2008 Annual Conference
Paper & Presentation Abstracts

The following abstracts are presented in alphabetical order by title. Abstracts give brief insight into the topics discussed by speakers during SAVE International's 2008 annual conference technical program.

Add Value to Manufactured Products with DFMA

By James D. Bolton, PE, CVS, PVM

Most manufacturing organizations today are looking for ways to add value and improve the profitability of their manufactured products and processes. Design for Manufacture and Assembly (DFMA) is an excellent tool to not only add value to the manufactured products or processes being evaluated, but it can also help generate innovative techniques for the development of new concepts which can lead to a competitive advantage for the company with a well managed DFMA process. A variety of manufacturing organizations today are utilizing DFMA as a benchmarking tool to evaluate the cost and structure of their competitors and then seeking to determine if there are any ideas that could be incorporated in current or future products to add value for their own customers. Some companies actually utilize DFMA as one of their first steps in their product development process by driving the completion of Design Failure Mode Effects Analysis (DFMEA's) and Process Failure Mode Effects Analysis (PFMEA's) and other sequential steps towards the successful launch of their manufactured products. DFMA may also be utilized to enhance the value of current products and processes by optimizing the actual design and process of the product under evaluation while at the same time minimizing tooling and capital required to manufacture the product. With a well managed corporate process, innovative solutions may be generated utilizing DFMA especially if target costs or competitive market conditions are driving the total product cost. DFMA along with other value enhancing tools such as TRIZ, can provide an iterative product development approach to arrive at the final design which will support the corporate profitability target. One of the greatest benefits of utilizing a DFMA program effectively is the improvement in communication between the design and manufacturing communities within the manufacturing organization. This can lead to significant improvements in time to market for any given product which will reduce the overall product cost as well as bring new technology to the market ahead of the competition, thus improving market share. These are just a few ways that DFMA can create value for your particular manufactured product or process and improve your overall profitability. This paper will seek to share how these goals have been accomplished to become a world leader and 'Best in Class' within a designated business sector.

CO_2 in the Construction Industry

By Mei-Yung Leung, Ph.D., MCIOB, MAIB, MRICS, MHKIS, CVS, MHKIVM

The world is getting warm in this generation. According to the report of Intergovernmental Panel on Climate Change (IPCC 2001), the global temperature was estimated to grown up 5-6 ^{o} at upper bound by the end of 21 century. The Hong Kong Observatory projected that the number of hot days (daily maximum temperature 33^{o} or above) will increase from 11 days in 1961-1990 to 24 days in the last decade of 21st century, while the number of hot nights (daily minimum temperature 28 ^{o} or above) and the cold day (daily minimum temperature 12 ^{o} or below) will be increased from 8 days to 30 days and be decreased from 21 days to 0.8 days respectively (Leung et al. 2004). Scientific study has revealed that the Earth's surface temperature is determined by the amount of solar radiation reaching the ground and by the amount of infrared radiation sent down by the atmosphere itself. The latter is determined by the amount of

Greenhouse Gases (GHGs), of which carbon dioxide is a key component (Lam, 2006). It has now been widely accepted that the emission of GHGs is one of the primary causes of global warming. As global warming will trigger a host of ecological problems, reduction of GHGs emission has become an essential topic in the world.

Can Value Added Strategies Enhance the Competitiveness of Products?

By Ferenc Nádasdi, CVS, Ph.D., FSAVE

Globalization continues to become stronger. In addition to the favorable legal environment, the rapid development of logistic systems and the unpredictable development of telecommunication may further enhance globalization in gaining ground. Products can get even to remote countries, so manufacturing companies are not safe anywhere in the world. One possible "escape" for companies is to use value added strategy. If companies can offer products in the market that other companies do not know about or learn about only at a later time, the "grip" of the market may ease considerably. However, this is a "double-edged" weapon. If development cannot meet customer demands, the expenses of development may turn into "wasted costs." The key to success is to link value methodology with marketing activities. In our research in value added strategy we have achieved promising results in the footwear industry and the furniture industry. In both cases, we have accomplished added value by means of value methodology with good results. Only function analysis can enable us to accomplish added value with minimum costs. In such a case the strategies that can be used include Function ↑/Cost→ , possibly Function ↑↑/Cost↑, or Function ↑/Cost↓. The suitable solutions were selected through iterative cooperation with the customer. We believe our methodological results could be successfully applied in other sectors of the economy as well. Our experience shows, that added value may enhance the competitiveness of products, and a result, the market position of companies may also improve. This however can only be achieved by means of carefully planned and implemented R&D activities. The application of value methodology can play a key role in this with the *inclusion* of marketing tools. We have utilized the Function↑/Cost→ g strategy in several projects with success, because in the first phase we have achieved a reduction of costs by value methodology. The reduction in costs partly or fully covered the costs of added value. Obviously, the added value may also be achieved without the use of value methodology. However, it requires more time, higher cost levels and it involves greater risks. The author will present practical results in addition to theoretical results.

The Carbon Value Index

By Donald E. Parker, PE, CCE, CVS, FSAVE

The Miles Value Foundation encourages all value engineers to consider the carbon impact of all of its recommendations for change in client work when conducting a value study. Carbon is a resource, the same as money. Carbon can be a focus of potential savings in performing value engineering as surely as money can be the focus.

Even if not the primary resource justifying a recommendation for change, carbon should from now on be one of the attributes used to compare changes. By doing this, Value Methodology can help reduce carbon use.

We all know that Value engineering is a problem solving technique, unparalleled in its competency to provide alternative solutions and change the course of direction to conserve and protect resources.

When weight is the focus of a value study in the aircraft industry, weight can be reduced. When energy is the focus in the construction industry, energy can be reduced. When quality is the focus in manufacturing, quality can be enhanced. Similarly, we need to develop the tools to include carbon consideration in or work and/or make carbon the focus of our work.

In short, we need help from the academic research community to be successful in achieving this capability.

Collaborative Value Engineering: Creating a Global Value Network Using Wiki

By Javier Masini, AVS

Networking and collaborative work are very important in improving team performance, since all kinds of experiences can be shared by heterogeneous VE practitioners with different needs and ideas. Journals and conferences are typical connection nodes for these networks and wikis are also the new type of arena where VE related collaborative work can be improved.

Here is a proposal of a platform that will be very useful for VE practitioners as well as the academics to share, discuss, improve, and standardize the performance of VE teams by having a platform containing collaborative information such as VE theory, savings records, lists of ideas used to improve function, team performance expectations, and so on.

Construction Method of Value Design Know-How Database

By Tomoko Numazawa, VES

Many Japanese companies are striving for cost cutting by using tools. They are basically database systems from where developers retrieve information and the production information (PLM etc). However, as the life cycle of the product becomes shorter, reducing investment is more effective than cost reduction efforts in the product development.

For developers, it is extremely helpful to have records of lessons learned from past developments. Therefore, I analyzed documents on the design process of about 150 in-house new products development cases in order to define their functions. And the functions were then classified into about 50 VE methods. These 50 VE methods were set as mandatory items. Based on that, value design know-how in products development has been accumulated. This is our database for design VE. In this way, the functions necessary for designing can be improved and be utilized for other product development since these functions are accumulated as the value know-how database.

Construction Project Delivery—Value Added Strategies

By Stephen J. Kirk, Ph.D., FAIA, FSAVE, LEED AP and Stephen E. Garrett, CVS

The construction industry has developed a number of new project delivery methods in response to Owner requests for projects completed earlier and within budget. Each method has its strengths and weaknesses. Quality is sometimes compromised compared to the traditional “design, bid, build” approach. This presentation will start with VM applied in the traditional delivery approach, then discuss how VM can be applied during these alternative project delivery methods. Key VM techniques will be highlighted for application to improve the weaknesses of each delivery method. Case studies will be used to illustrate how value based design decision-making methods can improve each delivery method. The presenters have years of first hand experience in applying VM to all types of construction delivery methods. The audience will become familiar with issues particular to each construction delivery method.

Development of an Integrated E-Learning Centre for Construction Value Management

By Mei-Yung Leung, Ph.D., MCIOB, MAIB, MRICS, MHKIS, CVS, MHKIVM

To enhance the innovative management techniques for the construction students who will be come professionals in the industry, Value Management (VM) course has been incorporating in the BSc(HONs) in Surveying programme at the City University of Hong Kong since 2003. In order to allow VM students to get acquainted with the rules at a pace suited to the level of professional knowledge, an integrated e-Learning Construction Value Management (CVM) Centre has been established since 2003 with the support

of a number of organizations such as City University of Hong Kong, Hong Kong Institute of Value Management an LEARNet at the University of Hong Kong.

Apart from the basic VM information such as the history, the development and the technologies, the e-Learning CVM Centre also includes over 350 self-explanatory slideshows and live videos of VM techniques in the 6-phase job plan and 4 scenarios with the application of VM in real construction projects. Students, thus, can learn who to apply various VM techniques to solve the practical construction problem during VM workshop. This constructive e-Learning Centre creates an excellent environment for students in the VM education, as it establishes a self-learning platform to them for acquiring both theoretical and practical VM knowledge without the limitation of time and venue in their learning process. Finally, it is further expected that students will contribute their professional knowledge to the construction industry by applying the VM techniques in the future.

The Development of a User Satisfaction Evaluation Model on VE Proposals using the Fuzzy Analytic Hierarchy Process

By Myung-Jin Son, Ph.D., Chang-Taek Hyun, Ph.D., PE, TaeHoon Hong, Ph.D., and Jong-Hyeob Kim

This study aims to develop a user satisfaction evaluation model focused on the evaluation phase in the VE Job Plan. First, we analyzed users' requirements based on various domestic cases such as marketing theories and existing VE reports in order to select user satisfaction evaluation items. Finally, we established the hierarchical classification system of the evaluation items through factor analysis. Also, we measured the relative importance and order of preference using the Fuzzy Analytic Hierarchy Process (AHP) to measure the preference of the decision-maker through the confidence interval instead of the existing AHP and matrix evaluation method in the decision-making phase. Further, to verify the effectiveness of Fuzzy AHP, we measured the relative importance through the matrix evaluation table and AHP and compared and analyzed it according to the order of preference.

The Dynamic Relationship between Value and Worth

By J. Jerry Kaufman, CVS-Life, FSAVE

The terms *value* and *worth* are often used interchangeably to describe a need, or want. The *American Heritage College Dictionary* offers little assistance in helping determine the differences in terms. The dictionary defines value, as “An amount, as of goods, services, or money, considered being fair and equitable for something else.” Worth is described as “The quality that renders something desirable, useful, or valuable.” Inherent in these two terms and their definitions is a market dynamics that describes the relationship between the producer and the buyer. In this relationship, *value* is a producer, or seller’s term, and *worth* is a buyer, or customer’s term. When the producer places a price tag on his product offering, he is establishing a market value for that product. If the buyer believes that the offering is “worth” the price, an exchange occurs.

Therefore, from the seller’s prospective: VALUE = FUNCTION/COST.

However, the buyer’s motivation is expressed as: WORTH = BENEFITS/PRICE.

These are fundamental relationships of value management that carry this powerful discipline beyond the common use for simply achieving cost reductions. To be successful in the market, the producer must have an appreciation for which functions and features should be designed into the product offering to resonate with the buyer’s sense of worth. In other words, the producer must know which functions and features the buyer is willing to pay for. Offering a feature rich product that does not attract customers is a sure path to business failure.

The paper will explore the market dynamics and the relationship between *value* and *worth* as the foundation discipline of value management.

For Whom are Public Works? A Value-Added Facilitation Technique for Public Works

By Hisaya Yokota, CVS

VE is an activity to enhance value. Now, whom is the value evaluated for? Mainly the public works are used by people, and many people have different sense of value. In order to enhance value of public works, the team leader should at first let his/her members be aware "for whom are public works." Next, he/she needs to identify who are the users and that kind of sense of value each of them has. Lastly, he/she must evaluate the value of the users in a comprehensive manner. Public works can be enhanced its value by completing all of these steps. This is necessary for the team leader in facilitating VE studies. The author will introduce the concept and technique which have lead to successful results.

The Good, the Bad, and the Function

By William S. Easley, PE, CVS and Richard D. Lambert, Jr., PE, RLS, CVS

The first step in developing a Function Analysis System Technique (FAST) diagram is identifying the functions of the VM study subject. Functions typically reflect a mix of defensive and offensive actions; i.e., preventing negative effects and performing positive accomplishments. In crisis situations, people often focus more on defensive actions than offensive actions. For example, stakeholders for a levee project are usually more focused on reducing flood damages or preventing flooding than on positive benefits such as defining the riparian zone. This article explores ways to demonstrate the degree to which a project is expanding benefits rather than simply avoiding unwanted results.

The Integration of the Japanese Tear-down Method with Design for Assembly and Value Engineering

By James A. Rains, Jr., CVS-Life, FSAVE, PVM and Yoshihiko Sato, CVS-Life, FSAVE

While working for Isuzu in the early 1970's, Yoshihiko Sato first learned of tear-down methods from his association with General Motors (GM). Later Sato fully developed the tear-down methodology to become much more extensive and encompassing than the original version offered by GM. Since that time Sato has written several books and has offered training in his tear-down methods. Recently he has taught his methods in the USA and now has a book written in English, which is co-authored by J. Jerry Kaufman. In 2006, Sato was brought to the USA by Jim Rains to teach and perform a full week tear-down workshop for an automotive supplier.

Based on the experience of working with Sato, Jim Rains has been able to perform tear-down workshops with other companies. One of the elements of Sato's tear-down method is Dynamic Tear-down. The author has developed a Design for Assembly (DFA) module that he has inserted in to Sato's Dynamic Tear-down element. This DFA module has further enhanced the tear-down method. In addition the author has experience of integrating value engineering with the enhanced tear-down method. The paper will describe the introduction of Japanese Tear-down into the USA and the enhancements that have been made as a result; including the integration of Tear-down/Design for Assembly and value engineering.

May Value Added Strategies Increase Product Competitiveness?

By Ferenc Nádasdi, Ph.D., CVS-Life, FSAVE

Globalization is spreading fast. Its world-wide appearance is further galvanised by favourable legal frameworks as well as the quick improvement of logistics systems and the so far unforeseeable ascendance

of telecommunication. Products can reach faraway countries, which mean no manufacturing company remains safe. One of the "escape tunnels" for companies is the application of value added strategies. If companies are able to offer the market products their competitors are unable, or not yet able, to produce, market pressure may be reduced. This, however, may prove to be a double-edged weapon. If the result of the development fails to meet customer demand, all the costs involved in the development process will become a waste. The most important condition of success is to connect value methodology with marketing. Our researches in the field of value added strategies have yielded favourable results in the shoe, clothing and furniture industry. In all cases, value adding was achieved by means of value methodology, with good results.

May Value Methodology Ensure the Creation of Value Added Strategies?

By Kornélia Vámosi

The creation of a Value Added Strategy may prove to be the most important tool in surviving today's cut-throat market competition. This is a difficult task as companies traditionally tend to operate along "linear" basic processes. Resources concerning specific products are granted from department to department. Should it turn out in phase one that one of the previous decisions was not correct, it is very difficult to change anything. The resources have been allocated, the production plan has been drawn, the material necessary for production has been ordered etc. the basic problem is that owing to labour division within the company, actual processes (R&D, creating, developing and making technology etc.) are completely separated from the market, economic and financial processes. The problems usually come down to the fact that the designers wish to realize their "dreams". They create outstanding products, get ISO certificate, but the customer is only willing to buy another "perfect" product. Often, companies do not analyse actual processes, but seek only financial means. Expert economists have been teaching for decades that the production of a loss-making product should be cancelled immediately. This usually involves the partial layoff of the workforce, even if the product proves to be competitive. It is our experience that Value Methodology can usually make a competitive, but loss-making product profitable. The application of Value Added Strategies requires the reconstructing of present market strategies. It is necessary for specific corporate departments to conciliate the proper and economic allocation of resources before the final decision; Value Methodology may provide great help in this. Team-work, as well as function- and cost-analysis are also great tools for the application of Value Added Strategies.

Proposals of Making Value Master Plan for Each Public Agency and a Unit of Common Value to Create Our Society a Better Place to Live

By Takashi.Nakashima, LL.B, VEL

When doing a VE study, a business plan with better value is always prepared. However, we neither have compared the improved plan with businesses other than the original plan before conducting VE, nor known exactly how much and in which part the new plan would have been improved if it was actually carried out. For example, when we conduct a VE study to a road project, we create a new business plan better than the original. However, how about if we compare this with other businesses? How much the citizen and the community would be happier? On the contrary, how many people would be affected by this project?

The author proposes a value master plan and a basic unit of functions supported to work on the master plan for the government administration in state, prefecture and community level in order to create our society a better place to live. If this proposal is properly implemented, not only the comparisons of livable areas can be made but the emphasis on the projects can be determined, and also the comparisons with overseas projects can be possible by using currency exchange rates.

A Study of Cost Competitive Power Elevation by Efficient VM Process Practical Use

By Young-Joo Suh, Ph.D., CVS

The paper are studying that consulting result changes how progress activity by phase to do VM activity. After we usually progress by information phase, function analysis phase, creative phase in VM process, we evaluate and consolidate idea. But, can invent many ideas at creative phase by examining improvement point aimed at by step of contents that inspects improvement item, and executes at function analysis phase arranging contents examining at information phase. Therefore, the paper studies method that can get many ideas and expectation effects by effective operation by VM process.

A Study on the Consecutiveness of the Function Analysis and Idea Creation Phase with Function Integration (FI) and Hierarchical Value Engineering Concept Modules (HVECM)

By Chi-Sung In, CVS, CCM; In-Ill Namkung, AVS; and, Chang-Taek Hyun, AVS

The function analysis and idea creation of the value engineering (VE) process has been applied to the manufacturing industry for the development of functions in the elements of a product. Also in the construction industry, it has been used in various service levels in the design and construction phases of civil structures and components of a project and the function itself, such as in plans, specifications, sizes, and spaces. Due to the multifunction aspects of each menu of elements in a construction project, in the case of the applications of VE, the construction industry is considered less efficient than the manufacturing industry in terms of continuity and working environment.

To address this problem, a unique model is needed in the function analysis and idea creation phases for greater consecutiveness during VE job plan adaptation. This paper will provide the construction-oriented integrated-function analysis with the function integration (FI) and hierarchical value engineering concept modules (HVECM) technique, which can be sequentially adapted as the definable features of functions.

Success of Value Engineering Applications in Organizations in the Competitive World

By Amit Kumar Ghosh, CVS, FINVEST

The value engineering technique although is persisting almost now more than 50 years but being an “user friendly” technique this is one of the most preferred tool found by many shop floor managers for improving performance in an organization. This paper deals with how value engineering application became successful in my company, namely M/S Tata Steel Limited, INDIA, through which immense benefits were accrued. The papers talks about launching of value engineering program in organized and systematic manner and also deals with various phases during its launching. It starts with taking top management into confidence by logically convincing benefits from value engineering, organising and designing VE awareness programs for various levels of managers as per plan, setting VE goals through strategy in company's objectives, concept of formation of a full time VE group for effective and close facilitation, developing VE training materials including both from inputs given by VE experts and from live case studies, identification of improvement areas, selection of cross functional teams, conducting VE workshops, review mechanism of VE projects, presentations to top management by the teams and its approval for changed proposals, auditing projects for financial benefits, recognition and motivations.

This paper also talks about the concerns that might cause interruption/retardation in the progress of VE applications in an organization. Besides the success story in the company, this papers also deals with the role & responsibilities of value practitioners towards the society, industrial communities, the country and above all for the world to achieve global improvement in the areas like industries, health, services, education, etc.

Finally this papers also deals openly with logical importance of co-existence of the value engineering technique with other newer improvement tools like “Theory of Constraints”, “Total Productive Maintenance”, “Daily Management”, etc., as complementary to each other without creating a feeling of threat that value engineering may be perceived as back-dated concepts.

A System Engineering Approach to Value Engineering Change Proposals (VECPs)

By James R. Vickers, CPCM, AVS; Karen Gawron, AVS; and Connie Cobo; AVS, PCM

Industry has been using value engineering change proposals (VECPs) to reduce costs on government contracts through the contractual provisions that allow for sharing savings on accepted VECPs. The use of VECPs has, in total, worked well for both the government and the contractor. However, on some programs, particularly those for major weapon systems, using VECPs has lead to a few sub-optimizations. The VECP proposed savings on one component or subsystem, may be realized, but it can result in increased costs to other related components or subsystems. This paper will examine how using a system engineering approach to VECPs takes into account the effect of changes to a total system. Any negative effects of the VECP can be neutralized and may result in increased savings and performance for the entire system. Specific examples will be provided of how a system engineering approach to VECPs was used at Raytheon Missiles Systems as well as examples of where it was not used and the resultant problems.

Value Added Strategies to Sustain a Successful Value Improvement Program

By John L. Robinson, PE, CVS-Life

We have all seen and many have enjoyed the fruits of successful Value Programs. We have also watched time and time again as these successful and robust Value Programs gradually spiral downward until they are no longer considered viable or beneficial. This paper addresses how actions can result in unintended consequences that contribute to the downfall of a successful Value Program. The paper will discuss many of the common compromises that are made relative to the scope of the value effort and the consequences that result from these decisions.

Further, the paper will provide value program coordinators and value consultants the knowledge, tools, and techniques to allow them to justify proper scoping of value studies to include such issues as required disciplines, number of team members, level of experience and expertise, and study duration.

Value Innovation Program for Product Planning of Samsung Electronics

By Dong Joon Kim, Ph.D., CVS

As major product and service categories are generally becoming more similar, people increasingly select products and services based on price. Under these circumstances, how can companies survive? Not only products and services but also strategies and methodologies for gaining customers are oversupplied and become more and more similar, so they are losing their values. In the event companies get faced with the situation that makes it more difficult that they make their own products and services by which they win over customers. Therefore people who work in the company should get solutions that satisfy customers as well as the company. They should know methodologies and practical techniques that make competition irrelevant. This new insight to products leads companies get out of the vicious circle of price competition, and, moreover, creates new markets in which customers as well as companies are satisfied.

This presentation, following the Samsung’s presentation in 2006 (“Creative VE Activity Using Value Curve”), will explain how to sail business into new markets with no competition and greater profitability by addressing its unique and comprehensive approach to value innovation strategy that can be applied to products and services or any organization attempting to create an innovative strategy to accomplish goals.

The Value Methodology: A Critical Short Term Innovation Strategy that Drives Long Term Performance

John E. Sloggy, CVS

Is the Value Methodology any different from other popular value improving practices? How is it different and what results can I expect? As organizations continue the search for improvements to profitability and performance the light shines on Value Engineering. The need exists for a process that both generates real innovation and achieves that with a measurable and sustainable improvement in the organizations performance. Many tools have surfaced that propose to solve the performance puzzle (i.e. Lean, Six Sigma, et al.), but how to achieve real innovation and increased performance that is measurable and sustainable? The Value Methodology provides the answer.

Innovation is what separates high performing organizations from the rest of the pack. A hierarchy of the impact on an organizations performance exists and the design function to a large degree drives both the organizations innovation and performance. The greatest impact is achieved by altering the design of a product or project. Organizations that pursue innovation as a competitive strategy need to inculcate it into the core organizational competencies. Innovation can be pursued as both long term strategies (R&D) and short term strategies. The Value Methodology is a highly effective short term innovation strategy that produces real long term increases in an organizations performance.

VE and Sustainability

By Steven Paget, AVS, LEED AP

Green building and sustainable design have experienced explosive growth over the past decade in response to the adverse impact of development on the natural environment and the need to mitigate this impact. High-performance, sustainable design aims to provide the needed function with the highest degree of environmental sustainability possible at, ideally, the lowest initial and life cycle costs. The value methodology (VE) can make an important contribution to this significant transformation occurring in the construction industry.

In recent years, the commodities market for construction materials has seen a high level of volatility and cost spikes from increased demand, reduced availability, and growing production costs. The factors responsible for the market volatility are in part a result of the increased cost to harvest and process natural resources, transport materials, and mitigate environmental impacts. The two colliding trends of increased demand and reduced availability of energy and natural resources are rapidly increasing the cost and risk of doing business.