GainSharing: The Inventive Incentive

Much more than just a piece-work system, today's programs represent the ultimate corporate "carrot."

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It's what The American Productivity and Quality Center predicts "will become one of the fastest-growing strategies in the United States in the 1990s and beyond.'"

Indeed, virtually every manufacturing industry is using it now; corporate practitioners include General Electric, Cincinnati Milacron, Dover Corp., Rockwell International, TRW, and Exide Electronics, to name a few.

The phenomenon we're referring to here is gainsharing.

A Basic Definition

Gainsharing is *not* an incentive or bonus plan for individuals who exceed a standard or quota. That's the old piecework system. Gainsharing is a *group* bonus plan in which the facility's entire work force is involved in an effort to exceed past performance. If realized, the gain is translated into cash and shared. The work force usually receives 50% of the gain in the form of bonuses, with the company receiving an equal share. That's gainsharing in its simplest form.

Over a decade ago, gainsharing received federal attention when the U.S. General Accounting Office issued a report containing the following conclusion: pay-for-performance compensation systems (gainsharing) "resulted in labor cost savings averaging 17%, along with improved work relations, reduced absenteeism, reduced turnover and fewer grievances."[2]

Figure 1 summarizes the gainsharing experiences of 110 plant managers, located in facilities in Michigan, Ohio, Indiana, Illinois, Wisconsin, and Minnesota.[3]

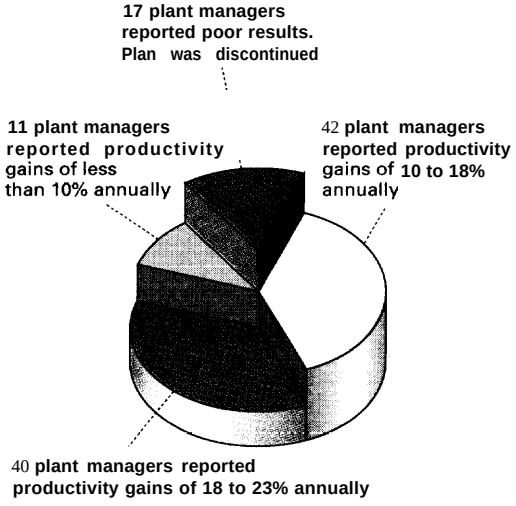

Figure 1. Gainsharing experiences of 110 plant managers.

As indicated, 93 of these managers reported highly favorable results in productivity improvement.

PCB Case Study #I

In the PCB fabrication scenario, defects can be introduced in the phototool generation stage. These include pinholes as well as flaws caused by the presence of foreign material on the film. Ranging from several roils to less than 0.25 mil in size, these defects can affect the fabrication process at innerlayer print, outerlayer print, solder mask print, and nomenclature screen, eventually causing rework or scrap.

To correct such defects, operators must engage in an inspection/touch-up process that usually takes 10 to 45 minutes per sheet. This increases the per-job cycle time and requires several technicians as well as additional equipment. Even so, the touch-up process is not 100% reliable, particularly with fine-line designs. Elimination of such defects and their impact on the manufacturing process

requires teamwork between the photo lab operators, other members of the work force, and manufacturing management.

One PCB fabrication facility had experienced excessive touch-up costs due to the time-consuming nature of the process. At this facility, three to five operators spent eight hours a day on inspection and touch-up, which resulted in annual man-hour costs of over $100,000. Even more costly were the defects that slipped through the inspection process, occasionally severe enough to cause an entire lot of printed circuit boards to be scrapped. The company estimated its annual losses due to such factors at $560,000. The gainsharing goal, in this case, was to reduce this financial loss to zero, with the company and the work force dividing the savings (gains) 50/50.

The average pinhole rate was 20,000 per million sq. in. of product. This rate dropped to an average of 8,000 in the first year and 3,500 in the second year of the gainsharing plan. As a result, the company was able to reduce its lab work force by 55% and redeploy employees to value-added production positions. The company decreased its cycle time by about 10 hours per job, thereby reducing rescheduling problems and increasing manufacturing uptime.

Yet another benefit of gainsharing realized by this firm was higher-quality phototools. The pinhole defect rate was reduced from 190,000 to 1,000 ppm (99.5%), and the foreign-material defect rate dropped from 180,000 to 200 ppm (99.9%). As a result, the company has experienced fewer set-up problems and fewer restarts. Over two million sq. ft. of phototools have not required inspection or touch up. Savings to the company ran approximately $260,000 in the first year of gainsharing, $380,000 in the second year, and $420,000 in the third year. These savings were divided 50/50 between employees and company.

and manufacturing defect levels and efficiency continue to improve.

This example, however, does raise some questions. For instance, how is the standard of productivity to be set? Careful investigation of past experience can be used as a basis for establishing how many hours were required for the average mix and volume of quality output; or hours (or dollars) wasted on producing defects, scrap, and rework for every $1 million of output. A typical base period is selected to serve as a standard.

PCB Case Study #2

Table 1 summarizes the results of the first year of a gainsharing plan implemented by a Michigan manufacturer of printed circuit boards. The object here was to cut the number of man-hours needed to produce a given quantity of output. Under the column heading "Current Hours" are listed the actual hours worked in January 1990 to produce a given amount of output. This is in comparison with the figures listed under the heading "Standard Hours," which depict the number of man-hours required to produce the same (or similar) quantity of PCBs during the base period of 1988-89.

Current PCB production required 64,216 man-hours in January 1990. The same (or similar) output during the base period, 1988-89, required 71,315 man-hours. Result: In January 1990, the facility work force gained 7,099 man-hours by working harder, smarter, and more carefully.

The overall gain was 11% of actual hours worked (64,216 current hours). This amount, divided 50/50 between company and work force, gave each a 5.52% gain for that month. The typical factory employee in this Michigan plant, who was paid $10 per hour, worked 173 hours per month for a monthly gross of $1,730. Since his gainsharing portion was 5.52% of monthly pay, his gainsharing bonus for January was $95.50. The company saved the same amount. The gainsharing pool can be paid out in equal sums to all employees or distributed as a percentage of average wage, the latter amounting to $.55 per hour for that month.

Table 1. Gainsharing experiences of a Michigan PCB manufacturer.

Period (1990)	Current hours (1990)	Standard hours (1988-1 989)	Hours ga ined 1 00%	50%	Gain share
Jan	64,216	71,315	7,099	3,550	5.52%
Feb	76,005	90,913	14,908	7,454	9.80%
Mar	61,350	72,133	10,783	5,392	8.78%
Apr	57,690	62,186	4,496	2,248	3.89%
May	55,458	51,666	–3,792	-1,896	–3.41%
Jun	57,474	61,530	4,056	2,028	3.52%
Jul	60,370	66,136	5,766	2,883	4.77%
Aug	67,496	75,204	7,708	3,854	5.70%
Sep	68,106	75,929	7,823	3,912	5.74%
Oct	63,241	68,534	5,293	2,646	4.18%
Nov	66,660	73,061	6,401	3,200	4.80%
Dec	65,327	72,060	6,733	3,366	5.15%
Total	763,393	840,667	77,274	38,637	4.87%

Table 1 shows that monthly gain shares varied from -3.4170 to 9.80%. The company chose to pay

level gainsharing bonuses of 4% every month. For those months that showed a bonus return of more than 4%, the surplus was banked so that 4% could be paid out in the slower months (e.g., April, May, and June) to keep employee involvement high. All surpluses were paid out at the end of the year.

The gainsharing plan at this facility is still operating successfully, and gainsharing percentages have increased.

Devising the Formula

Gainsharing plans allow a company to change the base following such occurrences as new production equipment installation, changes in government regulations, and significant alterations in processes or materials caused by environmental regulations.

Different gainsharing plans involve different bonus formulas. Some combine productivity and quality improvement; others are based on curtailing the ratio of inventory to work in process. Some emphasize cutting utility consumption or chopping lost-time accidents.

There are many different types of gainsharing plans, depending on such variables as company cost structure, type of product or service produced, manufacturing processes, and kinds of materials used. A reference containing a description of how gainsharing formulas are devised in different industries is listed at the end of this article.[1]

Rules for Success

Based on experiences installing gainsharing programs in 15 companies to date, the following guidelines for ensuring program effectiveness are suggested:

1) The payout formula must be reasonable and realistic. A formula that yields miniscule bonuses or is based on the illusion that large improvements will result instantaneously is doomed to failure.

2) The first six to nine months of a program are vital to long-term

The payout formula must be reasonable.

success. Key determinants of that success are employee involvement in devising the plan and employee understanding of the gainsharing details. Hence, a program of employee education must accompany the introduction of the gainsharing bonus formula.

3) Employee participation in drafting the gainsharing plan has a stronger effect in motivating the work force to improve productivity and quality than even bonus share or bonus frequency. Methods of achieving employee participation are described in an Indiana University study.[5]

4) While some executives like to pay gainsharing bonuses on a quarterly basis, that is usually too long an interval to sustain a high level of employee motivation. Monetary rewards should follow performance with minimal delay. Monthly payouts seem to work best.

5) Unionism *per se* is neither a plus nor a minus in gainsharing. Preliminary education about the plan is vital. With gainsharing, the work force and management can concentrate on problem solving and rewarded improvements rather than sparring with each other.

6) The most successful plans are tailor-made for the specific plant situation.[6] Studies have also revealed that where the gainsharing formula was well researched and the work force well indoctrinated concerning the goals and rewards, not only were productivity and quality improvements forthcoming, but collateral benefits accrued, such as:

- an 18% increase in on-time shipments
- a 12% decrease in customer returns
- an 84% drop in the absenteeism rate

- a 69% reduction in the number of lost-time accidents.

Conclusion

When it comes to improving plant performance and compensation, the wave of the future in U.S. industry appears to be pay for performance. So why aren't more companies using gainsharing now? The answer may lie in the words of management authority Peter F. Drucker: "Inertia in management is responsible for more loss of market share, for more loss of competitive position, and for more loss of business growth than any other single factor."[7] FAB

References

[1] "Productivity Sharing Programs Can They Contribute to Productivity Improvement?" U.S. General Accounting Office, Washington, D.C., 1981, p.15.

[2] Ibid.

[3] *Crain's Chicago Business.* April 2 l/May 5, 1994.

[4] Imberman, Woodruff. "Everything You Ever Wanted to Know About Gainsharing But Were Afraid to Ask." *Target Magazine,* Association for Manufacturing Excellence, May/June 1993. (For a complimentary reprint, contact the author at Imberman and DeForest, 1740 Ridge Ave., Evanston, IL 60201, fax 708/733-0074.)

[5] Imberman, Woodruff. "Employee Participation: What It Is, How It Works." *Business Horizons.* Indiana University, January/February 1993. (For a complimentary reprint, contact the author at the above address/fax number.)

[6] Imberman, Woodruff and Betty Flasch. "Gains and Losses from Gainsharing." *Industry Forum, Management Review* American Management Association, New York, NY, December 1989.

[7] Drucker, Peter F. *Managing&the Future: The 1990s and Beyond. New* York, NY, 1992, p.174.

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