REWARDS AND REALITIES OF German Cost Accounting

Time-tested German cost analysis can help improve financial results. But first you have to grapple with its complexities.

BY KIP R. KRUMWIEDE, CMA, CPA

IN JUNE 2004, I WENT TO AUSTRIA, GERMANY, AND SWITZERLAND TO STUDY GERMAN COST ACCOUNTING as part of a project sponsored by the Institute of Management Accountants (IMA). It was one of the association's first research projects to learn how German cost accounting methods are used by German-speaking companies, to identify their benefits, and to figure out how U.S. companies might use them effectively. All told, I visited 11 companies, four professors, and three consultants in 15 German-speaking cities in 22 days. Here's an account of what I learned.

THE GERMAN COST SYSTEM

German-speaking companies have traditionally used advanced costing practices called Grenzplankostenrechnung (known as GPK in the U.S.). The rough English translation is "flexible standard costing," the primary elements of which I note in Table 1. The table also shows how typical U.S. companies use GPK compared to the 11 German companies I visited.

German firms that use GPK typically have integrated information systems based on SAP software, and they tend to have highly complex products and manufacturing processes. In contrast, manufacturers that use a continuous process usually don't use GPK because their processes are relatively simple and automated. Companies with relatively simple and automated processes won't benefit from GPK as much as those with many work centers, batch and job processing, complex products and processes, and both fixed and variable costs. Also, GPK isn't just for manufacturing companies. Deutsche Telekom, for example, has one of the most sophisticated GPK systems.

Table 1: German Cost Accounting Criteria by Company

GPK CRITERIA	TYPICAL U.S. FIRM	BEIERSDORF AG	CIBA SPECIALTY CHEMICALS	DAIMLER CHRYSLER AG	DEUTSCHE TELEKOM
At least one output measure per resource cost center	No, often one per department	No	Yes	Yes	Yes
Separate fixed and proportional costs in relation to output measure by cost center	No, fixed and proportional costs generally are not separated	No	No	Yes	Yes
Identification and isolation of the cost of idle capacity (an optional GPK criteria)	No	Yes, idle capacity is isolated and addressed via variance analysis (fixed cost variance)	Yes, detailed by various subcategories of production resources	Yes	Yes
Costs from support cost centers are added to primary cost centers while maintaining distinction between fixed/proportional costs	No, but support cost centers often are allocated to operating departments	Yes	Yes, except there is no distinction between fixed/proportional costs	Yes	Unclear, but most support center costs are proportional
Use standard price system	Used often	Yes	Yes	Yes	Yes
Many cost centers and a network of cost assignments	No, typically use one to five overhead cost pools	Yes (12)	Yes (thousands)	Yes (2,000-2,500)	Yes (20,000)
Variances reported by cost center (an optional GPK criterion)	No	Yes	No	Yes	Yes
Estimate consumption (total demand) for each cost center	No	Yes, requires standard cost estimations—consumptions by cost center	Yes	Yes	Yes
GPK implementation?	No	Simplified	No	Full	Full
Product	N/A	Skin care products	Specialty chemicals	Cars	Telephone network
Process	N/A	Continuous	Batch and continuous	Batch	Continuous
Product complexity	N/A	Lower	From low to high	High	High
SAP system	Used often	Yes	No	Yes	Yes

Overall, seven out of the 11 companies I visited use cost systems that strictly meet GPK criteria; the remaining use cost systems incorporating many of the traditional GPK methods to suit their own products and processes. (This ratio doesn't necessarily represent the percentage of all German-speaking firms that use GPK.) I chose these firms because they were known to have very advanced costing systems even though some had simplified GPK or non-GPK systems. Almost all of the ones I visited had advanced enterprise resource planning (ERP) information systems, such as SAP, that can handle GPK.

Here are some of the common characteristics of the companies' GPK methods:

Many cost centers. The number of resource cost centers in German-speaking firms is far more than the overhead cost pools typically used in the U.S. Their range is from eight to 20,000 resource cost centers, with most having 400 to 2,000 compared to one or a few department cost pools in a typical U.S. firm.

More cost characteristics tracked. Facilitated by their

HEIDELBERG-CEMENT AG	HEIDELBERGER DRUCKMASCHINEN	MAGNA STEYR	PORSCHE AG	RASSELSTEIN GmbH	SCHERING AG	STIHL AG & CO.
Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	No, all fixed—only materials are proportional	Yes
No	Yes	N/A	No	Yes	Yes	No
Yes	Yes	Yes	Yes	Yes	Yes, except no distinction between fixed/ proportional costs	Yes
No	Yes	Yes	Yes	Yes	Yes	Yes
Yes (110–130)	Yes (2,000)	Yes	Yes (450)	Yes (400)	Yes (3,500)	Yes (650)
Yes	Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes	Yes
No	Full	Full	Full	Full	Simplified	Full
Cement	Printing machines	Cars	Cars	Tinplate	Pharmaceuticals	Chain saws
Continuous	Job	Batch	Batch	Batch	Continous	Batch
Lower	High	High	High	High	Lower	High
Yes	Yes	Yes	Yes	Yes	Yes	Yes

SAP systems, German companies typically identify more cost and cost-center characteristics than U.S. companies do. For example, Ciba Specialty Chemicals, based in Basel, Switzerland, identifies the following characteristics for each manufacturing cost:

- Assignability—direct vs. indirect;
- Type—production, research and development, general and administration, marketing and distribution;
- Decision relevance—relevant/irrelevant;
- Cost behavior—fixed or variable;
- Cash-flow relevance—relevant/irrelevant;
- Allocation level—primary/secondary cost;
- Production cost category—other income and expense, strategic, idle capacity, capitalized production costs;
- Absorbability—nonabsorbable/absorbable;
- Production cost type—material handling, process labor, equipment cost, utilities, quality control, environmental, building overhead, and general factory overhead.

Separate fixed and variable costs. A key aspect of GPK is the separation of fixed and variable costs. German firms are much more likely than U.S. firms to separate these costs, but some German companies are simplifying GPK by not separating fixed and variable costs within cost centers. For instance, Schering AG assumes all production cost centers are fixed—only materials costs are treated as proportional (variable). Labor is treated as fixed because labor laws make it difficult to downsize in Germany, so labor costs can't be reduced much.

Simplifying GPK systems. There's a trend for German firms to try to simplify their cost systems. Some nonaccounting managers feel there's too much information that's too sophisticated for nonaccounting managers to understand. Also, some people perceive that the administrative costs often outweigh the benefits of the information. Still, the majority of companies I visited seem to value having the detailed information.

BENEFITS OF GERMAN COST ACCOUNTING

German accountants I spoke with at the staff level often had trouble articulating the specific benefits of GPK. There seems to be an inherent assumption that cost systems have to be detailed to provide adequate control. Also, these accountants spend much of their time maintaining the systems. It's mostly the plant controllers who use the GPK information, and they're in a better position to discuss the benefits. Here's what they reported:

Make-vs.-buy analysis. Because GPK allows companies to break down the cost of their products to any level of aggregation, it's easier to do make-or-buy analyses for products made at various locations worldwide. At STIHL AG & Co., for example, the corporate costing group is able to split out all nonmaterial costs for parts supplied to the U.S., helping it decide where to produce the products. This ability is a very important aspect of their target costing practices.

Capacity decisions. Separating fixed and proportional costs is crucial for deciding how to use or whether to eliminate capacity. Rasselstein GmbH, for example, uses this ability to make cost comparisons and calculate cost effects of certain projects. Key capacity information normally consists of rates, literally translated as "part-cost-rates," such as the level of indirect costs in cost per ton or cost per piece for certain cost types in certain cost centers. These rates consist of only proportional costs, not fixed. This doesn't mean that fixed costs are ignored, but their relevance depends on the purpose and time frame of the decision.

Cost control. Separating fixed and proportional costs also allows cost center variance analysis, comparing target (flexible) costs to actual costs. This analysis is much more accurate than comparing planned costs with actuals, which is still common in the U.S. The separation of fixed and proportional costs during planning provides the opportunity to identify where costs can be reduced. This is a big benefit for production managers. For instance, STIHL does variance analysis for every production cost center and then sorts the variances by amount. The five cost centers with the largest variance are earmarked for further analysis. Target costs are determined by adjusting only the proportional parts from planned to actual activity. Fixed costs are the part of target costs that do not vary by activity. That way, you get a "fair" standard of comparison that the person responsible for the cost center can understand and accept. Thus, GPK can enhance "responsibility" accounting—the idea that managers should be held responsible for costs they have control over.

Transparency for cost information. At Rasselstein, Ralf Damitz, head of the controlling department, and Holger Liermann, assistant head and former plant controller, reported that their GPK system provides cost information that's more reliable and easier to get, but these benefits depend on a good IT system. The system must be able to provide the data quickly and reliably. In SAP R/3, GPK capability comes with SAP's controlling module, which means key figures are available, so to speak, "at the touch of a button."

Sales and production planning. Liermann also said that GPK-type information can help in controlling sales and production planning, partially by using contribution margin (CM—revenue minus costs), a concept that has been addressed for years in our textbooks but rarely used in practice. Of course, to be to able compute CM, it's imperative that we can distinguish between fixed and variable costs. For a single product, the CM provides the short-term lower limit for the price. Any item that can be sold for more than this value adds profit that can be used to cover fixed costs. (The German term for contribution margin is translated as "covering contribution.") Moreover, the contribution margin is especially important in managing production "bottlenecks." Many production facilities have capacity limits that are below the salable quantity for their products. In this case, the "absolute" contribution margin, in dollar per ton or dollar per piece, and the production time per piece, in minutes per ton or minutes per piece, lead to so-called "relative" or "bottleneck-related" contribution margins, such as dollar per minute, at the restricted work center. With these figures, better decisions can be made about which products to produce to optimize the contribution margin for the whole company.

GPK IN THE U.S.?

Based on the success of GPK-type costing systems in German-speaking countries and the general dissatisfaction with cost systems in the U.S., I recommend that U.S. companies consider using GPK. While many U.S. businesses have implemented ERP systems like SAP R/3, most don't use their full functionality for costing purposes. In fact, the German companies I talked with have had great difficulty getting their U.S. affiliates to use GPK methods. DaimlerChrysler in Germany, for example, has a detailed GPK system that's part of a long tradition of sophisticated costing methods in the Daimler side of the company. But Chrysler doesn't use GPK. It has a different culture, which is common in the U.S., that doesn't see the need for so much detail.

Chrysler is only one example. Many U.S. management accountants say their companies aren't interested in GPK for a variety of reasons:

Unsure whether the benefits will exceed the cost. GPK is costly to implement and maintain—more so than simpler systems—and it's hard to know how the level of cost information will benefit you until you have it. Some U.S. controllers also worry about GPK information making it harder to understand what the major cost drivers really are. What's more, management accountants at U.S. companies have few peers using GPK in the U.S. to talk to about it while their counterparts in Europe do.

Most of the additional costs are added in the planning phase. "In GPK you must have a quite detailed plan; the actuals are then collected automatically from the IT system underneath," Peter von Zimmermann at SAP told me. Nobody collects planning data; it all comes from the SAP system, though various people in the organization have to enter their plans online. Schering, for instance, maintains planned target data with two people for production reporting and another who does the consolidations worldwide, according to Helmut Goll, Schering's head of management accounting. But Schering has been able to reduce planning data requirements considerably by treating all cost center costs as fixed. In the U.S., few companies do planning at the work center level.

Lower emphasis on management accounting. Looking at management accounting in German companies, it's quickly apparent that they put more emphasis on it than U.S. companies do. U.S. companies seem more interested in the capital markets and strong financial accounting systems. The number of management accountants and controllers in Germany often rivals the number of U.S. accountants doing financial reporting. In Germany, these functions have traditionally been separate, although the recent trend is to follow the U.S. model and consolidate the people (and the data) into one department and system.

One possible reason Germans put more emphasis on management accounting is that there seems to be a cultural need for more precision at German-speaking companies. The people I interviewed often commented how their need for accuracy demanded a very detailed costing system.

More downsizing. German companies have a greater need to understand their fixed costs because German labor laws make it much harder for German companies to downsize than U.S. ones.

Less contact with software consultants. SAP designed its controlling module with the help of expert German consultants and academics, such as H.G. Plaut, Peter Horvath, Paul Reibel, and Kurt Vikas. But while there's plenty of GPK consulting help available in German-speaking countries, there's less in the U.S., although SAP and other GPK consultants are rapidly increasing their presence in the U.S.

Lack of knowledge about GPK. Although U.S. academics are just now studying it, GPK is usually taught in all

German-speaking universities. Even so, Reinhold Feghelm, a cost accountant at Porsche, said that finding new hires who really understand the GPK philosophy is difficult. The company has to train its people to understand it, which usually takes about a year.

GPK UP CLOSE

Here are short summaries of how the firms I visited use GPK and the benefits they achieve from it. They are classified by the extent to which they adhere to GPK criteria, as shown in Table 1.

FULL USE OF GPK

Rasselstein GmbH. This international maker of tinplate for packaging products such as aerosol and soda cans has one of the most sophisticated internal cost allocation systems. For example, its electricity consumption for a cold rolling mill cost center has a detailed cost function equation based on coefficients for kilowatt hours per operating hour, per tons throughput, and per tons throughput tinplate. The mills rely on a full SAP R/3 information system, and the GPK system uses almost 400 cost centers (240 primary and 124 service). As I mentioned, Rasselstein can make cost comparisons or calculate cost effects of certain projects with information on part cost rates that show the level of indirect costs in cost per ton or cost per piece. Before its new system was installed recently, the company had 100 product groups, and the costing of the products wasn't accurate, Ralf Damitz told me. Now it has a planning and analytical process for 8,000 products, and the costs are generally accepted as reliable. Every manager is responsible for every Euro of cost. "There is no cost we can't influence. Who and how it can be influenced has been identified," Damitz said.

But having this kind of detail and accuracy comes with a price. Rasselstein's system requires five people to do the GPK monthly variance analysis and adjust the cost center rates annually. Also, some product team members see information from the controlling department as a "cemetery of figures." In other words, they have too much unusable data. So Rasselstein plans to reduce the information and make the system more understandable, thus sacrificing some detail and accuracy to reduce cost and increase usefulness.

DaimlerChrysler AG. A manufacturer of automobiles that have innovative features produced in high volumes, DaimlerChrysler is going through a transition in its management incentive system. The complexity of its cost accounting system is due primarily to management incentives based on financial accounting numbers, such as OPBIT (operating profit before interest and taxes), operating cash flows, and return on assets. Nonetheless, Daimler, whose typical plant has 30,000 employees and 2,000 to 2,500 cost centers, uses a sophisticated GPK system running on SAP software, and many different processes and people use and are influenced by it. For example, GPK information motivates product designers to consider the cost of design changes or new features. Daimler also is improving its costing system by using activity-based costing for certain types of costs, such as logistics.

Porsche AG. Porsche, an automobile manufacturer, builds its cars with more labor and less automation and robotics than other car manufacturers. But the company's cost accounting system isn't much different from ones at other companies. Porsche doesn't build that many cars, so they don't have as many cars over which to spread out the fixed costs. Thus, cost control is more important for this company than I expected. "GPK is an internal instrument intended to make sure we make our cost targets," Reinhold Feghelm explained. Porsche uses all the classic GPK characteristics except for the optional costing of idle capacity because they usually don't have much idle capacity. They use all of their capacity and even outsource production of Boxter sports cars to a Finnish company.

Magna Steyr. A supplier to original equipment manufacturers in the automobile industry, Magna Steyr does vehicle engineering and assembly. The company is flexible and changes its structure as needed. Long-term clients include Mercedes and DaimlerChrysler. Eighty percent of the work is outsourced, but Magna accountants said there are still many cost drivers affecting the other 20%. Top management primarily wants cost accuracy but doesn't necessarily care if GPK is used; they say what they want but not how people should be able to give it to them. The company's controllers use a GPK system with 455 cost centers and about 900 cost drivers with a range of one to eight cost drivers per cost center. Magna accountants told me they don't use ABC because their SAP system would require more modules and because ABC doesn't separate fixed and variable costs. They also said one of the biggest benefits of the GPK system is that it helps management decide where to focus cost reduction efforts. For example, when the paint shop was identified as a bottleneck, the company changed production to need less capacity and worked with suppliers to increase outsourcing of painting. The company

is currently trying to make its GPK system simpler for senior management to understand.

SCALED-DOWN GPK

Beiersdorf AG. A maker of body-care products such as Nivea creams, Beiersdorf's goal is to increase sales with current and new products by 8% to 10% per year, so it watches its marketing budget closely. The products are relatively simple to make. For example, the bill of materials might consist of only 24 items. Because Beiersdorf's products are relatively simple and the company is focused on marketing, it uses a simpler GPK costing system. One way the company has simplified its cost system is by identifying only raw material, labor, and energy as proportional costs. Everything else is considered a fixed cost. The company always uses standard costs and the same cost of sales for both financial reporting and management accounting purposes. A midsize plant of 600 employees might have only 12 cost centers.

Ralf Eberenz, Beiersdorf's vice president of corporate accounting and controlling, told me that the benefits of this relatively simple system include consistency and fewer variances to worry about. Also, product costing is easier to understand, and the results are more transparent. He considers it "perfect" for external reporting because it meets the needs of International Accounting Standards, tax laws, internal management, and external auditors. To improve the system, the company is striving to understand the variances better and find owners most responsible for them. With this information, it can improve its responsibilty accounting and make improvements faster.

Schering AG. A large pharmaceutical business with 26,000 employees worldwide, Schering must place heavy emphasis on R&D, which accounts for about 19% of its sales. The company has simplified its GPK system so that only material is treated as proportional—everything else is considered fixed. It started using SAP for accounting in 1999 and now has 3,500 cost centers. Like most other companies, it uses machine hours and labor hours as the activity measures for production cost centers. It also uses planned rates based on practical capacity and reports idle capacity in total and by cost center. Helmut Goll told me the company's cost system information works well for product costing, helping the company achieve its goal of reducing product costs from 30% of sales to 20%. Like most of the other companies I talked to, Schering would like to simplify its cost system somewhat to make it more understandable to nonaccountants.

More on German Cost Acounting

Strategic Finance and *Management Accounting Quarterly* have published 10 articles that were about German cost accounting methods or that referenced them.

Anton van der Merwe and David E. Keys, "The Case for Resource Consumption Accounting," *Strategic Finance*, April 2002, pp. 30-36; and David E. Keys and Anton van der Merwe, "Gaining Effective Organizational Control With RCA," *Strategic Finance*, May 2002, pp. 41-47.

Anton van der Merwe, "Chapter Zero in Perspective," *Management Accounting Quarterly*, Winter 2004, pp. 1-6, an overview of Chapter Zero, the introductory chapter to the latest edition of the preeminent cost accounting textbook on German Standard Costing, *Flexible Plankostenrechnung und Deckungsbeitragsrechnung,* by Wolfgang Kilger, Jochen Pampel, and Kurt Vikas.

"0 Introduction: Marginal Costing as a Management Accounting Tool," *Management Accounting Quarterly*, Winter 2004, pp. 7-28, a translation by Stephen Offenbacker of the first chapter of *Flexible Plankostenrechnung und Deckungsbeitragsrechnung* by Wolfgang Kilger, Jochen Pampel, and Kurt Vikas.

B. Douglas Clinton and Sally A. Webber, "RCA at Clopay," *Strategic Finance*, October 2004, pp. 21-28; and Sally A. Webber and B. Douglas Clinton, "Resource Consumption Accounting Applied: The Clopay Case," *Management Accounting Quarterly*, Fall 2004, pp. 1-14.

David E. Keys and Anton van der Merwe, "German vs. U.S. Cost Management," *Management Accounting Quarterly*, Fall 1999, pp. 19-26.

Paul A. Sharman and Kurt Vikas, "Lessons from German Cost Accounting," *Strategic Finance*, December 2004, pp. 28-35.

Paul A Sharman, "Bring on German Cost Accounting," *Strategic Finance*, December 2003, pp. 30-38.

Paul A. Sharman, "The Case for Management Accounting," *Strategic Finance*, October 2003, pp. 43-47.

NON-GPK GERMAN COST SYSTEMS

Although all the companies I visited had what would be considered sophisticated cost systems in the U.S., several firms don't use GPK systems per se.

Ciba Specialty Chemicals. With 20,000 employees, $5 billion in sales, and about 60 production sites globally, Ciba sells a variety of specialty chemical products in four major business segments: plastic additives, coating effects, water and paper treatment, and textile effects. Ciba doesn't currently use GPK per se because of its complexity and because, in chemical manufacturing, it's difficult to predict the output quantity as some batches produce more or less product than expected. GPK requires that you are able to predict outcomes fairly well, as in the auto industry.

Instead of GPK, Ciba uses a system of eight groups of indirect costs and tracks detailed information about each cost, as I discussed earlier. Their system also has a high percentage of common global data and process definitions, making it easier to make changes to the cost management system globally. This level of detail was debated in a global review project, but Ciba management ultimately decided it was necessary. Even with this level of detail, it's dwarfed by the level of detail other chemical companies in German-speaking countries use. Ciba's costing methodology is applied in all major production sites around the world and is currently being enhanced globally.

HeidelbergCement AG. A producer of ready-mix cement and building materials, HeidelbergCement must operate seasonally. The company repairs its mills during the winter when product demand is lower, giving it high costs and low output, and runs its production line during the summer when product demand is higher, giving it high output and no repair costs. Their costing system has to reflect this. It was developed 50 to 70 years ago and relies on actual costs instead of standard costs. For example, last year's actuals serve as this year's planned costs. A typical plant uses about 110 to 130 cost centers, and about a third of production costs are proportional and mostly direct. Without many indirect costs to worry about, the company isn't highly motivated to use GPK methods.

IMPETUS FOR BETTER COST ACCOUNTING?

Learning firsthand about GPK methods, benefits, and challenges was enlightening and impressive, and I think Western companies—especially those with complex processes and sophisticated, integrated information systems—ought to consider adopting them. But even companies with less complex products, processes, or information systems may benefit from some of the GPK and other costing practices discussed.

There are, of course, challenges to adopting GPK. First and foremost, U.S. firms must decide to place a higher emphasis on management accounting than generally exists today. Long-term financial results will probably be improved by strong internal information and cost analysis. Many U.S. firms have invested millions in integrated systems such as SAP R/3 yet don't take full advantage of what these ERP systems can do for cost analysis.

There are other challenges as well, such as the cost of implementing and maintaining GPK and the lack of other U.S. companies using these methods. But I came away from my trip thinking that German cost management practices could, in fact, be one of the cures for what ails cost management at U.S. companies, where there is strong dissatisfaction with cost accuracy and detail. One German controller suggested that U.S. companies don't necessarily need GPK because no single tool will meet all needs, including cost-object valuation, decision-making support, behavioral control, and cost control. But GPK can be a big help to U.S. firms in making decisions and controlling costs. ■

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GPK/German cost accounting is a topic at IMA's Annual Conference June 18-22. For details, visit www.imanet.org/boston.