



# PYROWAVE

## A DAD MOTIVATED BY COMPLEX CHALLENGES

Pyrowave presents to you a series of interviews with its employees in order to better know the faces of those who are the driving force of the firm. The star of the day is **Jean-Philippe Laviolette, co-founder and VP Innovation.**



**Virginie Bussières: Jean-Philippe, you are VP Innovation and Pyrowave's co-founder. Tell us about your background before this adventure.**

**Jean-Philippe Laviolette:** I started studying in mechanical engineering, then I did a PhD in chemical engineering under the supervision of Dr. Jamal Chaouki, one of Pyrowave co-founders. It was at this time that I met Jocelyn Doucet, Pyrowave's CEO. First, I worked in the industrial sector, at Rolls-Royce. After two years, I wanted to be more challenged, to break new ground, and to solve complex problems. I went back to university as a researcher with Jamal. This is how Pyrowave is born. Jocelyn and Jamal had already begun a preliminary project on microwave pyrolysis. I joined the project, and I took over the development in the lab. We had interesting results, so we began designing the first commercial prototype, I quit university and we launched Pyrowave.

**V.B: What stimulates you in Pyrowave's adventure?**

**J-P.L:** When you start a project like this one, you don't really know what you're getting yourself into and it comes from curiosity and a desire to learn. What stimulates me is to work on tough issues and to find solutions to concrete problems about environmental issues. With a project like Pyrowave, not only do we imagine new things, but we conceive them, we prove that it works, and we develop a technology that we wish will be used all around the world and will have a real impact. We are paving the way for a completely new field. It took time before we had a functional project, but we never stop believing in it. And once it works, it is so satisfying, and it motivates you for the next step.

**V.B: Where did the idea of Pyrowave come from?**

**J-P.L:** The project came from the desire to solve the waste problem. We wanted to create small technologies that will treat waste locally. We began with fast food waste, but we realized the material was complex as it was uneven and time-varying. So, we focused on polystyrene in order to develop a functional and marketable technology. Today, Pyrowave's platform demonstrates the potential of electrification of chemical processes based on microwaves. This first application restores polystyrene waste into their virgin material, styrene, that could be used for new products. Using microwaves improves the chemical yield of the process and provides a high thermal efficiency. In fact, recycled styrene consumes 15 times less energy than styrene produced from oil. Now that we have a company with great teams and our own centre for microwave innovation, we are dealing with other waste. Microwaves provide interesting advantages compared to conventional technologies, and it creates new opportunities for sustainable chemistry.

**V.B: What is the job of a VP Innovation at Pyrowave?**

**J-P.L:** As a VP, I establish a R&D strategy, which means setting the priorities for the company's development based on the principles of sustainable development. To reach the objectives, I manage a R&D team and I coach them, so they stay curious and at the forefront of new technologies. As a VP, it is important to provide an environment conducive to innovation and achievements. So, we must be humble and highlight the team members. We reach our goals if the employees achieve their full potential in their work.

**V.B: In everything you have accomplished for the past 10 years, what makes you proudest?**

**J-P.L.:** Lots of things make me proud! On the technical level, I am proud of what we created. On the human level, I am pleased to have helped to build this company and those teams. There is a real dynamism, people get along very well and are stimulated by what they are doing. Another level of pride is the impact. Our mission is to close the loop of waste, and I think it's heading in the right direction. I believe we can have the best technology in the world but if people do not embrace it, it doesn't worth it. We did our best to stay humble, to listen carefully during all the process and to question the technology, the raw materials we will focus on, the business model and the way to develop this technology so it could solve the clients' problems. And that's why people are supporting it.

**V.B: What is innovation for you? How do you conceive it?**

**J-P.L.:** For me, the key to innovation is questioning the status quo in real issues. As John Warner, the father of green chemistry, once said, innovation is problems-driven research – so focusing on solving real problems. Innovation is also about sharing and collaboration. For instance, our microwave platform is paving the way for a new field in electrification of chemical processes, and we hope that others will be working on that topic in the next 50 years.



**V.B: Pyrowave is a story about collaboration. How do you keep stimulating this collaboration as the team grows?**

**J-P.L.:** I think the key is to be available, to involve people in decision-making and to establish frameworks for information sharing. For instance, every morning, I do a 15-minutes meeting with my team where everyone can present their objectives for the day and share if they have any problem. It is important to point out good work and to create informal moments for team building and belongingness.

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*Jean-Philippe Lavolette*

**V.B: What are the main activities of the innovation centre?**

**J-P.L.:** R&D is composed of “research” and “development”. The research part is about implementing new solutions in the medium to long-term. Currently, we are doing research to apply our technology to new type of waste. The development part aims at short-term impacts, and it consists mainly in optimizing our polystyrene platform. The R&D team contributes to the scientific field through conferences, articles and books which give an opportunity to spread our research work. The team also develops the company's intellectual property portfolio through patent deposit. Finally, we support young students and professionals. For example, we are currently helping a PhD student from Polytechnique Montreal, Ghazaleh Mirakhori, who is doing applied research based on our reactors.

**V.B: What is your ambition for Pyrowave for the next 10 years?**

**J-P.L.:** I hope that in 10 years the polystyrene platform will be operational on several plants all around the world and that we will have paved the way for microwave use for other processes. I wish also that we contribute to many conferences and publications so others could take over. I hope we'll motivate the young generation to innovate in complex field and promote lofty ethics. For instance, at Pyrowave, respecting facts is essential. The project is living, and we are contributing to it.

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