$1,000,000 in initial potential savings reported by VA teams as--

Value analysis unlocks hidden costs at Schwinn

By **Walter J. Reed,** Managing Editor

Harry Coffin, industrial engineering & value analysis manager (right), and George Dahl, budget & office manager and assistant value analysis manager, compare prototype plastic chainguard with steel guard already on sprocket. Benefits of proposed purchased plastic part include a weight reduction of 4:1 and elimination of in-house production costs.

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Bicycle builder experiences upturn in profitability, productivity and product enhancement as teams of company personnel with newly acquired training in value analysis zero in on cost orientated problems

In 1974, apparent U.S. bicycle sales totalled 14,105,775 units—a 9 percent decrease from the peak of the "bicycle boom" recorded the previous year. But one manufacturer actually increased its shipments to just over 1.5 million bikes during that same span. For the Chicago-based Schwinn Bicycle Co.—a name synonymous with bicycling—that's to be expected, right? Wrong!

Surprisingly, Schwinn is neither the largest bicycle company in the world nor even the largest in the U.S. And competition in today's market is keen. In fact, 226 other manufacturers in 33 free-world countries also build bicycles, many with an eye toward competing in the American market.

The answer to Schwinn's success, or at least part of it, appears to be in distribution, product design and quality. Since its founding, the company has maintained a progressive engineering program to improve quality, comfort, usefulness and modern appearance.

Another chapter in this continuing effort was initiated several months ago with the introduction of a value analysis program. While sometimes used interchangeably with the terms value engineering and value control, here, value analysis is defined as improvement efforts applied on an after-design, present-manufacturing level.

Program Implementation

The VA program was adopted and implemented under the auspices of the industrial engineering department and the finance department in conjunction with Value Analysis, Inc. The latter, a Newport Beach, Calif.-based consulting firm is claimed to be the first such organization to offer instructional guidance to industry in the techniques of value analysis, value engineering and value control.

Sixty of Schwinn's personnel were selected to participate in the program. These include industrial engineers; manufacturing supervision; general foremen; middle line managers; tooling, design and manufacturing engineering personnel; finance people and a plant superintendent.

Training was conducted on the basis of a 40-hour workshop seminar which included a "hands on" project assignment. These were assigned to 15 four-man teams. In-house objectives were selected under the guidance of the director of engineering by Harry Coffin, industrial engineering and value analysis manager and George Dahl, assistant value analysis manager and budget & office manager. Both carry dual responsibilities.

Project assignments were provided with initial research already completed, cost data, specification require-

Flow chart of value analysis job plan presents sequence of steps required as a prerequisite to development of a job proposal. (Courtesy Value Analysis, Inc.)

INFORMATION PHASE

DEFINE SCOPE

PREPARE SEQUENCE FLOW CHART

COST EXISTING SYSTEM

DEFINE FUNCTIONS—WHAT DOES IT DO NOW?

DETERMINE BASIC & SECONDARY FUNCTIONS

PREPARE F.A.S.T. DIAGRAM

COST F.A.S.T. DIAGRAM

REVIEW SCOPE

SPECULATION PHASE ON ORIGINAL SCOPE

CREATE IDEAS ON BASIC FUNCTION

REPEAT INFORMATION PHASE ON REDEFINED SCOPE

SPECULATION PHASE ON REDEFINED SCOPE

CREATE IDEAS ON NEW BASIC FUNCTION

EVALUATION PHASE

ELIMINATE NONSENSE

GROUP SIMILAR IDEAS

SELECT LOWEST COST IDEAS

DEVELOP & REFINE IDEAS:
—Prepare Skeleton Outlines of New Sequence Flow Charts
—"T" Chart

SELECT BEST IDEA

PLANNING PHASE

CONSIDER PROBLEMS OF IMPLEMENTATION:
—Develop A Plan

EXECUTION PHASE

PREPARE DETAILED SEQUENCE FLOW CHART OF NEW SYSTEM

DESIGN REQUIRED FORMS

COST NEW SYSTEM

REPORT PHASE

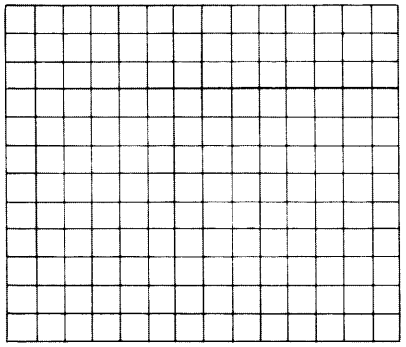
DOCUMENT PROPOSAL

SUMIT PROPOSAL

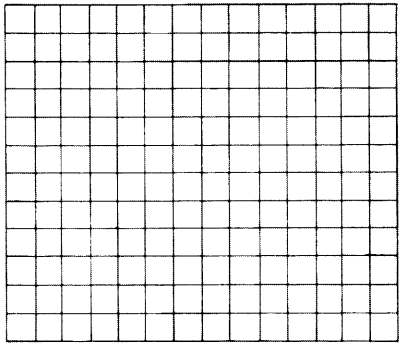
VALUE ENGINEERING PROPOSAL

NAME OF PART OR ASSEMBLY:	DWG. NO.
USED IN:	QUANTITY PER: UNIT _____ CONTRACT _____ OTHER _____ YEAR _____ TOTAL REQ'D →
FUNCTION:	

PRESENT



PROPOSED



UNIT MANUFACTURING COST	MATERIAL	LABOR	BURDEN	TOTAL
PRESENT	$	$	$	$
PROPOSED	$	$	$	$

% PROPOSED REDUCTION _____ SAVINGS PER UNIT $ _____

TOTAL UNITS X SAVINGS/UNIT = GROSS SAVINGS $ _____

COST OF CHANGE	ENGR. & DRAFT. _____ TEST _____	LESS
TOOLING & PATTERNS _____ OTHER _____	TOTAL COST OF CHANGE →	$
	NET SAVINGS →	$

COMMENTS AND ADDITIONAL RECOMMENDATIONS: _____

PROJECT TEAM _____ PROPOSAL NO. _____ DATE _____

Proposal form used to summarize findings of project study. Data is expressed in terms of (1) cost value, or the total cost involved in producing a particular item, the sum of labor, material and overhead; (2) exchange value, or the properties or qualities of an item that allow it to be traded for something else; (3) esteem value, or the properties, features, or attractiveness that make it desirable; and (4) use value, or the properties or qualities which accomplish a use, work or service. (Courtesy Value Analysis, Inc.)

ments and a blueprint of the part involved.

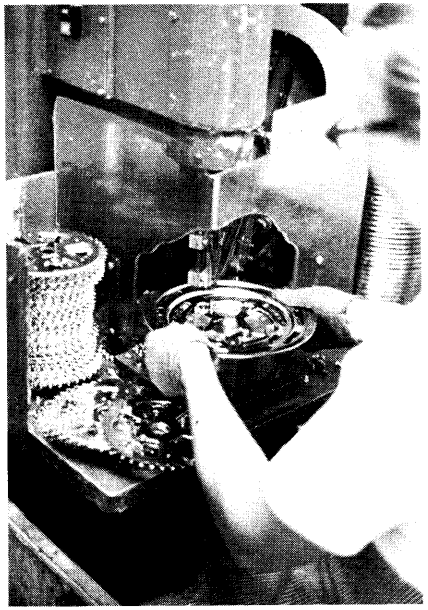
Savings Begin to Surface

A summary of potential savings identified by the teams totalled over $1 million. Of that, projects valued at over $60,000 have already been approved by management for implementation. About $563,000 is still under study while a little over $451,000 has been rejected by management.

Cost reduction is normally associated with VA because many of its activities are part oriented. But this usually involves changes such as altering manufacturing methods, relaxing tolerances or thinning of material. However, VA strives for large improvements in cost and value by modifying or changing design. Therefore, it is said to be function oriented.

A sprocket assembly, one of the 15 projects selected at Schwinn, is a good example of successfully applied techniques. The present unit consists of two stamped metal sprocket components bolted together with a chainguard.

Basis for a proposed change is a newly designed chainguard made of polypropylene. Advantages include lower overall cost, lighter weight (4:1), better resistance to structural damage and the elimination of any manufacturing operations prior to assembly. In addition, manufacturing scrap would be eliminated and overcrowded material storage relieved. Material and



Chainguard and sprockets are assembled with machine that automatically drives bolts to desired torque. While other in-house production operations will be eliminated by new purchased plastic component, this operation will remain essentially the same.

labor costs were broken down in cost per 100 units.

Based on the new design, new equipment was needed that included an experimental mold, a permanent mold for the chainguard, a piercing die and assembly machinery. These expenditures are listed as fixed costs.

Using a projected volume figure for assemblies required for a full production year, a three-year savings table was developed (actual figures deleted).

Assemblies/Yr.	1st Yr.	2nd Yr.	3rd Yr.
Gross Savings	$	$	$
Fixed Costs	$	–	–
Net Savings	$	$	$

VA Concept

By definition, the philosophy of value analysis/value engineering blends technology and psychology to bring about an atmosphere of constructive discontent in which high and/or unnecessary cost areas can be eliminated. It provides an organized approach to identifying, defining and solving problems by:

1. Determining functions that are or must be performed.
2. Forcing cost/function relationships to be established.
3. Stimulating the desire to creatively achieve functions at the lowest possible cost without sacrifice of performance or delivery requirements.

A job plan involves several phases that include:

- Information–get all details, specifications, costs, customer requirements (from the best sources) and define functions.
- Speculating–do creative thinking; turn off analytical mind; concentrate on developing new ideas.
- Evaluating–review ideas technically; assign a dollar figure to each idea then select the best one.
- Planning–determine approach to be followed.
- Executing–follow plan.
- Reporting–document and present recommendations.

Lighter chainguards will also have an effect on the assembly line where operators will be working with approximately one-fourth of present component weight.

Impact and Payoff

"Although it's impossible to predict future savings," cites Coffin, "the first four proposals to be accepted and implemented justified initial program costs." But the dollars-and-cents aspect of VA is not the only benefit. It also provides a working camaraderie between VA participants which represent almost every sector of the company. In this atmosphere of "constructive discontentment," individuals can conscientiously and constructively contribute to a company's economic well-being as an added dimension to their primary job responsibilities.

Today, with the emphasis that is placed on rising costs, productivity and profitability, isn't this a management tool that could be applied from design to delivery of a finished product? ●●●

VALUE ANALYSIS, INCORPORATED

VALUE ANALYSIS, INC. was incorporated in 1958 and now maintains offices in the U.S., Europe and Australia. Over the past 17 years, the U.S. staff has trained over 20,000 people in over 300 organizations in the techniques of value engineering and value analysis.

The training staff of VALUE ANALYSIS, INCORPORATED have collectively over 50 years of Value Analysis/Value Engineering experience in both government and industry. All three principals in the company worked for General Electric in the early days of their careers, and have worked together as a full-time team for the past seven years. All are Certified Value Specialists (C.V.S.) by the Society of American Value Engineers (S.A.V.E.).

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