low-priced commodity products to increase volume for the remaining products. Given an expected decline in volume, managers knew those overhead cost dollars would be spread over a decreasing number of units and, in turn, would cause the cost per unit to increase, making the profit per unit decline. The result? This ineffective product costing system encouraged non-strategic management actions and often resulted in “giving margin away.”

LOOKING FOR A SOLUTION

Clopay management recognized that they were relying on inaccurate cost information and intuition that unfortunately provided a poor substitute for strategic cost information. Moreover, the current system couldn’t simulate cost results given changes in resources such as an additional machine or upgrading an existing one. As a result, Clopay agreed to serve as an RCA case study to investigate the differences between RCA and its current system.

For purposes of the RCA pilot application, the compa-

ny didn't consider some overhead costs such as information technology and corporate-level cost because of the timeline and workload constraints. Clopay also didn't include changes that RCA would have made given batch-related information—setup costs related to the machines, for instance. We'd expect more significant changes given a full RCA application where batch costs undergo a more sophisticated materiality test. In addition, the Augusta Clopay operation wasn't characterized by significant reciprocal relationships since only about 6% of total cost resides in support departments. Therefore, the misallocation of support department costs for the Augusta plant wasn't expected to significantly impact cost accuracy. Reciprocal relationships among resource pools would likely have resulted in greater changes in the cost results for plants where such relationships are significant.

THE RESULTS

Clopay used RCA to create 23 resource pools for costs in two categories: general support and production departments. Using 23 resource pools as opposed to eight support and six production departments offered the opportunity to better trace costs by type into resource pools. More resource pools provided more detailed information, which made for more accurate data to use when

making strategic decisions. This approach provided greater homogeneity than Clopay could achieve by using departments that contained a diversity of costs.

Figure 1 displays the relationships that define the Clopay RCA Cost Model. RCA assigns costs based on causality but doesn't insist on using activity drivers for cost assignment where such drivers are either unnecessary to achieve accuracy or aren't desired for some other purpose, such as achieving a greater understanding of processes or how to manage them.

RCA excluded fixed costs that couldn't be traced based on causality—the largest of these costs were due to idle capacity, which resulted in a total of 6% fewer conversion costs assigned by RCA than with the preexisting Clopay cost system.

Clopay implemented additional RCA features by using replacement cost depreciation for product-costing purposes and theoretical capacity for denominator volume. Using theoretical capacity resulted in underabsorbed overhead of more than \$2 million (i.e., actual overhead was higher than the amount assigned). The effect of the smaller cost assigned based on using theoretical capacity was somewhat offset with the higher cost associated with replacement cost depreciation. Yet neither effect provided the largest difference in results—the largest was due to

Figure 1: The Clopay RCA Cost Model

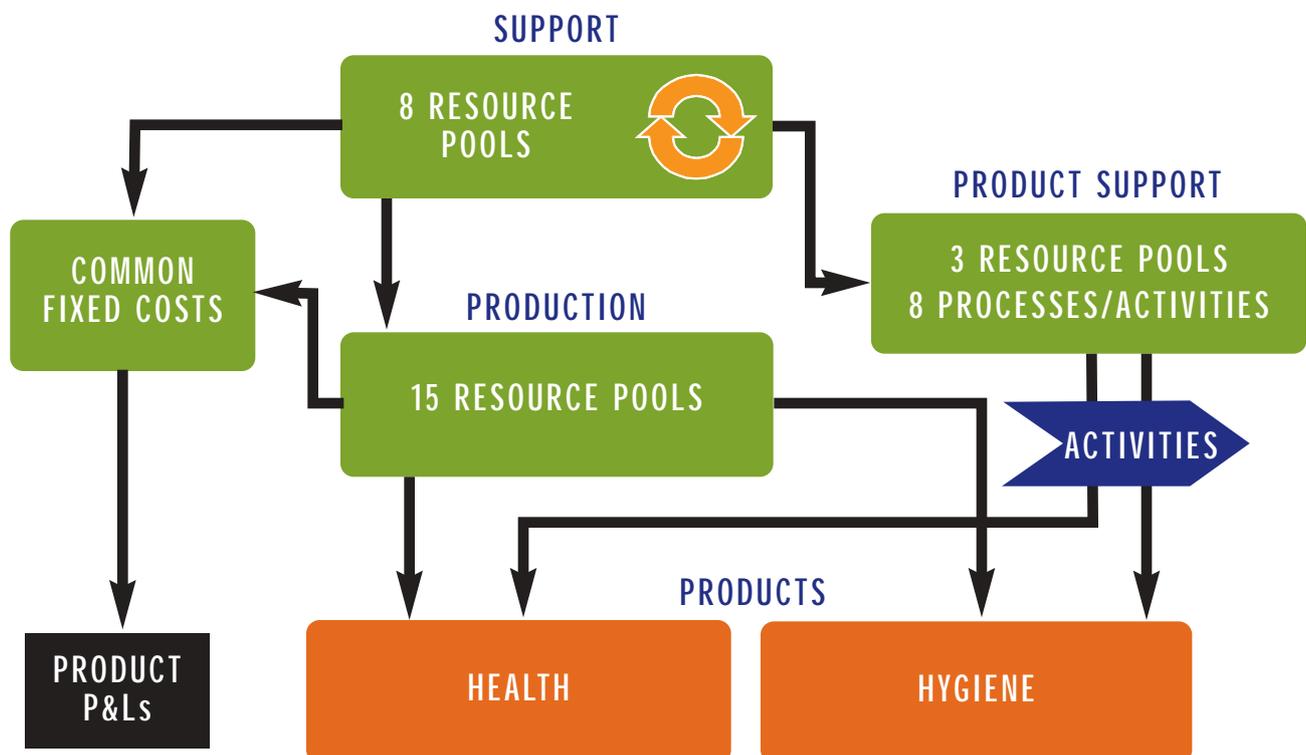


Table 2: RCA Product Cost Results

	Average Product Cost Change	Largest Product Cost Change
Total Conversion Cost	14%	40%
Proportional Conversion Cost	18%	49%
Gross Margin	29%	218%
Contribution Margin	4%	33%

following the RCA logic in cost assignment.

As Table 2 shows, product costs changed considerably. The average total product cost changed by 14%, and individual product gross margin changes were as high as 218%. Although the significance of the individual item percentage changes varies depending on the size of the initial base amount, the average differences would be significant to most companies and their products. These changes resulted primarily from recognizing causal relationships in assigning support costs. An important result Table 2 doesn't show is that the prices for more than 10% of the products didn't cover their proportional costs. Given that costs were more accurately determined with RCA than with the prior system, this should cause the company to consider their price structure for these and perhaps other products.

CAUSALITY IS KEY

The most dramatic effect in the RCA application at Clopay was the proper recognition of causal relationships regarding support department costs and their proper assignment based on resources consumed. Causality is the key principle to proper cost assignment relationships, and RCA requires it.

One relationship mentioned earlier involved rubber rollers where machines that didn't even use the rollers were being charged for them. RCA changed that. Since the cost of rubber rollers was fully attributable to the machines used in extrusion, RCA assigned the cost correctly to only the extrusion cost pools. After all, the extrusion line used the rubber rollers while the conversion line didn't.

Clopay also experienced a major shift from treating certain costs as fixed when they were innately proportional costs. Innate means the initial inherent nature of costs. For example, the Quality Assurance department cost was treated entirely as fixed under the preexisting Clopay product costing method. But the activities of the department, such as testing and product returns, consumed resources in a proportional manner. Because all Quality Assurance costs were treated incorrectly as fixed costs and allocated directly to production

departments, the data revealed the company was overcosting low-volume conversion line products and undercosting high-volume extrusion line products. This outcome is opposite of what you'd expect when correcting for cost-assignment inaccuracy using traditional standard costing.

Using replacement cost depreciation should reduce the tendency for cost distortion between lines that employ new vs. old machines. Replacement cost depreciation restates the cost to reflect the economic reality of capacity management associated with fixed asset replacement. Using a supply-based denominator concept, such as theoretical capacity, provides a consistent cost that doesn't change based on changes in other resources used elsewhere in the plant or changes in other products. Moreover, RCA assigns only the cost of the resources used. That is, excess/idle capacity is never allocated to products. Yet RCA makes E/I capacity visible to management so that they can do something about it, which is consistent with the capacity management framework RCA provides.

In summary, the RCA attributable cost concept assigned the cost to the correct cost pools. Properly recognizing the nature of the rubber rollers' cost resulted in a significantly higher cost for products that only went through extrusion lines and lower cost for products that went through both extrusion and conversion lines. Replacement cost depreciation does a better job of reflecting the economic reality managers face, and using a supply-based denominator concept promotes consistency that results in better marginal analytic decision-making information.

MORE TO COME

The case study at Clopay illustrates the importance of and need for reliable management accounting system information. With RCA cost assignment, Clopay increased the fundamental reliability of management accounting information the system provides. In addition, the use of replacement cost depreciation and theoretical capacity mitigates the risk of changes in cost assignment due to unrelated changes elsewhere.

We've only begun to skim the surface of this topic, but if you'd like to read a detailed analysis of the Clopay case, turn to the Fall 2004 issue of *Management Accounting Quarterly*, which will be available online at www.imanet.org at the end of November. ■

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