

# Building Industry Partnerships by Enticing Industry to Work for You

Jerome Tapper  
School of Engineering Technology  
Northeastern University

## Abstract

Why should industry get involved with you or your college? The answer to this is the key to understanding the mechanisms involved in attracting industrial partnerships and using this relationship to your advantage. In fact, both parties as will be seen here will benefit and prosper by your appropriate application of some simple rules in establishing corporate relationships<sup>1</sup>. This paper establishes the ground rules for creating and keeping industrial partnerships alive and viable. If the ideas presented here are implemented appropriately, this relationship can prosper for many years to come with some additional positive side effects; continued industrial support. By taking advantage of these partnerships, colleges can gain access to new state-of-the-art equipment for their laboratories. In fact, most companies are more than willing to help *if asked properly*.

## I. Introduction

There are many reasons why the education establishment should align themselves with industrial partners. One of the principal reasons is to gain assistance in the form of materials needed to teach state-of-the-art technologies to their students. For many schools, high tech. teaching materials such as exotic laboratory equipment may very well be out of the financial reach of their particular department. By creating a mutual dependency relationship with industry, engineering technology departments can gain a shot in the arm in the form of an *advocate* for their program. By establishing this close industry partnership, educators will have direct access to an almost infinite supply of much needed state-of-the-art materials which will have many positive consequences. Among these are a better trained/educated student, a more attractive program to prospective students and their families, an excellent marketing tool for your school and department, possible future cooperative work assignments (for those schools with co-op programs), industry supported *capstone projects*, employment following graduation, and financial support for industry related projects and research to name a few.

This paper establishes some strategies for gaining access to industry and developing relationships with industry representatives. It is these relationships that will prove to be most valuable.

## II. Some Ground Rules

Before establishing a relationship with a potential industrial partner, it is most important that a few necessary rules be understood. Once you have worked with your industrial partners and established an *unwritten* mutual benefit agreement, which will be discussed later in this paper, you must understand that your partners will expect as much from you as you do of them. As you

will see, once the “industrial well” has been turned on, and you are being supplied with your much needed state-of-the-art materials, your industry partners will most likely monitor your progress to see if you are using their equipment as promised. After all, they are also in this relationship to benefit. There are several important items that must be considered *prior* to establishing this relationship. The first is to determine if you have enough room in your facility to accommodate the new donations you will potentially be receiving. If not, this could lead to a serious problem. Since your progress will be monitored by your industrial partners, you will not want them to see you not using the materials they have just donated to you. If they see their equipment not being used, they may stop donating. If they stop, you may never be able to get the donation momentum going again. The bottom line here is to make sure that there is sufficient facilities available *prior* to working with the donors. At worst, you should get a firm commitment from the appropriate parties in your college or department to obtain, for you, an appropriate space for your donated materials.

Another item to consider is *budget*. Keep in mind that your original focus was to gain access and ownership to state-of-the-art equipment that would ordinarily be out of the reach of your department’s budget. Therefore, most of the donated items will tend to be expensive. These items will most likely require supporting materials such as consumables or other ancillary components. These ancillary items, which will not be a part of the donation will have to be purchased separately. These monies will have to come out of your department’s funds and may in some cases be substantial. It is important that a budget, of some type, be considered for these purposes.

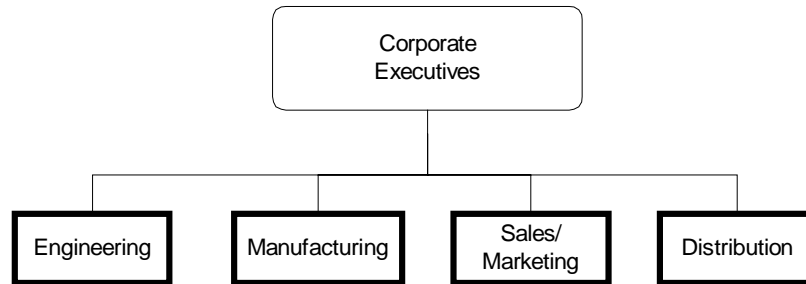
### III. Connecting with Industry

#### The importance of Industry Experience

In order to follow through in making an industry connection, it is vital that the educator making the industrial leap for donations has sufficient experience with industry. It is better for the educator to know how industry works from an actual experience standpoint than from a text book vantage point. This is one case where there is *no substitute* for actual industrial experience on behalf of the educator. In fact, there is a requirement<sup>2,3</sup> in the Engineering Technology area, specified by the Accreditation Board for Engineering Education(ABET), that mandates a minimum of three years of “real” industrial experience as a pre-requisite for teaching in the Engineering Technology area. This is actually a good thing, since this rule makes it very advantageous for engineering technology faculty to work with industry on a more intimate level.

#### The Corporate Structure

Understanding the basic corporate structure and the functions of each department will go a long way in helping the educator determine where best to look for industry support. The following block diagram represents a typical corporate organizational<sup>4,5</sup> structure. As shown in Figure 1, there are several basic departments that make up a typical industrial organization. We will investigate the departments that are most likely to assist you in your quest for equipment donations and explain why this is so.



**Figure 1** Basic Corporate Organizational Structure

#### IV. Reasons for Making a Donation

The reasons that a group or organization will make an equipment donation to you can be fairly complex. Each organization may have many reasons for wanting to make a donation. As established through experience, without exception corporations make donations for self serving reasons. The tax write-off seems to be the most popular seller's reason (educator's selling point) for making a donation. However, an even stronger argument for donating follows:

By donating state-of-the-art equipment to you in conjunction with your College or University, the donor will receive additional potential benefits in the form of:

- A pre-trained workforce for the original equipment manufacturer (OEM)

It is well known that time is money. When a newly hired employee comes on board in a company, the employee must be trained on the specifics of that company's equipment. There is a certain *learning curve* that is required to complete this action. If the newly hired employee had previously been trained in the operation (i.e. hardware & software etc.) of this company's equipment, the employee's learning curve time would be greatly shortened, saving the company a great deal of up-front training money. This is a great reason for that company to make an equipment donation.

- A pre-trained workforce for companies that utilize this equipment

Companies that purchase and use equipment from OEMs also require product knowledgeable employees. By donating equipment to you, not only will the principal manufacturer of these goods benefit directly, but they will also benefit indirectly by their own customers having a more technically informed workforce. This creates a domino effect, where "what is good for the corporate user is very good for the corporate producer," providing another good reason for a company to make an equipment donation.

## Virtual Marketers

When a college or university sends a graduating senior into the workplace, these people unknowingly become *virtual marketers* or *virtual sales people* for the original equipment vendors. This has been shown to be true, since a student who has graduated from college and subsequently moved on to work for a company, is more likely to specify a piece of equipment that they are familiar with. Their familiarity, in this case, will come from the college or university laboratory where they had used this equipment originally.

As was shown here, all of these reasons are valid and justifiable and can be used as a tool in leveraging a donation from a corporate partner. However, keep in mind the following:

*All companies are in business to make money. Giving away equipment does not create an immediate return in dollars as normal sales do. This means that companies may indeed treat any requests by you as “back burner” items. It is up to you to realize that you are not their priority, but must take a back seat to “real” sales dollars. In fact, it is up to you to make others, at higher levels in your department, understand this same principle. You must be patient and wait your turn. This is a case for initiating your donation request strategies early.*

## V. Where to Look - Starting Your Quest

### Existing Contacts

The first and foremost rule to observe when attempting to establish industrial partners is:

- *Leverage existing contacts within a viable organization from which you would like to receive donations.*

Since this person already knows you, an existing rapport has been established and therefore a reasonable trust currently exists between both of you. This person should be able to direct you to the appropriate parties within their company and act as your advocate within this company.

### Distribution Outlets

Somehow products must get to the consumer or end user. This happens through distribution. There are several levels of distribution. The first is corporate or factory distribution. This is the branch of the original corporate structure that distributes goods to local distributors. This author feels, through experience, that corporate distribution centers are not viable donation points. Local distributors, on the other hand, are worthy of discussion. These local distributors are either independent companies or are corporate owned. Local independent distributors distribute multi-vendor products and are not limited to a single principal's (OEMs) product line. In either case, incentive to donate at this level is relatively low. However, some benefit can be gained. If anyone is to donate, it would be the privately owned local distributor, in order to gain the basic tax write-off against profits. Their incentive to donate is relatively low, since most local

distributors operate in a volume sales mode. Donating a few items may not be very profitable for them. Remember, if it is not in the best interest of a sponsor to donate, they will not.

Special cases do exist where an argument can be made to the local distributor for a donation. There are times when a local distributor may lose a particular product line and no longer have the right to distribute it. This distributor may have a lot of excess stock in inventory that they are unable to return to the principal's factory. In fact, since they no longer can sell this product, they also cannot legally support it. Their choice is to write it off, sell it without support, let it languish on their shelves and depreciate until it becomes worthless, or give it away as a charitable donation. The latter should be suggested to the local distributor. Remember, even though the local distributor cannot continue to sell this vendor's product, they are very likely to pick up another vendor's line which is similar to the one they have just lost. These local distributors need sales engineers trained in the use of these types of products. Your college is the ideal place for them to get these trained workers, even if it is on a competitor's product.

Local distributors can also provide additional donations in some other interesting ways. All local distributors of technical items have factory designed and built demonstrator units. These were to be used by their own sales people to demonstrate a product at a customer's site or within a training center at their own facility. Note that not all local distributors have on site training centers, although this is becoming more prevalent as products become more technical and complex in nature. When a product becomes superceded by another, it becomes obsolete. Most of the time, these obsolete demonstrator units are in excellent condition. In fact, this author has acquired several very expensive units that have seen very little usage. These make excellent laboratory demonstrating units, by virtue of their original intention. If these units are not donated to you, they would most likely be discarded and written off by the local distributor.

You must demonstrate to local distributors how they can benefit by donating to your cause.

### Sales Outlets

Sales people rank high on the list of potential donors, as they are always interested in uncovering ways to make their sales volume bottom line look better. There are several variations of these sales representatives. Some work directly for local distributors, while others work directly for the OEM. The direct factory sales representative can be the most valuable of the two since they have direct connection and influence with the principal OEM. These are the people who are connected directly to the primary manufacturing source and are always looking for ways to increase corporate business while expanding their bottom line. These are the sales "bird dogs" of the business world. By nature, they are tenacious in their quest for new sales leads.

Another reason that OEM sales people are so valuable is that they have direct access to the deep pockets within their company. If a company's sales person feels that there is value in the form of a potential dollar return for his company, he or she will work tirelessly to exploit this venture. This is, in fact, what their job is all about. The question that needs to be answered now is:

"How can I get a corporate sales representative interested enough in my project so that they will advocate for me in their company?"

The answer lies in your ability to convince them *that it will be in their best interest to form an alliance with you*. In reality, it will actually be in both of your interests to do so. This representative must be made to understand that there is great benefit to be derived by their company in what you are trying to accomplish. By helping you, they are actually helping to promote their own interests by gaining the basic tax write off, while simultaneously being provided with 25 to 50 graduating seniors per year (depending your program) who are knowledgeably trained *virtual marketers* or *virtual sales people* for their products. Graduating seniors can go directly to work for the OEM or any customers using this OEM's product. As discussed previously, any product learning curve that would normally be required of a new employee will be greatly shortened, saving the company many dollars in training time.

Moreover, when this new employee encounters a situation that requires a product or component to be specified in a particular application, they will be more likely to specify a product that they are familiar with. This is a very big plus for the OEM since employed graduating seniors will now act as fertile *sales seeds* within the marketplace. What more could anyone ask for. Your school is providing real market ready talent with the ability to promote your donors products as soon as the student is hired by a company. Now that's "hitting the ground running".

The following table summarizes the most relevant reasons for a sponsor to donate to your cause.

**Table 1** The Four Most Important Reasons To Donate

<p>Donor company will benefit via:</p> <ul style="list-style-type: none"><li>• A tax write-off</li><li>• A pre-trained work force for their company</li><li>• A pre-trained work force for their customers</li><li>• A virtual sales/marketing group of 25 to 50 new people every year at no cost to the company</li></ul>
--

### Marketing Outlets

OEM marketing departments are perhaps the strongest candidates to approach for donations, as this department is the "horses mouth" for company resources. When they speak, everyone in the company listens. Once you have gained their confidence, you will most certainly be granted the keys to the kingdom. This department has the largest impact in influencing the company's direction in the marketplace, and can benefit from donating to you for the same reasons presented in Table 1 above.

As an example, this author recently contacted the head of marketing for a national supplier of automated robotic feeding equipment. During the phone conversation, the four reasons for

donating were explained At the conclusion of the discussion, this author was asked if there was interest in receiving a complete 30' x 30' robotic feeding system formerly used as a demonstrator at a trade show. This group of items was worth well over \$300,000.00. Needless to say, the answer was in the affirmative. There is no way that a college or university could easily afford to make a purchase of this nature. As you can see, marketing departments can be very useful if asked properly. Again, *you must make it clear that it is in the best interest of that company to support you* for the reasons stated earlier.

### Other Sources for Donations

Perhaps the best source of leads for possible donations comes from a place exhibiting the widest selection of companies to choose from, **the Industrial Trade Show and Conference/Exposition**. It is here that an eager donation solicitor can readily connect with a large and varied contingent of prospective donors. These shows usually occur yearly and represent just about every aspect of industry. For example, there are shows related to Plant Maintenance, Data Base Management, Industrial Automation, Electronics Manufacturing, Electrical Products, Instrumentation, Mechanical Components - the list is endless. A list of such shows and their times and locations can easily be obtained from an Internet search using any one of the current search engines such as [www.altavista.com](http://www.altavista.com)<sup>6</sup>.

In order to understand why industrial trade shows and expositions are such great sources for donations, one must understand the purpose of the trade show. These shows are used as marketing launch pads to exhibit a company's products and or services, both old and new. The idea is to snag potential customers into seeing, up front and personal, their latest products. A visitor to the exposition who is exposed to a product never previously seen may very well specify or purchase that product when the need arises. Does this scenario sound familiar? While the intent of these shows is absolutely not meant for educational solicitation, it is very fertile ground just begging to be exploited for educational purposes by the *right* educational solicitor.

This author has attended numerous expositions and has been very successful in acquiring equipment donations for an Industrial Control Systems Laboratory currently under development at his university. The author has been able to make the various vendors understand *that it is in their best interest to work as a team and participate*. The author relied on nothing more than the reasons presented in Table 1.

There is a reasonable strategy that can be used to break through the barrier that exists for educators at such expositions. The secret to success or failure is dependent upon something every exposition visitor must have - an identification badge. It is a well known in the industry that if you have a badge identifying yourself as a college professor or educator, you are less likely to be taken seriously. After all, most companies know that colleges have little or no money to spend, and at best, they will be cordial to your advances for equipment. This author has experienced this first hand, having been in industry for 20 plus years.

Vendors that have purchased booths at any exposition are panning for potential customers with gold in their wallets. Since you do not fit this category, what do you do? You must create a

winning strategy that involves making the vendors perceive you as a potential buyer via innuendo.

How is this done and will it be believable? The secret is to create a consulting company for yourself. After all, all industries have consultants. A consultant's job is to advise, design, and specify items required for the company they are consulting for. There is no law preventing you from being a consultant. However, if you are going to be a consultant, you must absolutely have a serious company name. This is where the exposition's identification badges come in. Again, all participants of an exposition, even the booth vendors, are required to have identification badges. Instead of using your professorial title and school name on your badge, you now will use your newly created consulting company name. It also does not hurt to have business cards made with your consulting company information on it. This will re-enforce the fact that you are a legitimate consultant. Whatever name you do choose for your consulting company, it must sound professional. For example, don't pick John's Consulting. Vendor's are aware that there are lots of freeloaders who attend expositions. Therefore, you should pick a name that reflects your area of academic expertise such as "Northeast Electronics and Manufacturing Integration Consultants", NEMIC for short. You can even give your home address where you want material to be sent as no one ever checks addresses at industrial expositions. Moreover, once you get onto the company's mailing list, you may begin to receive lots of related information and free samples.

The next step in the process is to put your soliciting talents into practice. While roaming the isles of the exposition, make notes of the companies that have equipment you may be interested in for your laboratory. Try to locate "direct OEM" booths only, not their local distributor's booths. Once this is done, the solicitor must approach the vendor's booth in a programmed and careful manner. Remember, you are a professional consultant, and must act as so. You must act as a buyer who has full control of the purse strings of his/her company while your demeanor exhibits a slight arrogance while still being somewhat humble. This is not an easy thing for someone to do. It takes a very special talent.

Booth personnel must also wear badges identifying themselves along with their titles. Seek out the highest ranking person there, if possible. While physically looking around at the displayed goods in a serious manner, approach this person. This person will automatically initiate dialog with you, since this is what he is trained to do at these expositions He or She will observe your badge and ask you what types of equipment you specify or are interested in. Remember, they now think you are an industry person - don't let them down. You must initially ignore there interrogatory request for information. **You** must now ask the all important lead off questions in your dialog. For example:

***"Hi, how are you today? I need to ask you something important."***

With a slight pause in you speaking cadence, ask the person in the booth the following:

***"Is your company making money?"***



Most respondents will smile and want to brag. If they respond with a question, you simply ignore their question and respond back in a serious tone with the following:

***“I need to know that your company is doing well in the market place, so is your company making money?”***

Remember, the vendor has perceived you as a consultant. When you ask a question as serious as this, the vendor now perceives you as a potentially serious buyer. Don't let them down! You now have them on the ropes.

By asking this question, you have *set up* a situation from which the vendor cannot escape. This author believes there is not a company representative in the world who, while attending an exposition/trade show, will admit to doing poorly in the market place. Therefore, even if a company is doing poorly, they will not openly admit to it, especially to a potential buyer at a large exposition. They will tell you that they are doing “well, real well.”

Since the person in the booth just told you that their company was doing fantastic, they will not want to appear as having lied when you subsequently approach them with your solicitation speech. After all, companies who are doing “real well” in the market place will have no reason not to want to donate to you. The big moment has now arrived. Tell them that in addition to your consulting work, you teach at XYX college and are starting a new and innovative laboratory in the area of “name your lab's area”. This laboratory will use state-of-the-art equipment such as the type that this company manufactures. Explain that you are currently partnering with industry to build this laboratory and have been considerably successful with other similar companies thus far.

You must now demonstrate great excitement about the prospect of using equipment from this vendor's company. ***You must then explain how a donation will benefit their company.*** This is the most important part of your dialog, since now that this company representative knows that you are looking for something for free, you must convincingly explain the benefits to their company. Thoroughly, reiterate each item in Table 1, emphasizing the last 3 listed items one at a time, in order. The first item in the table, the tax write-off, is a given and most people already know this. Therefore, this tax deduction item, as listed first in Table 1, should be mentioned last.

Also, tell the person in the booth that you have spoken to many other companies who have expressed great interest in your project and have made commitments to it in the form of equipment donations. ***Remember, the only way a company will donate something is if it is in their best interest to do so.*** Without question, do your best to explain why this is so for that particular company. Additionally, if the person you are speaking with is bright enough, they will, by their sales nature and competitiveness, not want to let any competitor get one up on them. They will want to stay right up there with the pack. Get their business cards and any brochures they might have related to equipment you are looking for. Also, ask them when you can call them and follow up with the progress being made relative to your donation request. Don't let them say no. If they do, ask them for the names of the heads of their sales and/or marketing

departments. Follow up with these people, at corporate headquarters, if you do not get anywhere with the booth representatives.

**Remember, there will also be a big payoff for the companies that will support you!**

Important Warning !

*Note that not everyone is cut out for this type of self promotion. If you cannot perform as stated, you might consider getting someone who would be more suited to this task. The payoffs can and will be very large.*

Lastly, trade shows and exposition/conferences can also contribute donation leads by **word of mouth**. While visiting a trade show recently, this author was stopped, following a booth inquiry, by the president of a company in an adjacent booth. The author was told that this gentleman was the president of a small division of a much larger corporation, and asked if he could help in any way with the project. The author was given a business card and asked to follow up at a later date. Subsequently, this small company division not only made a donation, but the president asked if this author would mind if other division presidents were contacted by him and told about the project. This scenario is not unusual.

#### VI. Additional Benefits

With today's state-of-the-art equipment as complex and sophisticated as it can be, much **teaching material** is needed to help train individuals in its use. Manufacturers of such products have created in-house training schools to provide users with the knowledge to operate and work with these products. Corporate training facilities for these products are spread out across the United States and beyond. Along with these training courses come training manuals, CDs, floppy disks, PowerPoint® presentations, and PDF® files containing information such as product specifications and operations training information. Also available are video tapes containing similar information.

When a donor commits to your project, they will usually be quite willing to provide some, if not all, of this material to you for use in your new laboratory. This material has already been field proven. There is great value in having material that can easily be incorporated into your curriculum.

Sponsoring companies will also want to train you with their products. This author was sent to training schools by three different vendors at a would be cost of about \$2,000 each. Each vendor provided all of the necessary training manuals and materials and even provided refreshments during breaks during the course of the training. This amounted to \$6,000 in additional donations from these manufacturers.

Most of these companies have field engineers or technical support personnel who are usually sent to customer sites to aid in setting up their products. The equivalent dollar value for this is about \$300 to \$400 per day per field engineer. This can be a very valuable portion of any

donation made by a manufacturer. This author has had three companies provide this service for between three and five days each this past year.

## VII. Follow Up Donations

If you can demonstrate to a manufacturer that your program is successful and meeting all of the projected goals and expectations originally presented to them, you can easily expect them to continue to support you in coming years. Some will continue to donate current state-of-the-art equipment, while others will donate “last years” models to you. This is not a bad thing since, at worst, your laboratory will be one year behind the latest equipment models. That’s many years ahead of a college that receives no donations. Additionally, “last years” models usually change superficially and should not be a major concern to you. This method of cyclical donations can keep your laboratory viable and above all filled with the “almost” latest equipment available.

## VIII. Positive Side Effects

For schools with cooperative education programs (co-ops), there can be lots of additional benefits. Co-op jobs with donating companies, or companies in a related field, is a realizable possibility. In addition, permanent professional employment with companies such as these is also a real possibility for graduates.

Once your laboratory has been established and turning out competent students, the possibility for corporate supported “capstone” projects is also a positive side effect. Companies are always looking for new ideas and ways to develop applications to support their equipment products and processes. These ideas can be designed and tested within your laboratory. In fact, if the supporting company is enthusiastic enough, they will give your laboratory additional equipment and possible funding for research purposes.

For schools supporting evening degree programs, special teaching laboratories can be designed to support industry personnel who would otherwise be required to travel to remote corporate site locations for specialized equipment training.

## IX. Conclusions

**Enticing industry to work for you** can be a difficult chore, yet the rewards to your college and department will be great. However, some simple advice is in order - do not become greedy. Although you would like to construct the largest state-of-the-art laboratory possible, you must be practical. Do not initially ask for large quantities of the same (expensive) item. Come up with a number that you have determined, well in advance, would be sufficient as a launching point for your laboratory. Most manufacturers feel comfortable donating a maximum of three items of the same variety. This means that you should start your laboratory with a maximum of three work stations. Other stations can be added later by internal funding or by donations from existing vendors if these vendors are impressed with what you have accomplished with the existing three stations. Donors who are asked to donate more than three items of the same variety, which are inherently expensive, are more likely to get turned off by this action since they have not as yet

seen any payoff. Once they see that what you have promised is about to be realized, they are more likely to continue to support your efforts.

It seems that there is almost no end to the benefits to establishing industrial partnerships. If a careful self marketing strategy is mapped out and implemented in an organized manner, there is no reason why a state-of-the-art laboratory cannot be built with industry as your partner. You can , in fact, get industry to work for you. Industry does need and want **you** to help them, but cannot by virtue of its historically focused mission understand why. It is up to you as professional industry experienced educators to make these great resources-to-education see why they should be a part of your team. Indeed, these strategies may not always work with your particular industry due to factors including market competition, or whether the items you are searching for actually warrant being donated. You would not expect a computer manufacturer to donate computers to your state-of-the-art high technology laboratory so that you can promote them to your students. These items are not specialized enough. But you could expect to get in-kind donations of equipment where the cost of items is high, the items are very specialized in nature, and lots of competition exists between manufacturers. Good luck in your quest for successful industrial partnerships!

#### Bibliography

1. Tapper, Jerome, "Building Industry Partnerships, The Key to Creating State of the Art Laboratories," Proceedings of CIEC, Presented February, 2000, Orlando, FL, Session CIP/ETD 345
2. A.B.E.T. Document: "Criteria for Accrediting Engineering Technology Programs," Evaluation Cycle: 1999-2000, General Criteria, Section F; Faculty ([www.abet.org/tac/TAC\\_99-00\\_Criteria.htm](http://www.abet.org/tac/TAC_99-00_Criteria.htm))
3. A.B.E.T. Document: "Proposed Criteria for Accrediting Engineering Technology Programs," Evaluation Cycle: 2001 - Beyond, Criterion 3; Faculty, Qualifications. ([www.abet.org/tac/New\\_TAC\\_Criteria.htm](http://www.abet.org/tac/New_TAC_Criteria.htm))
4. Grove, Andrew, *High Output Management*, Vintage Brooks/Random House, 1995, ISBN: 0-679-76288-4
5. Stoner, J.A., Freeman, R.E., *Management*, 5<sup>th</sup> Edition, Prentice Hall, 1992, ISBN: 0-13-544313-X
6. Industrial Trade Show/Conference Listings: Search: [www.altavista.com](http://www.altavista.com) using possible search criteria: "industrial trade shows" etc.

#### JEROME TAPPER

Mr. Tapper received a Bachelor of Science Degree in Electrical Engineering in 1970 and a Master of Science Degree in Information Systems in 1998, both from Northeastern University. He is a Registered Professional Engineer in the Commonwealth of Massachusetts with over twenty years of industrial experience in the areas of process control, industrial automation design, circuit design, product development and project management. Mr. Tapper is the author of *Electronics for Engineering Technology*, a tool-kit based text for electrical engineering technology students. He currently is an Associate Academic Specialist in the area of Electrical Engineering Technology in the School of Engineering Technology at Northeastern University in Boston, Massachusetts.