PORTRAITS

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Jean-François Dupont, un entrepreneur d'envergure

AMBASSADEUR ENTREPRENEUR ÉTS ET COUP DE CŒUR 2016

Par Brigitte Boucher, ÉTS

Sans tomber dans les stéréotypes ou les comparaisons faciles, il semble que les Ambassadeurs Entrepreneurs soient tous des personnages assez colorés. Forts, ambitieux et charismatiques, ils savent captiver leurs interlocuteurs et rapidement, on a envie de les suivre. Jean-François Dupont ne fait certainement pas exception.

Jean-François Dupont, Ambassadeur Entrepreneur ÉTS 2016, en compagnie de sa conjointe, Josée Poudrier

Diplômé au baccalauréat en génie de la production automatisée en 1994, M. Dupont est à la tête de AV&R. Pourtant, l'entrepreneuriat n'était pas son premier choix de carrière. En fait, à l'adolescence, Jean-François Dupont se voyait devenir programmeur-analyste. Il se souvient d'un cours de dactylo en troisième secondaire où les bons étudiants avaient le droit d'aller à l'ordinateur. Quel privilège! Il a donc travaillé fort et est devenu le meilleur, juste pour accéder à cette fabuleuse machine. Déjà, Jean-François possédait une détermination à toute épreuve, ce qui allait lui servir tout au long de son parcours professionnel.

Plus tard, il a complété un DEC en informatique, mais il avoue qu'il s'y ennuyait un peu… Pour un jeune homme très actif, qui faisait beaucoup de sport, ça ne bougeait pas assez à son goût. C'est lors d'une visite de recrutement par l'ÉTS à son cégep, où il a vu des extraits vidéos concernant la production automatisée, que Jean-François a eu le déclic. Il s'est dit : « C'est ça que je veux faire!!! ». Il s'est donc inscrit à l'ÉTS. Notons au passage que, comme plusieurs diplômés de l'ÉTS, Jean-François a été le premier membre de sa famille à accéder à des études universitaires.

Il a fait ses études à l'ÉTS lorsque le campus était situé sur la rue Henri-Julien, sur le Plateau-Mont-Royal. Il y garde le souvenir d'une ambiance familiale, où les étudiants étaient un peu à l'étroit, mais toujours dans une atmosphère chaleureuse. Il se souvient également qu'il y avait très peu de filles! L'un des moments marquants de ses études a donc été la rencontre avec la femme de sa vie, Josée, une collègue étudiante. Avec quelques amis, ils formaient « une belle gang » et étaient très actifs dans les différentes fêtes. Malgré les obligations familiales et professionnelles, quelques-uns d'entre eux ont tout de même réussi à demeurer en contact et se voient encore à l'occasion.

Ses parents étant entrepreneurs, il était tout naturel pour Jean-François de penser, dès sa sortie de l'université, à un projet d'entreprise. L'occasion s'est présentée relativement rapidement, alors qu'il était à l'emploi du groupe Walsh, puisque l'intrapreneuriat faisait partie intégrante de la culture d'entreprise. En trois ans, il a développé son équipe et son expertise, en motivant ses troupes avec le rêve « On va bâtir notre *business*. » Les choses se sont un peu compliquées après que l'entreprise ait été achetée par une multinationale, modifiant de façon importante les façons de faire. Il lui faudra donc cinq années et trois tentatives pour finalement réussir à acheter la division Vision & Robotique et créer, en 2005, AV&R avec 14 employés du groupe.

Au départ, Jean-François se qualifiait de « jeune et fou » et avoue qu'il n'avait pas tout à fait conscience des risques qu'il prenait. Avec le temps, entouré de son équipe, il a élaboré un plan stratégique axé sur le domaine de l'aérospatial et AV&R a rapidement été reconnu comme un spécialiste dans ce domaine. Toutefois, le krash boursier de 2008 a fait très mal à l'entreprise et, presque du jour au lendemain, les contrats ont été annulés, ceux à venir et même ceux en cours… Pour survivre, il n'y avait pas d'autre choix que de se tourner vers l'Europe et l'Asie. Pour une entreprise habituée à transiger exclusivement en Amérique du Nord, ça représentait tout un défi. En 14 mois, tout le modèle d'affaires a changé et c'est ce qui a sauvé l'entreprise. Détermination, je vous disais.

Ce qui était au départ un « trip d'ingénieurs » pour développer les meilleures solutions en automatisation est devenu une compagnie prospère qui aide les entreprises à être performantes, profitables et durables. Bien qu'à la tête d'un groupe d'envergure mondiale, Jean-François conserve la passion de l'innovation, mais s'exprime désormais à travers la création d'équipes qui vont, elles, créer des choses. « Ce qu'on fait, c'est nécessaire pour faire voler les avions et en plus, c'est *l'fun*! » dit-il en toute candeur.

Avant même de recevoir le titre « Ambassadeur Entrepreneur ÉTS 2016 », Jean-François s'est toujours considéré comme un ambassadeur de l'ÉTS. L'institution l'a accompagnée dans son parcours et lui a permis de faire des rencontres marquantes, des gens qui l'ont encouragé à tenter sa chance, à suivre sa voie. Il est reconnaissant et fier, et souhaite faire rayonner l'ÉTS sur toutes les tribunes. D'ailleurs, chaque année, Jean-François se fait un devoir d'accueillir des stagiaires de l'ÉTS et son personnel est composé à plus de 50 % de diplômés de l'ÉTS.

En terminant, notons que lors du Gala des Ambassadeurs ÉTS 2016, le 21 octobre dernier, Jean-François a profité de sa présence sur scène pour faire la grande demande à sa belle Josée, qui a accepté devant les 328 convives. Nos meilleurs vœux de bonheur aux futurs époux et toutes nos félicitations à Jean-François Dupont, Ambassadeur Entrepreneur ÉTS 2016.

Robotic vs. Manual Deburring, Which Makes Sense for Your Company

February 3, 2017

Many metal parts must be deburred before being put to use, but not all finishing applications are created equal. When determining the most efficient way of deburring, there are several factors to look at including the quantity of parts you are finishing as well as the consistency needed from part to part. In the past few years larger shops have been implementing robotic deburring, and smaller companies have been researching the technology.

As for robotic deburring, one early adopter is the Aerospace industry.

Jet engines are high performance machines and a burr, even if it is only one thousandths of an inch, can have expensive and dangerous consequences. Each turbine blade within the engine must be manufactured to tight tolerances. These blades routinely operate under high stress, and edge breaking is a method used to strengthen the components. When a micro radius is put on a part to spread the

stress away from 90 degree angles, great care must be taken to retain its original geometry. Failing to do so can affect the aerodynamics of the plane and reduce efficiency.

This is an example of where robotics excel. Turbine blades are made and deburred in a volume that makes sense to take the time and spend the money to implement a machine with precision deburring abilities. AV&R Aerospace is doing an excellent job creating robotic cells specifically for this application.

In the same industry, when smaller parts or components that are not produced at a high volume are being finished, hand deburring is still going strong.

Here's why:

Programming compliance requires tremendous sophistication, and might be overkill for general deburring.

It's common to employ robotics to complete work like machining parts because every motion can be calculated and programmed. But no two burrs are exactly alike and tiny differences make deburring and edge breaking each individual part subtly different. Programing compliance in robotics is a task that allows for very consistent finishing and tight tolerances. For jobs that don't require such tight tolerances part after part, performing manual deburring is a time tested method. Skilled workers account for inconsistencies with "feel." As the operator pushes on

the part, force is exerted back on the tool and that force is part of what guides the process to perfect deburring and edge breaking.

Deburring by hand is faster when working on custom or low volume orders.

Programing a deburring cell to finish a part takes a good amount of time. In addition, to get the process perfect, you will need to run tests on a few spare parts. If it's low volume runs, this will take longer than manually deburring. In these situations, it's more practical for human operators to complete the task.

Smaller shops just don't have the budget.

As of now, implementing robotics takes a chunk of change. Companies with larger capital are benefiting from robotics, but as this technology becomes more affordable, smaller businesses will begin to invest in this machinery. As of now, we see the majority of small shops deburring with human operators.

Robotics are constantly evolving and improving. They have earned their existing place in manufacturing processes that can be accomplished using repetitive motions for high volume parts. But until robotics become attainable for smaller shops and custom parts, manual deburring is still a very viable option.

Whether you stick with tried and true manual deburring or implement robotic solutions, Rex-Cut has you covered with cotton fiber abrasives that can both deburr and finish parts using one tool.

AV&R Aerospace:

Improving the Efficiency of Aerospace Industry

Giving the importance of no room for error in the aerospace industry, achieving maximum precision is must for the companies. Needless to say, cost also plays a massive role when it comes to determining priorities along the value chain. However, these two factors are not mutually exclusive. So, to fill this void, enters **AV&R Aerospace** with its supply of automation solutions that deliver ultimate precision while keeping the cost low.

The expert team of AV&R offers automation integration to its clients. Their requests, often touching critical operations for the entire industry leads to the birth of new specialties for the team. The automation processes provided by the company eventually allows a reduction in production and labor costs, as well as improves productivity and quality.

The Man Behind the Success

Mr. Eric Beauregard is the **Executive Vice-President** of AV&R Aerospace. He holds a degree in Economics from The University of Sherbrooke. Back in 2006, he joined AV&R as a CEO where his role was to structure AV&R (*Averna's Vision and Robotics Group)* as an independent company and, then along with his team, to find a market niche for the company. Eric also worked hard to make AV&R a market leader in Robotic Finishing and Automated Visual Inspection for gas turbine parts. Additionally, Eric is a well-known, accomplished speaker at various Aerospace Conferences, and is a member of the *Board of Trade of Metropolitan Montreal's International Affairs Committee.* He has also been a member of *Aéro Montréal's* Board of Directors for six years.

Offering Ground Breaking Services

AV&R Aerospace is a brand of engineering firm named AV&R, which specializes in automation with a little over 100 employees spread across 2 operational sites worldwide. The company specializes in complex automation projects which require a high level of precision. AV&R is working in the aerospace industry for more than 20 years now. Till date, it has completed more than 600 projects with a team consisting of more than 80 engineering graduates, who are known as *aerospace specialists.* The company has developed its expertise in *gas turbine critical rotating parts,* which is its core business. It also specializes in Robotic Finishing which includes deburring, polishing and profiling, and in Automated Visual Inspection.

Eric Beauregard
Executive Vice-President

We are the leader in industrial automation for more than 20 years, and we specialize on automation, machine vision and robotics solutions

Tackling Turbulent Weather

AV&R Aerospace is well-positioned when it comes to playing a significant role in the transformation of its client's factories with the Industry 4.0. But the challenge is quite big! The main objective of this new revolution is the establishment of *"Smart Factories"*.

However, according to the company, the aerospace industry is yet to deploy a concrete plan to transform the production line. This change will take some time and investment, both of which the industry lacks right now. Yet Eric believes the industry is not as far from implementing these "Smart Factories" as it thinks now.

Mission and Vision

AV&R Aerospace is known as a world class leader in designing Robotic Finishing and Automated Visual Inspection solutions for aerospace high value-added parts. Its mission is simple: to keep it that way. The vision of the company: to build the future with its automated solutions. With industry 4.0, the company's vision is slowly turning to reality! This revolution requests its clients to make their factories evolve into smart ones, which necessitates automation systems that communicate with each other. But still, an aspiration in the industry. This is mostly because when all the machines on the production line are intelligent and can communicate with each other, then only it would be possible. AV&R's Aerospace is one of the few suppliers ready for this evolution.

Future Perspective

AV&R is just at the center of the industry helping its clients to reach a new era. The fact that it is not yet realized in Aerospace factories is hard to grasp: having such a high value-added part, it is even more useful for this industry to establish communication in the production line.

The sooner one notices an inaccuracy tendency, the less high-value processes are needed to be performed on already scrapped parts which eventually saves a lot of money. This is where AV&R Aerospace comes into action with its robotic solutions. These robotic solutions might seem a bit complicated now, but these have obvious advantages and are also attractive mostly due to the value they offer. It surely is a key to tomorrow's business success.

GLOBAL BUSINESS REPORTS

INDUSTRY EXPLORATIONS

QUÉBEC AEROSPACE

2017

Regional Hubs - OEMs - Supply Chain Providers
Education - Advanced Manufacturing - R&D - Space

Jean-François Dupont

CEO
AV&R

AV&R is an engineering firm specializing in automation, vision and robotics with a history dating back to 1994.

Have there been any developments since we met in 2015, particularly as companies increase their uptake of automation technologies?

Automation is currently a buzzword in the industry. A lot of AV&R's attraction stems from companies needing to lower costs, for which the main driver is coming from the OEMs. Because the new engines on the market have been sold at cost or even at a loss per unit, the next years will be marked by cost reduction, and there is only one way to reduce cost: automation. In the past, OEMs were moving production to lower-cost countries but the new performance requirements and tolerances make it impossible to carry out these processes manually any longer. Even low-cost environments are now required to automate processes and the amount of investment needed is roughly the same or sometimes higher due to the highly qualified workforce required to operate the system.

We are particularly focused on the aircraft engine, surface finishing and surface inspection. The future will center around Industry 4.0, and we believe our position in the market is very strong to facilitate this move: our systems are deployed on the ground, connecting all parts, we know the exact variations in process, the type of defects, part profiles, and are able to populate all the software used. We are the chain to connect all the information and centralize it in the cloud.

Québec is also home to a variety of SMEs which lack such high levels of investment capital. How great a barrier will cost be to these smaller companies and can they remain competitive?

Automation has long been easily deployed in plants with high throughput volumes. If a company has only small batches, it is much more difficult to automate its processes. In aerospace, the volumes are not yet high enough to demand the same levels of precision as in automotive production and a greater flexibility is demanded to accommodate a greater variation in the parts. Because of this, we have invested a lot of money to adapt the system to accept variations, which brings the possibility of implementation to smaller companies.

What are some of the results companies can expect to see through the automation of surface inspection?

The key is to merge human expertise and judgement with the use of robotics to maximize the task performance. The robot will present the defect and require a judgement call.

We are currently developing a solution with Rolls Royce and will deploy our first inspection system at the AMRC in Sheffield. Quality is a clear benefit of this kind of solution and also helps the inspector focus their knowledge on the decision at hand.

How will AV&R utilize new technologies to maximize efficiency in testing over the life of an aircraft?

We will be able to follow the complete life of a part–we digitalize the surface of the part so we know exactly where the potential defects are. Following a cycle, we will re-inspect the parts during the maintenance overhaul and compare the surfaces with the originals. This will allow us to monitor any deterioration and predict defects over the life of a part. In our extensive database, we will then be able to find where all these parts are involved and will be able to ground only the one plane with a potential defect. Normally, an engine is verified with all tests done on a computer with parts modelled after their initial design. All simulation parts are perfect. We will be able to simulate the real engine, recreating its real performance.

What are AV&R's main objectives going forward?

Due to agreements with some key customers, we will be opening some offices outside Canada, initially in France and the United Kingdom, and potentially in the United States depending on any changes to NAFTA. However, it is already much more difficult for us to cross the border and send engineers over. Previously, the United States was a local market for us.

Airlines order planes that will be delivered in five to ten years. Since AV&R offers solutions to automate the production of these planes' engines to the motorists, we are currently operating off their backlog, which will keep us busy for at least five years.

Image courtesy of AV&R