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May 8, 2012
Dr. Sergei Ikovenko, President
The International TRIZ Association

Re: Certification for TRIZ Master on Merit

Dear Dr. Ikovenko,

With this letter I apply for certification for TRIZ Master on Merit.

Sincerely,

Mark G. Barkan, PhD
Certified TRIZ Specialist #27

Attachments:

1. Resume
2. A list of selected innovation projects, in which I personally participated, Included are only projects with implemented solutions
3. A several examples of the projects with a description of the manner the TRIZ tools were applied.
4. List of references from some past clients.
5. Recommendations from TRIZ Masters.

Mark G. Barkan

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Engineering and Project Manager

Cross-Functional Experience and Cross-Industry Expertise

Highly qualified Engineering and Project Manager offering 30 years of management experience within construction and manufacturing industries. Results focused and effectual leader with proven ability to deliver a project on time and within budget. Talent for proactively identifying and resolving problems – facilitating/managing cross-functional teams, controlling costs, and maximizing productivity. Advance computer skills. Strengths in:

- Situation analysis and task/project development
- Managing cross-functional teams
- Process development and improvement
- Proactive problem solving
- Project logic/schedule development
- Productivity enhancement
- Creative problem solving, application of TRIZ, Six Sigma, Lean and VE/VM for problem solving and process development/improvement
- Facilities design and equipment layout

PROFESSIONAL EXPERIENCE

Independent Consultant **2009-Present**

Involved in small and medium size projects on process improvement/development with various clients.

Lisega, Inc – Newport, TN **2007-2009**

Engineering Manager

Lisega Inc is serving Energy Sector as a supplier of pipe supports and supplementary steel. The Engineering Department supported sales growth of 250% in 2 years with 15% increase in manpower. My responsibilities included:

- Review of customer specifications and cost estimates in the estimating stage
- Identify technical challenges and provide proposals for resolution
- Recommend methods, materials and layouts for design improvement based on manufacturing needs and capabilities.
- Schedule and assign required tasks
- Budget engineering staffing needs, facilities and software

Concept Catalysts – Charlotte, NC **2000-2007**

Principal

Initially established Concept Catalysts as a technology and business consulting company, which applied proprietary **Innovation on Demand** methodology to facilitate analysis and improvement/modification of business and technological processes.

Idéation International Inc. – Detroit, MI **1997-2000**

Director of Analytical Services & Engineering

Recruited initially as a member of Amoco Consulting team. Then, promoted to Director and Amoco Program Manager. Responsibilities included overall project management, client relations, and new project development.

Key Results

- Implemented a project control system that identified the best ways to reduce time and cost for project completion
- Negotiated a number of new projects
- Introduced process improvements that maximized per project profit margins by 27%

Gaston County Dyeing Machine Co. – Mount Holly, NC **1990-1997**

Director of Engineering

Joined Gaston County Dyeing Machine Co. and charged with rebuilding the company's complete engineering operations.

Selected Results

- Reduced number of employees in Engineering Department in half while increasing output
- Reorganized MRP system' application, resulting in reduction of 70 engineering hours per sales order
- Instituted concurrent engineering process, resulting in reduction of order lead time from 21 to 12 weeks
- Lead a team of process and design engineers in modification of 2 product lines, resulting in $145M in new orders from the customers who traditionally bought from the competition
- Initiated a number of design changes resulting in 40% cost reduction across several products
- Managed design-build-install project for a burned down textile mill, cutting total project time by 50%
- Lead participant on Vendor Negotiations Team, negotiated substantial discounts on the majority of supplies

Day Engineering (Consultants for DuPont) – Charlotte, NC **1985-1990**

Process/Project Engineer

Performed steady state hydraulic and heat/mass flow calculation, developed P&IDs and equipment specifications, procured equipment in accordance with specifications, supervised piping engineers and designers. Facilities design, supervised cross-functional teams in design and construction of various facilities.

Selected Projects

- Waynesboro Lycra solvent recovery piping system – reduced scheduled completion time by 40%
- The biggest in DuPont organization new scrubber system – reduced design and field installation cost by 15%
- Waynesboro Lycra #6 spinning machine – reduced scheduled design time by 25%
- Cape Fear Polyester plant – silo design-build project – reduced scheduled design/construction time by 15%

Duke Power Co. – Charlotte, NC **1979-1985**

Design Engineer/Group Leader

Performed stress analysis and structural calculations for pipe supports and rupture restrains. Led a group of 90 engineers in pipe support design and associated calculations. Specified and procured nuclear power plant components in accordance with NRC seismic regulations. Organized seismic qualifications for existing pipe supports based on statistical sampling as ordered by NRC.

Affiliations

ASME, B31.1 Power Piping Subcommittee – Sub Group on Materials
ASME, B31.1 Power Piping Subcommittee – Permanent Task Group on Pipe Supports
2005-2011 – The International TRIZ Association – President
2011 – Present – The International TRIZ Association – Executive Director

Certifications

Certified as TRIZ specialists, Level 4
Certified as Six Sigma Black Belt
Certified as Lean Master

Education

MSME from Moscow Technical University, Moscow, Russia
PhD from Moscow Technical University, Moscow, Russia
MBA from Queens University. Charlotte, NC.

Mark Barkan 1991-2012

List of projects performed with various companies

I Gaston County Dyeing Machine Co. – selected projects; more than 50 total innovation projects were completed in 7 years.

1. **Piece dyeing jet machine** – only implemented innovations are included in this list:
    1. Variable jet – developed a jet, capable of automatically changing flow gap – used shape memory effect
    2. Treating dye solution with magnetic water; reduced dyeing cycle 20%
    3. Forecast of Piece Dyeing technology – developed a 50 years outlook which, so far, is proving rather accurate
    4. Developed a brand new process – for 30 years prior, it was deemed that high pressure is required to propel fabric. Thus, a contradiction – the pressure must be high to propel fabric, and the pressure must be low not to damage fabric. As usual, a compromise pressure was selected. Not ultimately suitable for fabric transport and still beating the lint out of fabric. System analysis revealed that the increased flow propels fabric and does not require high pressure. A new arrangement was designed and implemented in 1996. Sales of this model of the jet dyeing machine surpassed all other models combined.
    5. Fabric rope speed measuring device – enables on the fly adjustment of fabric speed
    6. A transporting device for highly sensitive fabrics – enabled processing of fabrics never before dyed in a piece dyeing machine
    7. New chamber design enabling better reorientation of fabric – this feature facilitates dyeing process
    8. A concept of a new piece dyeing machine; won silver medal in 1999 at the International Equipment show, Paris, France.
2. **Package yarn dyeing machine** – only implemented innovations are included in this list:
    1. Tapered lock – package on a spindle; patented design. Unfortunately, only one patent.
    2. System design enabling reduction of required water, dyes and chemicals by 45% as a ratio to total amount of yarn. Was – 8 to 1; new 4.5 to 1
    3. Redesign of the drain portion of dying process. Resulted in 28% reduction in process time. This particular invention helped the company to win several big bids. Although the unit price of the equipment was higher, the total number of dying machines was reduced as each machine was producing 30% more.
    4. Horizontal package dyeing machine. Through utilization of TRIZ, we were able to design a superior piece of equipment. Cycle time, liquor ration and quality of dying was better than any other dying equipment
3. **Special projects** – only implemented innovations are included in this list:
    1. A dryer for pharmaceutical industry – through application of subversion analysis revealed a mechanism of equipment failures. Saved over $3 million of potential losses in a law suit.
    2. A distillation column design enabling installation savings of nearly 25%

Note: Gaston County Dyeing Machine Co., filed for 17 patents, which were recalled 2 weeks later on the advice of a patent attorney.

II Selected Projects with Ideation International Inc

1. Control system on unmanned gas producing platform. The gas would freeze at temperatures well above freezing. Found the true problem and implemented a simple fix. Over $2 million per operating platform return on total cost of improvement of $52,000
2. AFD at a chemical plant. A total of 21 potentially disastrous events were revealed during 1 week of work with the team of experts.
3. 4 Directed Evolution projects. In one case we were able to define a brand new mechanism of oxidation reaction. Calculated economic benefit - $2,500,000 for one plant.
4. Premature failure of a very large shell and tube heat exchangers. Through subversion analysis revealed that the failure was caused by the process of heat exchanger manufacturing. With a few inexpensive changes in manufacturing process the failures stopped.
5. Voluntary rotation of fuel tanks on large tractors. Determined the reason for rotation was the way fuel tanks were attached to the frame. A simple modification eliminated this problem. Saved tractor manufacturer nearly $1,000,000 per year in service calls.
6. Drilling for oil and gas. The big issue is the need to periodically stop drilling and case a part of the well. Formulated the main contradiction and found resources to resolve this contradiction. To my knowledge, the project is still alive. If implemented, it could reduce the cost of drilling one well from $20 million to $3 million.
7. A cost reduction for power source for a telephone system. Reduced the cost of equipment, manufactured by the client, by 47%. An interesting detail – it took 8 people, who worked together on this device for 2 years, 4 hours to describe functioning of the device. Once we build a functional model of this device, it became apparent how semantics get in a way of clear communications.

III Selected Projects with Lisega

Here, in addition to running the Engineering Department, I mostly worked on improvement of manufacturing processes. The most successful was a project were we reduced an order lead time from 14 weeks to 8 weeks. An application of Systemic approach enabled recognition of process' bottlenecks and associated contradictions, which were resolved with the aid of TRIZ tools.

IV Selected Projects with Concept Catalysts

I started Concept Catalysts in 2000 as a technology consulting business. However, the vast majority of the projects were dealing with improvement of various processes. In particular, I am very interested in application of TRIZ to Business Process Improvement. Several projects of this nature I did for an electric and a natural gas utilities. Both headquartered in Charlotte, NC. In particular:

- Reduction of service calls due to summer disconnect of gas supply
- Decommissioning of nuclear facilities
- Design of robotic equipment, used at nuclear facilities

- 8 projects with the Department of Energy. Bound by non-disclosure for eternity
- Work with small, privately owned companies on cost reduction and manufacturing and business processes development and improvement.

Methodological aspects of practical application of TRIZ with few examples of the real life projects

Every solved problem
has simple solution

In a nutshell, a Problem Solving Process consists of three parts – analytical, solving of the revealed problems and validation of selected solutions. Different TRIZ companies and individual TRIZ practitioners use somewhat different approach to problem solving, however, these three main segments of an innovation process are present in practically every approach. In the few examples of the projects with implemented results I demonstrate how TRIZ tools and processes may aid in problem solving. Also, I will show what could happen if some of the processes are violated or, simply, not observed.

Project – Reducing the Liquor Ratio of a Horizontal Package Dyeing Machine

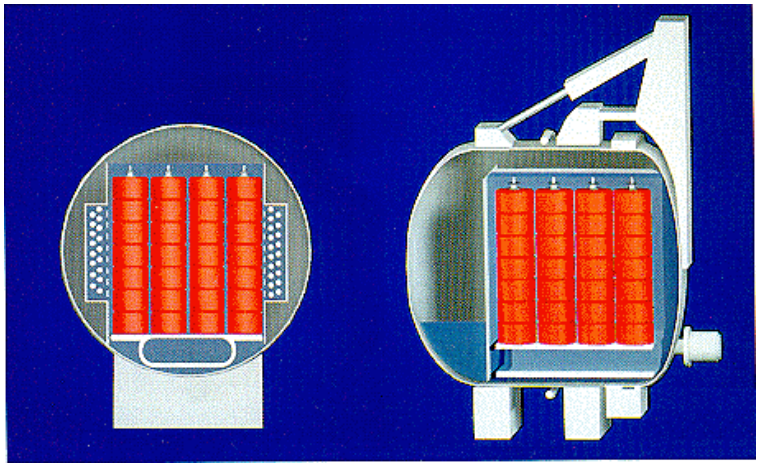
Vertical Package Dyeing System

As can be seen from the above picture, a vertical package dyeing machine consists of a kier, which is a pressure vessel of sort, a carrier with spindles for holding yarn packages, inside of the kier, a pump, a piping arrangement and chemical addition system? With this said, the pump and most of the piping are located in the basement of the dye house. This, of course, adds to the capital cost of building these facilities.

This issue is resolved by the development of the horizontal package dyeing machine. In this case, all of the system is located on one floor, the capital costs of building a new dye house are substantially reduced.

As usual, when a solution does not take the entire system into consideration a subsequent problem, or two, spring up. In this case, an increase in liquor ratio presented a new problem. Liquor ratio is a ratio between the total weight of yarn been dyed and the total weight of dye solution. This ratio must be kept to an absolute minimum, in order to minimize the cost of dyeing operation. So, the liquor ratio of the newly developed Horizontal Dyeing machine was in 9.5-11 to 1, as opposed to the liquor ratio of the Vertical Machine of 5.5 to 1. The industry could hardly absorb this substantial increase in cost of operations.

Horizontal Package Dyeing Machine



In order to minimize liquor ration, the vessel for a Horizontal Dyeing Machine should have square shape. However, high pressure inside of the vessel necessitates, in this case, a very thick vessel wall, which leads to prohibitively high cost of pressure vessel. Thus, a physical contradiction – the vessel must have round shape for high pressure reasons, and it must have square shape for supporting lower cost of operation.

In the spring of 1992 in my very first TRIZ based innovation project I developed a carrier for horizontal package machine, which enabled a liquor ration of 5.5 to 1. The stated physical contradiction was resolved by separation in space. The vessel is round and the carrier is square. The carrier is constructed in a way that contains dye solution inside the walls of the carrier. Since the top of the carrier is open, the pressure inside of the carrier is the same as outside. Therefore, a square shape is not detrimental for high pressure operation. The new design was introduced to the company’s customer base and, after initial enthusiasm, was soundly rejected.

This situation provided a very profound lesson in systemic laws. The new carrier was not compatible with the existent automatic material handling systems. Of course, we made all the necessary modifications to alleviate this issue. Yet, we lost about 6 months of potential sales. Plus, the competition received a present of time they used to develop something similar.

Project – a New Jet for a Piece Dyeing Machine

Jet dyeing was invented in the late 1950s. For over 40 years jet delivered high pressure dye solution flow to a strand of fabric. The flow of dye solution served two main purposes: 1) to help propel fabric and 2) to bring fresh dye solution to fabric surface. It was believed that the pressure must be high for propelling the fabric.

However, this approach has one major flaw – high pressure bruises fabric surface and forces lint out of fabric. Therefore, the dyeing system must be equipped with a filter, in order to remove lint from the flow of dye solution. This particular flaw limited the ability of piece dyeing machine to dye sensitive fabrics such as silk and many kinds of synthetic fabric. For decades this situation persisted and there was no apparent way to improve it. The industry resorted to all kinds of optimization measures – the pressure was reduced to protect fabric surface, but not enough because the flow would not be sufficient for propelling the fabric.

In 1996, together with a few dyers, we analyzed the jet dyeing process with ARIZ. After three days of building models, we made a "shocking" discovery – high flow, at low pressure, is a better way to propel fabric in a jet dyeing machine. In addition, high flow worked better at reorientation of fabric – an important feature for enabling access of fresh dye to every fold of fabric. We tried this technology in a mock up and the test was very successful. A dyeing machine with the new jet was introduced to market in 1998, after I left the company, and was immediately recognized by the industry as a superior piece of equipment for dyeing sensitive fabrics.

The new technology did not eliminate high pressure jet machines. Those were still used for dyeing of cotton fabrics. However, many sensitive fabrics could now be dyed in a jet of different kind, providing much higher productivity as compared to some other dyeing systems.

Project – New Oxidation Chemistry

This project was performed while working with Ideation International as a Director of Analytical Services and Engineering.

The project was one of 4 Directed Evolution projects, Ideation contracted with Amoco in August/September 1998. This project is described in sufficient detail by Dr. Bill Gong in his referral, a part of this document package, who was one of 3 Amoco SMEs on this project. My contribution to the project was in helping the Amoco/Ideation team, consisting of experts in chemistry, to focus on the systemic level, most suited for a positive outcome of the project. Initially, the team was focusing on process/equipment aspects of oxidation. Upon discussion on the direction of the project, the decision was made to move down to atomic/molecular level. As the result, a new chemistry was developed. More important, in my opinion, result

was framing of a process, by which new chemistry could be developed for most applications. I will be able to expand on this topic whenever a confidentiality agreement expires.

Project – Dye Distribution System

A new dye distribution system was designed and tested. The testing was performed by hooking up the control system to a mock up station, which electronically simulated real process conditions. Everything worked good and the Dye Distribution System was shipped to the customer. During the start up, after the system was installed, an unexpected “water hammer” would result once the operation reached a certain point in the process. After an extended troubleshooting process, we discovered the reason – of the two valves, which should close in a certain sequence, the one which should close first had a slow actuator. Thus, the first valve would close after the second valve would close. As a result, a high pressure flow would slam into closed valve and cause the “water hammer”.

The reason this deficiency was not discovered during the test is that a mock up station reacted by electronic means. In reality, the actuator is an electro-mechanical device, with a certain time to close. This was, probably, the first time I employed System Dynamics type of analysis. By including a feedback loop into the model, we understood the phenomenon. Although this may not sound as a TRIZ related exercise, I would not be able to fully understand the process and the failure without being able to see the entire system. The TRIZ tool here is Systemic Thought Process.

Project – DTM

DTM Corporation develops, designs, manufacturers, markets and supports, on an international basis, rapid prototyping and rapid tooling systems and related powdered materials and services. DTM's Sinterstation systems use the SLS® Selective Laser Sintering process to create solid three-dimensional objects, layer by layer, from plastic, metal, or ceramic powders that are "sintered" or fused using CO2 laser energy. The project is well defined on Ideation’s website at http://www.ideationtriz.com/DTM_Case_Study.asp. I served this project as a coach of a TRIZ based innovation process. The resulting piece of equipment possessed improved functionality at a reduced total cost.

Of the three projects I completed with DTM one stands out. In this project, by utilization of the analytical step of a problem solving process, the team discovered that if they continue on the selected path the project at some point the project will have to stop because it will be impeded by certain natural laws. TRIZ or not, the laws of nature are here to stay. By reassessing the project direction the team, by their estimation, saved 12 months of 5 people and ~$2 million if potentially wasted money.

An interesting detail, in a conversation with Craig Wadham, DTM’s Director of System Development, to my question about an impact TRIZ makes on their R&D work, Craig responded: “…the results are very good, however, at the end of the day, when R&D people finish and go home, one can see that they are really tired”. Thus, TRIZ enables good results, if one works hard.

Project – Cost Reduction for a Telephone System's Power Supply

A small company designs and manufactures a Power Supply for Telephone Systems. This device is a surface mount 1" by 1" card, which receives direct current at 70 volt, converts the current into alternating current, amplifies the current to 110 volts, and converts it back to direct current. The goal was a 25% cost reduction. The entire project took 2 days. The cost was reduced by 47%. One of the biggest cost savings contributors was a complete elimination of several components, which comprised a duplicate circuit. The function analysis, a part of the analytical step in a problem solving process, of the system revealed that under no circumstances the current could flow in both directions at the same time. Thus, one circuit was completely eliminated.

Project – Implementation of an Enterprise Resource Planning (ERP) Software

The ERP software was custom designed for a company. Upon completion of the design process, implementation activities were estimated to take 30 months at a cost of $2.5 million. In 2 weeks time, working with a cross-functional team, representing every department of the company, we discovered that the software developers introduced certain changes, which necessitated changes in company's business process, resulting in an extended training of personnel. Upon review of the proposed changes, company's management ruled that the potential benefits, resulting from these changes, do not warrant an increase in the implementation costs. The programmers were instructed to rewrite a few segments of the ERP software. The rewrite took a total of 2 weeks, resulting in implementation taking 18 months at a cost of $1 million.

This is another example of solving a social problem by technical means.

Project – Reduction of Order Lead Time

A manufacturing company was losing business for the reason of too long order lead time. It took on average of 14 weeks from order entry to shipment. Upon preliminary situation analysis, it was discovered that the direct activities, design and manufacturing, took 2 and 4 weeks respectively. The rest of the time was spent in various overhead activities or was not possible to account for. Further, the analysis revealed quite a few systemic inconsistencies, which caused delays in order processing. Some were caused by lack of understanding by the office personnel of their roles and responsibilities. I led a cross-functional team, which uncovered hidden resources and many new applications. For example, painting of structural parts was a very time consuming process. One of the reasons – the end of a square tube or an I-beam was to be painted in electrically conductive paint to enable field welding of these members. Upon venture into supersystem, the construction site, we discovered that field welders were grinding this special paint off anyway. Thus, a technical problem was solved by social means – we were able to explain this issue to company's customers and they lifted electrically conductive paint requirement.

By solving a multitude of inherent business/manufacturing process physical contradictions the Order Lead Time was reduced to 8 weeks. One of physical contradictions was formulated as follows: in order to keep the project on schedule, the engineering department must

complete the entire design documentation package prior to sending it for further processing and the engineering department must release the specifications for long lead purchased components in order to facilitate the timely order delivery. Traditionally, in many cases a total project time is reduced by compressing individual activities lead times. This process of setting “stretch goals” causes undue stress on the employees. A much better way is – a change in project logic. Or, using TRIZ terminology, replace one system with another system. In this particular case, by extending engineering completion time by 2 or 3 days, the overall project time was reduced by 2-3 weeks. It was possible to avoid a situation where “made” components were ready for shipment, and “purchased” components took an extra 2-3 weeks to be delivered.

Project – Redesign of the Product Structure Approach

A certain product family was comprised of a large number of Models. The Models were built with common components, arranged in accordance with individual process requirements and client preferences. In order to simplify design process and reduce a number of design engineering hours, a Models and Options system was devised. The way the system was structured, every new order became a new Model. However, an existing Materials Requirements Planning (MRP) did not allow for discretionary substitution of an individual component by simply pulling this component out of the Bill of Materials (BOM) and replacing it with another one. This situation caused a need for a lot of design engineering hours to maintain a huge, ever-increasing number of Models.

To alleviate this situation, I used one of the TRIZ Principals – Do it the other way around. In other words, if prior to change, the Model was a System and every common assembly was a subsystem, in the new structure the common assemblies comprised Group of Options, from which a Model could be constructed. By switching systemic level, every new order stood on its own and did not have to modified every time one of the options was modified.

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27 April 2012

MATRIZ Dissertation Council,
International TRIZ Association

RE: Recommendation Letter for Dr. Mark Barkan

It gives me great pleasure to recommend Dr. Mark Barkan for the TRIZ Mastership (MATRIZ Level 5 certification) for his exceptional achievements in practical application of TRIZ. For over 20 years in TRIZ, Dr. Barkan was always at the forefront of TRIZ application in the USA and is one of the most successful practical TRIZ innovators in the USA.

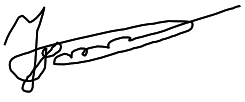
I have known Dr. Barkan since 1999. We met at the QFD conference that was held in Novi (MI). In the year 2000, during my fellowship in the USA, I visited Dr. Barkan at the *North Carolina State University* (Raleigh, NC), where he taught a course on TRIZ. Since then, we have regularly exchanged ideas related to TRIZ theory and to its practical application.

I am aware of numerous successful projects which were resolved with the help of TRIZ by Dr. Barkan and his team. In just seven years with the *Gaston County Dyeing Machine Co.* (Mount Holly, NC), for example, he completed over 50 projects. More broadly, many of the innovations proposed by Dr. Barkan during his career were implemented and provided companies with significant financial savings.

Being an exceptional TRIZ practitioner, Dr. Barkan also worked on a number of theoretical TRIZ topics and presented his findings internationally. His work on Lean Sigma and TRIZ is certainly very impressive. His Lean Sigma and TRIZ Bi-system concept was very highly regarded by many Australian innovation managers.

It would be a grave omission not to mention that Dr. Barkan was instrumental in the introduction of TRIZ to the Western world. I cannot emphasise enough the contribution that he made to the TRIZ community during his six years as the MATRIZ President.

I trust that in his application Dr. Barkan has been able to demonstrate his exceptional performance as a TRIZ practitioner. Without any hesitation I support his application for TRIZ Master status and wish to strongly recommend to the MATRIZ Presidium that Dr. Barkan be granted the diploma of TRIZ Master of the International TRIZ Association.



Iouri Belski,
Professor of Thinking and Problem Solving,
TRIZ Master (Diploma No 75),
PhD (Semiconductors and Dielectrics) from the Moscow Institute of Physics and Technology

Copies: MATRIZ President, Dr. Sergei Ikovenko; Chairman of TRIZ Master Dissertation Council, Dr. Simon S. Litvin

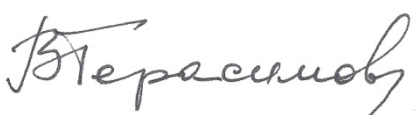
РЕКОМЕНДАЦИЯ

Я, Владимир Герасимов, познакомился с Марком Барканом больше 20 лет назад. За это время наши жизненные пути-дорожки пересекались множество раз. Вот всего несколько примеров:

- Летом 1991 г. прошел первый учебный семинар по ТРИЗ в США (на фирме Gaston County, штат Северная Каролина). Слушатели – ведущие сотрудники фирмы, в том числе вице-президент по маркетингу. Провели его мы втроем - Семен Литвин, Игорь Девойно и я. Марк не только преодолел сильнейший скепсис руководства в отношении «заезжих варягов», но и организовал все самым лучшим образом. Как я отношусь к этому событию? Если Колумб когда-то открыл Америку для Старого Света, то Баркан ее открыл для ТРИЗ.
- Спустя полгода Марк сумел «пробить» на фирме согласие на продолжение работ. Нас с Семеном Литвиным пригласили на две недели, чтобы не только слова услышать, но и проверить изобретательскую методику в деле. Итоги были вполне успешными, но это благодаря тому, что Марк непосредственно участвовал в работе. Он был не только великолепным организатором, но и грамотным инженером-изобретателим (вообще-то, для меня это синонимы).
- В течение 2,5 лет, начиная с апреля 1994 года, я был консультантом фирмы Gaston County по решению технических проблем. Моя статья про это время доступна в Интернете (http://www.metodolog.ru/00500/00500.html). Я не буду цитировать несколько страниц текста, написанного после моей полугодовой командировки на фирму по свежим следам. Отмечу только, что это был, на мой взгляд, уникальный эксперимент по внедрению ТРИЗ в реальное производство, причем, в самых, что ни на есть «боевых» условиях. За 5,5 месяцев были внедрены 6 серьезных предложений, одно уехало в г. Милан, Италия, на международную выставку. Сразу же после этого было еще несколько внедрений – таких результатов у меня и в помине не было за 30 лет предыдущей инженерно-изобретальской практики. Могу заявить со всей ответственностью: этого бы не получилось, будь на месте Марка любой другой человек. Это не пустой комплимент, это констатация факта.
- Пришлось мне поработать под началом Марка и в фирме Ideation International INC. Не скажу, что это было легко, Марк умеет требовать и «выжимать», но, во-первых, не грубо, а во-вторых, всегда по делу. С ним не всегда просто работать, но всегда РЕЗУЛЬТАТИВНО. За что ему от меня большое человеческое спасибо!

Считаю, что звания Мастер ТРИЗ самой высокой пробы Марк заслужил уже давным давно, а то, что у него до сих пор его нету – чистейшее недоразумение. Если написанного выше членам Диссертационного Совета МАТРИЗ маловато будет, готов по их первому же требованию привести десятки конкретных примеров, их есть у меня...

Владимир Герасимов
Мастер ТРИЗ, диплом № 8
21 апреля 2012 г.



To the Dissertation Council of MATRIZ

I have known Dr. Mark Barkan for more than 8 years since he worked for Ideation International and later as MATRIZ President.

Dr. Barkan is a TRIZ professional with a vast experience in TRIZ: usage, deployment, and proliferation. He has good knowledge of the methodology, a rich training track record and especially rich TRIZ application experience.

During his engineering/TRIZ career Mark conducted a number of innovation projects – especially when working for Ideation International as a TRIZ consultant he was exposed to challenging problems of various industries. Dr. Barkan was a lead consultant and Program Director for BP AMOCO then.

Dr. Barkan is active in methodology development. He is a Six Sigma Black Belt and Lean Practitioner as well as an expert in TRIZ (Level 4). One of the focal points of his research was integration of TRIZ with those two other methods.

Dr. Barkan can be credited for a number of presentations, TRIZ training seminars and workshops – he is an accredited representative of MATRIZ Council on Methodology and Expertise.

I had a privilege of working with Mark on MATRIZ Board when he served as MATRIZ President for 6 years. I would like to mention his significant contribution to TRIZ proliferation in the world, Dr. Barkan having been a key-note speaker at a number of TRIZ and innovation conferences. Mark is Executive Director of MATRIZ now.

I recommend that Dr. Mark Barkan be awarded "TRIZ Master on Merit" – Level 5 of MATRIZ certification.

Sergei Ikovenko,

TRIZ Master (diploma 68)

.

Рекомендация Марку Баркану

На присвоение звания "Мастер ТРИЗ" по совокупности выполненных практических работ (TRIZ Master on Merits).

Мы знаем Марка Баркана с осени 1993 года, когда начали работу вместе с ним по проектам компании "Gaston County Dying Machine Corp." Уже в первом проекте Марк принял активное участие, проявив незаурядное умение практического использования идей и подходов ТРИЗ.

В 1998 – 2000 годах Марк Баркан работал в компании Ideation International Inc. в качестве руководителя группы проектов, проводимых для компании Amoco. Эти проекты включали:

- Непосредственное решение изобретательских задач
- Поиск причин брака и нежелательных эффектов и устранение этих эффектов
- Предсказание и предотвращение возможных нежелательных эффектов и аварий
- Проведение Директед Эволюшен – предсказание развития нескольких систем (типа крупного химического и нефтяного производства)
- Расследование крупной катастрофы

Марк также участвовал в качестве руководителя проектов и решателя в проектах для нескольких других компаний.

При проведении этих проектов Марк проявил себя хорошим ТРИЗ решателем, способным "сходу" в процессе работы с клиентами находить решения проблем. Но главная его способность – он очень эффективно работает в области связки "ТРИЗ – бизнес", обеспечивая необходимые для успеха проекта коммуникации между ТРИЗ специалистами и экспертами заказчиков.

Учитывая богатый практический опыт и знания в области ТРИЗ Марка Баркана, мы рекомендуем присвоить ему звание "Мастер ТРИЗ" по совокупности его практических работ в области ТРИЗ

Борис Злотин, Мастер ТРИЗ
Vice President and CTO
Ideation International Inc.

Алла Зусман, Мастер ТРИЗ
Director of Product Development
Ideation International Inc.

20 апреля 2012

В Совет МА ТРИЗ

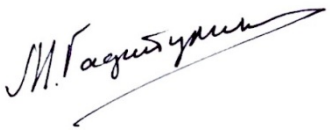
РЕКОМЕНДАЦИЯ

Я, **Гафитулин Марат Семёнович**, Мастер ТРИЗ (Диплом № 14) рекомендую

Марка Баркана ТРИЗ специалиста 4-го уровня на квалификацию «Мастер ТРИЗ».

Марк Баркан являлся Президентом МА ТРИЗ с 2005 по 2011 год. Быть Президентом общественной международной ассоциации дело почетное, но требующее от руководителя такого уровня большой ответственности и значительной отдачи личных сил и средств. **Марк** успешно справлялся с возложенной на него миссией, что подтверждает тот факт, что он трижды был избран на пост Президента МА ТРИЗ.
Кроме общественной нагрузки **Марк Баркан** был активным участником многих международных конференций, где своими выступлениями показывал не только свой профессионализм, но активно продвигал ТРИЗ как науку и МА ТРИЗ как активно развивающуюся общественную организацию.

С уважением – М.С. Гафитулин.



19.04.2012.

Рекомендация.

Я, нижеподписавшийся Митрофанов Волюслав Владимирович очень рад, что мне представилось такая возможность - отдать должное человеку, которого я безмерно уважаю - дать рекомендацию Баркану Марку для получения звания Мастер ТРИЗ. Если судить по тем критериям по которым автор ТРИЗ присваивал это высокое звание своим ученикам – то это были пропаганда и агитация за ТРИЗ, участие в преподавании ТРИЗ, вовлечение новых сторонников ТРИЗ, отчетность о работе. участие в конференциях и семинарах и т.д. то М.Баркан полностью им соответствует. Но Марк был президентом МАТРИЗ, и здесь уже шла агитация не на уровне СССР, а на уровне всех стран мира! А это дорогого стоит. Я не буду приводить цифры о том, сколько стран начали применять ТРИЗ, но обращу внимание на то обстоятельство, которое продемонстрировал Марк после того как он стал верным поданным ТРИЗ в Америке. Я об этом знаю, так как он проводил эту работу с нашими выпускниками Университета. Он помогал им по всем направлениям. Особенно мне понравилась работа, которую он делал на своем предприятии, куда он пригласил Владимира Герасимова, с которым они совместно работали полгода, Марк ежедневно находил задачи на действующем производстве и изготавливал узлы и детали, которые они совместно изобретали. Несомненно, важнейшей чертой Марка было умение ладить с инженерами и вносить жесткую критику, как в конструкции, так и в элементную базу. Многие инженеры фирмы увидели и почувствовали, как работать с ТРИЗ. Я, знаю, как много раз Марка приглашали Американские Университеты для знакомства с ТРИЗ. Когда он приехал первый раз в С.Питербург в 1995 году я попросил его провести занятия с нашими слушателями Ленинградского Народного Университета научно технического творчества.

Они были очарованы его рассказом и задачами, которые он им предложил. Я мог бы рассказывать очень много и долго о всех заслугах Марка Баркана перед ТРИЗ и теми людьми которых он привел и обучил ТРИЗ, но считаю, что то о чем я сообщил в своей рекомендации позволяет мне рекомендовать его к званию МАСТЕР ТРИЗ.

Мастер ТРИЗ.
Бывший Ректор Ленинградского Народного Университета научно технического творчества.
Заслуженный технолог России.
Митрофанов В.В.

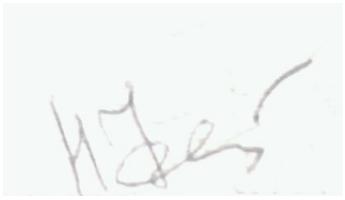
Диссертационному Совету

Международной Ассоциации ТРИЗ

Рекомендация

Я, нижеподписавшийся Фейгенсон Наум, рекомендую Баркана Марка для получения звания Мастер ТРИЗ за выдающиеся успехи в практическом применении ТРИЗ в изобретательской и инновационной деятельности.

Я не располагаю формально документированными свидетельствами о совместной работе с Марком Барканом. Но за время долголетнего знакомства с ним я неоднократно неформально обсуждал возникающие передо мной проблемы и неизменно получал полезные рекомендации. Для меня были интересны и поучительны рассказы Марка Баркана о решенных им практических задачах в области техники и менеджмента. Часть из решенных Марком Барканом задач, с его любезного разрешения, использовалась мною в преподаваемых учебных курсах.



Фейгенсон Наум,

Мастер ТРИЗ, диплом №72

feyg@bk.ru

feyg11@gmail.com

18 апреля 2012

В Экспертно методический совет МАТРИЗ,
Председателю Диссертационного Совета МАТРИЗ

Рекомендация

Рекомендую Марка Баркана, ТРИЗ специалиста 4-го уровня, для сертификации на 5 сертификационный уровень (Мастер ТРИЗ), поскольку он достиг выдающихся успехов в применении ТРИЗ для изобретательства и инноваций.

Претендент работает в ТРИЗ долгое время и внес большой вклад в развитие теории. Я знаком с Марком Барканом долгое время. Мы часто обсуждали вопросы, возникающие как в моей, так и в его практике, и каждый раз я был удивлен тем, что он может увидеть выход в самой, казалось бы, безнадежной ситуации, и найти верный путь решения задачи. Для меня всегда было полезно послушать Марка Баркана, который щедро делится рассказами о решении проблем из своей богатой практики.

Несомненную пользу представляют для меня и дискуссии по теоретическим вопросам. Тезисы Марка Баркана ценны тем, что в основе высказываемых им суждений лежит богатый практический опыт и ряд ценных наблюдений, полученных при решении практических задач в области техники и менеджмента.

Кроме этого, я хочу отметить продуктивную работу Марка Баркана по организации ТРИЗ движения, которой он занимался на посту Президента МАТРИЗ и занимается в настоящее время в качестве Исполнительного Директора МАТРИЗ.

Считаю, что Марк Баркан несомненно достоин сертификации на звание Мастер ТРИЗ.

Николай Шпаковский,
Мастер ТРИЗ (сертификат № 69)

20 Апреля 2012

Диссертационному Совету МА ТРИЗ

От мастера ТРИЗ Иванова Г.И.

РЕКОМЕНДАЦИЯ НА ПРИСВОЕНИЕ БАРКАНУ МАРКУ ГРИГОРЬЕВИЧУ

ЗВАНИЯ «МАСТЕР ТРИЗ»

(По совокупности достижений)

Я, Иванов Геннадий Иванович рекомендую присвоить Баркану Марку Григорьевичу звание «Мастер ТРИЗ» по совокупности его достижений в следующих областях:-

1. Применение ТРИЗ в инженерной деятельности.
2. Применение ТРИЗ в нетехнических областях.
3. Деятельность в области пропаганды и развития ТРИЗ.

Свою рекомендацию обосновываю следующими фактами.

Применение ТРИЗ в инженерной деятельности.

В течении своей инженерной деятельности Марк Баркан лично и в сотрудничестве с мастерами ТРИЗ- (Б. Злотин, А.Зусман, В. Герасимов и другими мастерами ТРИЗ) выполнил много инженерных проектов, которые принесли заказчикам значительную прибыль. Но самое главное – все его решения выполнены не просто в виде проектов, а реально внедрены в производство. Это говорит о величайшем профессионализме и умении решать не только основные задачи, но и десятки других вторичных задача, которые всегда возникают при внедрении и доводке основного решения. Умение доводить свои идеи до работающего образца это высший пилотаж любого инженера Таких, реально внедренных и работающих систем им выполнено больше 25.

Это говорит о том, что Марк Баркан не только мастерски владеет всеми решательными инструментами ТРИЗ, но и умеет грамотно анализировать возникшую проблему, находить ее первопричину и разрешать противоречия. Сам Марк Баркан по этому поводу говорит: - « В 70% случаев мне не удалось дойти до применения какого-либо из инструментов ТРИЗ, так как при правильной постановке задачи решение появляется как бы само собой».

Именно такой стиль работы отличает настоящего мастера от обычного инженера.

В практике Марка Баркана есть много ярких, неожиданных и по настоящему «тризовских» решений, которые говорят о его высоком мастерстве в области применения системного, диалектического мышления, то есть то, на чем основана ТРИЗ.

Приведем некоторые из таких примеров.

В текстильной промышленности существует необходимость в качественной и быстрой окраске пряжи на бобинах. Основной принцип, который ранее был заложен в окрасочных системах, это прокачка краски через бобины под давлением. Были выбраны все возможности этого принципа. Росли габаритные размеры, росли мощности, росли многочисленные вспомогательные устройства, но существенного повышения скорости окраски добиться не удавалось.
Марк Баркан вместе с Владимиров Герасимовым предложил иную конфигурацию системы, с помощью которой удалось уменьшить количестяо красильного раствора почти в два раза и сократить время цикла окраски на 40%. Первая же опытная установка показала великолепные результаты. Установка получила второй приз на международной выставке текстильного оборудования. Фирма, выпускающая эту установку, обошла всех своих конкурентов и увеличила свою прибыль от продажи этого типа оборудования в 2,5 раза.. Такое решение мог предложить только человек, мастерски владеющий инструментами ТРИЗ

Следующий пример

Одна из крупнейших химических компаний строила скрубберные установки для очистки газов. Это сложные химические аппараты в виде колонн высотой с многоэтажный дом и диаметров более 10 метров. Когда две таких установки были уже смонтированы, выяснилось что вся многочисленная трубная обвязка, которая обеспечивала их параллельную работу, была смонтирована в противоположные стороны. Компании предстояли многомилионные затраты по переделке всей системы. Все специалисты компании видели только этот путь устранения ошибки. Марк Баркан предложил иной способ. Он использовал имеющиеся мощные подъемные краны, для того, чтобы поднять колонны и поменять их местами. В этом случае вся их обвязка стала соответствовать проектному положению. Казалось бы, что это очевидное и простое решение, но оно никому из ведущих специалистов компании не приходило в голову. Это мог предложить лишь человек обладающий развитым системным подходом, отсутствием инерции мышления и умением анализировать надсистемные ресурсы. Такое мышление присуще только настоящим мастерам ТРИЗ, которым и является Марк Баркан.

Применение ТРИЗ в нетехнических областях.

По глубокому убеждению Марка Баркана, применение инструментов ТРИЗ возможно и эффективно не только в области техники, но и для создания новых и улучшения существующих процессов в управлении, в бизнесе, в образовании. Свое убеждение он подтверждает реальными делами.
Например, одна из компаний, выполняющая заказы по поставке оборудования, тратила на выполнение одного заказа в среднем 14 недель. Марк Баркан, применив инструменты ТРИЗ, предложил такие управленческие решения, которые позволили сократить процесс выполнения заказов с 14 до 8 недель. Этим самым финансовый оборот фирмы уевеличился более чем в 5 раз.

Есть масса других примеров, показывающих как Марк Баркан используя системное мышление и решательные инструменты ТРИЗ, находил такие управленческие и организационные решения, которые позволяли фирмам обойти конкурентов и в несколько раз увеличивать свою прибыль. За такой услугой к Марку Баркану и сегодня обращаются многие фирмы. Это говорит о его мастерском использовании инструментов ТРИЗ в нетехнических областях.
Находясь в должности президента Международной Ассоциации ТРИЗ М. Баркан сумел за короткое время развить систему сертификации специалистов ТРИЗ, которая стала приносить в Ассоциацию реальную финансовую прибыль.

Особую заботу Марк Баркан проявляет в области развития творческих способностей детей. Он активно участвует в разработке программы по развитию творческого воображения школьников младших и средних классов..

Деятельность в области пропаганды и развития ТРИЗ.

Марк Баркан лично провел десятки семинаров и лекций по ТРИЗ в различных регионах земного шара – Америке, России, Кореи, Малайзии и других стран. Им опубликованы многочисленные статьи по ТРИЗ в различных журналах и других средствах массовой информации. Он делал научные доклады по ТРИЗ на многих международных конференциях. О том, что деятельность Марка Баркана по развитию и распространению ТРИЗ достаточно эффективна и плодотворна, говорит тот факт, что он трижды избирался президентом Международной Ассоциации ТРИЗ.

Считаю, что указанных фактов вполне достаточно, чтобы присудить Марку Григорьевичу Баркану высокое звание - «Мастер ТРИЗ»

Желаю Марку Баркану дальнейших творческих успехов в использовании, пропаганде и развитию науки творчества под названием – ТРИЗ.

Мастер ТРИЗ – Иванов Геннадий Иванович.

Россия. гор. Ангарск. 26 апреля 2012 г.

В Диссертационный Совет

Международной Ассоциации ТРИЗ
от Мастера ТРИЗ Гина Анатолия Александровича
Диплом № 13

Рекомендательное письмо Марку Баркану

Я, Гин Анатолий Александрович, Мастер ТРИЗ (Диплом № 13), рекомендую Марка Баркана как специалиста, достойного звания Мастер ТРИЗ по системе аттестации и сертификации МАТРИЗ.

У Марка Баркана большой и разносторонний опыт применения ТРИЗ в различных проектах, а также большой преподавательский и организационный опыт в сфере ТРИЗ. Его наработки в сфере применения ТРИЗ для совершенствования процессов имеют значение для методического развития теории.

Анатолий Гин, 21 апреля 2012 года

bp

William H. Gong, Ph.D.

Research Associate
Aromatics New Technology

BP Americas
Research and Technology Department
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Cell: 630-414-7094
Fax: 630-961-6259
gongwh@bp.com

3 May 2012

Subject: **Mark Barkan**

Dear **Dissertation Council of MATRIZ**:

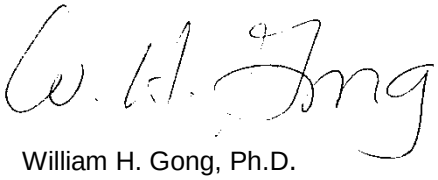
I wish to bring to your attention my support of **Dr. Mark Barkan**. I am a Senior Research Scientists employed by BP Amoco, and I have been of this department since 1990. In 1998, we engaged Mark's team to uncover new ideas relating to the area of *Future Oxidation Reaction Chemical Technology*. We were seeking new technologies to produce our main products, a number of aromatic carboxylic acids. The problem at hand was not trivial as we were seeking the development of a new catalyst(s) which would exclude the formation of a byproduct, and enable us to spend less money on capital for a new plant.

When we had entered into this relationship, we could not have anticipated the information that was uncovered and the subsequent ideas that later emerged. From the ideas that emerged, we selected one for the further development at collaboration with a US based university. I am aware of this project because I managed that university collaboration. The testing of the idea resulted in new chemistry, but due to reorganization, we could not extend the time to pursue this project. Additionally, this idea led to our participation in a company wide technology symposium in early 2002. The process that Mark's team employed is still being discussed today as means to brainstorm for new ideas.

During this process, Mark's team worked very effectively with our team, steering us into new ways of thinking about the problem that we had before us. Even though they had little knowledge about our technology, they soon became very familiar with it. They had mined the literature to develop a six-page "timeline" document that enabled us to obtain a "bigger view" of how our current technology had evolved. This "timeline" document became a vital tool that we had used in our brainstorming. We were not left alone to accomplish this, but Mark and his team guided us through this area. At times we had overlooked details because of our built-in biases, but Mark and his team, as outsiders who were trained to spot these biases, brought our attention back towards probing those details.

I am not aware of anyone who has second thoughts about bringing Mark's process back to conduct more innovation sessions. The process of guided innovation removed our biases, and reduced the amount of time needed to develop new ideas for development. Any technology department members will tell you that the lifeblood of the department is in the continuous unveiling of new ideas for development. Mark's role in our successes cannot be overstated. If you need additional information or clarification, please do not hesitate to contact me.

Yours sincerely,



William H. Gong, Ph.D.
Research Associate

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NEW HAVEN IN 46774
T 260 749 0421

28 April 2012

JIM BRADLEY Ph.D., PE, MASTER BLACK BELT& TRIZ SPECIALIST
RETIRED

Re: Dr. Mark Barkan
MATRIZ Dissertation Council

My First encounter with Dr. Barkan was in the year 1999, when he was employed by Ideation. His Team was invited to introduce TRIZ to Navistar Truck, and Engine Company. Our Vice-President, saw the value of TRIZ, and as a result of this I was asked to work with Dr. Barkan to implement TRIZ with our 6 Sigma program at Navistar. As a result of this implementation several Green Belt and Black Belt projects were a major success. Even though our 6 Sigma program was eliminated; several of our folks continued to apply what they learned as they worked on other projects

Through the years I continued to stay in touch with D. Barkan; he shared many books with me and even introduced me to V.V. Mitrafaonv when I was traveling to Saint Petersburg for advanced TRIZ training.

When some problems were encountered at Core Molding, an SMC Operation in Columbus, Ohio I had them get in touch with Dr. Barkan. Because of his TRIZ, and Manufacturing expertise, several problems were solved on the paint operations due to his efforts. As a result, the number of defects was reduced by 82%.

Just prior to my retirement; Navistar opened a Research Center in Windsor Ontario Canada in Partnership with the University of Windsor. Senior Staff in Fort Wayne was once again beginning to see the value of TRIZ. I invited Dr. Barkan to make a presentation about TRIZ to our Research Center. It was very well received, and there was a desire to implement TRIZ, however due to budget constraints it was put on hold.

Dr. Barkan was instrumental in our TRIZ Projects at Navistar becoming a success. I would highly recommend him for Certification as a TRIZ Master.

Respectfully submitted,

Jim Bradley Ph.D. PE

ISOTEC SYSTEMS LLC

January 10, 2011

To: Dr. Mark G. Barkan
9841 Giverny Circle,
Knoxville, TN 37922

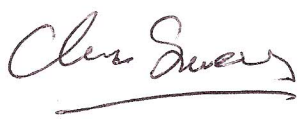
Mark,

As you know, we are in the process of reducing project personnel due to project completion. We are moving into this phase of the project with mixed feelings. On the one hand, we are glad we completed the project way ahead of schedule and considerably under budget, on the other hand we have to part with some major contributors to our success such as you.

This letter is not a separation notice as we need your services for a few more weeks. Just a note of appreciation for your involvement with several projects at ORNL. In one case, disposition of the U-233, you led the team in taking a much broader view at the task in hand. Thus, a new direction was formulated, which leads to a number of new disposition paths, the much more economically feasible paths.

Your lectures on TRIZ based problem solving technology will guide me, and the other team members, in our future endeavors.

Sincerely,



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April 24, 2012

TO: Whom it may concern
FROM: Dr. H. Lee Martin, Engineering Entrepreneurship, University of Tennessee
RE: Reference for Dr. Mark Barkan

Dr. Barkan has been a featured and regular lecturer in my courses on engineering entrepreneurship at the University of Tennessee, Knoxville for the past 3 years. His lectures on TRIZ (the theory of innovative thinking) have inspired my students to the point that they often say TRIZ was the most memorable information that they learned during the semester.

Dr. Barkan has a lifetime of experience applying TRIZ methods to difficult design and systems problems. This practical approach and the personal application stories that he shares bring the subject matter to life. It is most important to note that he teaches an innovation process, a way of thinking, to address challenging dilemmas that require students to think in new ways beyond the calculations that they typically rely on.

When presented with a new problem, Dr. Barkan has the skills and experience to decompose the complex into the simple and attack the most important core issues. Whether the opportunity relates to construction, fuel storage, the tight confines of a bathtub or methods to electroplate fragile materials, Dr. Barkan applies the processes of TRIZ to address a spectrum of challenges. In working with him and learning from him, I have found Dr. Barkan to bring an unmatched cleverness to any effort in virtually any subject.

Our education system needs to learn from Dr. Barkan on two levels: 1) how to convey and inculcate an innovative thinking process for problem solving, and 2) how to organize the entire educational program for improved system-wide outcomes.

Please feel free to contact me by phone (865-604-6660) if you have further questions about Dr. Barkan.

Best regards,

Dr. H. Lee Martin, P.E.
Industrial Engineering Department
University of Tennessee, Knoxville
hmartin1@utk.edu