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APPLIED DESIGN TECHNOLOGIES INC.

Applied Design Technologies - Respiratory Protection Products for the Military, First Responders, Medical, Aerospace and Consumers

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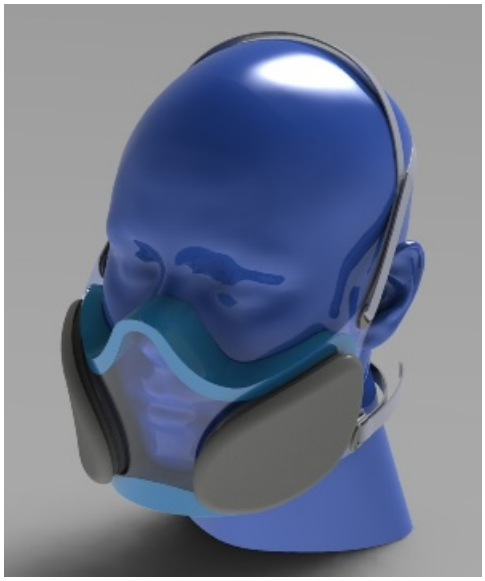
Interview conducted by:
Lynn Fosse, Senior Editor, CEOCFO Magazine

CEOCFO: ***Mr. Estkowski, what is Applied Design Technologies?***
Mr. Estkowski: Applied Design Technologies was founded about twenty years ago to design and develop all types of products including the specialty area of respiratory protection. One of our primary core competencies is the design and development of respiratory protection products which include personal protection for the military, first responders, industry, and consumers. That filter design expertise extends to other areas in medical, aerospace and industry where filtration of harmful gases and particulates prevent contamination and damage to human health, instrumentation, or sensitive environments. Consulting, testing, and training supplement our design work and have expanded our customer base over the years.



CEOCFO: ***Would you explain respiratory protection?***
Mr. Estkowski: Respiratory protection is a discipline within the Human Health and Safety Field. Essentially, devices that protect the respiratory tract create a barrier between the respiratory airways and the outside environment while they remove harmful particulates and gases from the air that can create acute or chronic health problems. The first certified respirator was inaugurated in 1920. Today, respiratory protection spans its application from simple face coverings that may block large particulates to the Self-Contained Breathing Apparatus (SCBA) that deliver purified air on demand in spaces that lack sufficient oxygen to support life. These are most often seen used by firefighters and other

first responders but are used in industry as well, in confined spaces and some chemical manufacturing operations. Included in the respiratory protection scope are systems that protect the military from warfare gases in combat operations and the medical industry that prevent medical staff from infection and transmission of infection to patients. Probably the most recognized respiratory device would be the N95 respirator, often used in the medical field and now commonly used by most anyone. Powered Air Purifying Respirators (PAPR) are also commonly used in the medical field, military, and industry when large volumes of air need to be delivered to users to reduce the work of breathing, improve comfort or ensure toxic gases and particulates are removed without user effort. Respiratory protection measures are employed when other engineering controls that can provide reliable and safe breathable air are not possible.

CEOCFO: ***Regarding military in the field, how do you know what the dangers are in any given country or any given area, so that you can have the piece of equipment filter out properly in the military situation where you may not know the particulars?***

Mr. Estkowski: Toxic gases are generally well characterized, including those that may be encountered on the battlefield. Removing these gases is a process based in chemistry, emphasis on kinetics and fluid dynamics. The discipline is well understood and there are appropriate substrates (catalysts and adsorbents) that have the ability to remove a broad spectrum of gases and all particulates that could potentially be encountered. Protecting the military during operations is very much a focus on ergonomics rather than chemical removal and how the breathing/filtration systems interface with personnel without compromising their ability to perform all the aspects of their missions.

"There have been many lost weekends and late nights working on our customer's critical issues that need an immediate fix. When these situations arise, there is no one other than Applied Design Technologies that is ready to make it happen, without notice and with a complex problem thrown on our plate late Friday afternoon. We do not wait for Monday or tomorrow and very often have it done by Monday or tomorrow." Christopher Estkowski

CEOCFO: ***Where are you involved in the designing and manufacturing process?***

Mr. Estkowski: Applied Design is a small, sometimes specialized company but we have the capability and experience to take a design from the conceptual stage and bring it all the way into the production environment while debugging equipment and training staff to work the design into manufacturing. I think Applied Design is able to service our customers more effectively when we leverage our core competencies while helping customers own their manufacturing. We enjoy helping customers through the really tough parts of the product development transitions, prototyping, testing, tooling, fixturing, even the quality assurance aspects are covered in whatever detail is necessary to ensure our customers can get the best product launch possible.

CEOCFO: ***Are there many companies that do something similar to what you do, and how would someone who might need your services know to look for Applied Design?***

Mr. Estkowski: I think there may be a number of companies that have the talent and scope to cover all these bases, but this ability has been acquired over 35 years of industry experience working every aspect of the manufacturing process evolving into a concise experience base that is easy to search and find solutions quickly. To duplicate this in a corporation with a larger staff is extremely costly and out of reach for many of our customers. Initially, customers may not realize they need

the breadth of experience Applied Design offers only to discover, when they run into trouble, having that expertise is essential. Much of the work Applied Design has been given over the years were seemingly unsolvable problems, or problems that needed a fix immediately, even overnight at times. We have always managed to bring a solution, implement the fix, and help these customers in their time of need. These challenges are surprisingly enjoyable, and I have personally witnessed the relief of many customers that have saved huge time delays and thousands of dollars in the course of their work with us.

In the respirator specialty, most companies have in house talent they use for the work Applied Design performs but even these have used us to solve problems they learn we have experienced. This is a money and time saver for them, and we are happy to help them out of these tough spots. There have been many lost weekends and late nights working on our customer's critical issues that need an immediate fix. When these situations arise, there is no one other than Applied Design Technologies that is ready to make it happen, without notice and with a complex problem thrown on our plate late Friday afternoon. We do not wait for Monday or tomorrow and very often have it done by Monday or tomorrow. Leveraging Applied Design's knowledge base and having all the tools at hand have allowed us to differentiate our service from others.

If there is a downside to this, it is many of our customers compete with one another, so they generally hold information close and do not share resources making word of mouth recommendations to others limited.

CEOCFO: ***We came upon Applied Design Technologies from your participation in Defense Tech Connect. Do you typically reach out in that manner?***

Mr. Estkowski: Generally, we have not, but a couple projects over the last few years where we were recommended have exposed us to opportunities that may fit our core competencies. We took on a project with a customer to provide a design for a respirator to potentially be used for the Biomedical Advanced Research Development Authority (BARDA) emergency stockpile efforts. Applied Design completed the initial phase of the program securing the second phase for our customer. We also had a great opportunity to work with NASA JPL on the Mars Lander providing them a manufacturing solution for incorporating the atmospheric filter element into the Mars Oxygen In-Situ Resource Utilization Experiment (MOXIE). We provided testable prototypes framed in their hardware for test qualification then went to JPL and trained their staff on installation techniques that provided a reliable enough installation for filter efficiency confidence without testing the unit sent to Mars (a contamination problem). This was a "have to do for cool factor alone" project that was challenging but super rewarding at the same time. So these more government related projects warmed us to soliciting new opportunities.

Our outreach to Tech Connect is related to a respirator we are developing that we think is new, unique and solves comfort and communication issues in a novel way. My colleague, Ken Kershner is responsible for identifying this opportunity and along with another colleague, Paul Newby, we have a passion for raising the performance

bar on respirators available to the general public and essential workers. Our respirator, The Works 3, invokes the Three Musketeers Novel theme knowing we were embarking on an epic adventure. The respirator design/development has advanced through the testable prototype phase and met our performance objectives. Design refinements are being made and we are soliciting quotes for tooling to produce our Engineering Validation Test assemblies (EVT). Since these expenses are high, we are working to find partners/funding to expedite our efforts and allow us the time to design the next two size roles and an adolescent size role for the respirator. Our modular filter and easily tooled faceseal provide the ability to make many sizes and meet hard to fit challenges where other respirators are too costly to produce.

The adolescent size role development is particularly challenging and requires both empirical study and extensive fit testing. The logistics of achieving this is complicated but needed in order to establish respiratory protection for our youth population that is as good as it is for our adult population. We think Works 3 can fill a void for our youth population and improve comfort and communication enhanced options for adults along the way.

CEOCFO: ***Are there newer materials and technologies you are able to utilize; do things change very often or do you get an idea and put the pieces together?***
Mr. Estkowski: There are plenty of new materials, Nano technologies and substrates (catalysts, adsorbents). There is quite a bit of development in catalytic substrates for removing various chemicals improving efficacy of filters for these applications. There are also improvements in textile development of particulate filter materials including PTFE laminates, meltblown filtering media and spun-bond materials. North Carolina State's Nonwovens Institute is state of the art in research and development for spunbond and meltblown laminate materials. Low resistance and high efficiency materials are making incremental improvements. As materials make themselves available, we utilize them if price for purpose makes sense. Our Works 3 design uses state of the art filtering media that helps us meet very low breathing resistance values. So, we are always on the lookout for materials that can help our customers. Many times, we have a requirement and end up searching for a material to fill the need and this has translated into new material developments. I highly value good ideas and technology but do not have a preference for new or old. So, unless the new advances an improvement in cost, performance or utilization, including life cycle control it is not interesting.

CEOCFO: ***Why pay attention to Applied Design Technologies?***
Mr. Estkowski: Applied Design has proven itself as a problem solver with a sense of urgency, a thorough understanding of the process and a wide range of experience in design and manufacturing. We are pretty much a go-to do-it-all type of company. We can create or transform a design and when we are done, we ensure it is manufacturable. We start projects and partner with companies so we can bring the expertise needed to the program. We have the expertise to manage the entire project and are experienced at communicating with our customer's team and vendors to smooth development transitions and catch problems

early. It is important to us that we deliver a solution to our customers that justifies their investment and confidence they place with us. When needed, we can walk with our customers into manufacturing and quality assurance, so our knowledge is transferred to the product as efficiently as possible. At times it is hard to distinguish between us and our customers employees as we are fully engaged and own the project.