



The plastics and composites industry: Being on the ball to stay in the game

The plastics and composites industry has experienced continuous growth since its applications have gradually substituted for glass and metal. Despite the recession, the sector did well. Since 2009, it has performed better than manufacturing as a whole in Quebec, in many respects. However, the coming years will have their share of roadblocks and hard battles will have to be fought to keep the markets and buyers happy, whether they be companies or individuals. The industry's health will depend on its ability to respond to challenges involving competition, labour, the environment and technological developments.

REBOUND AFTER THE RECESSION PLASTIC

According to the report¹ drawn up by PLASTICompétences, the Comité sectoriel de main-d'œuvre de l'industrie des plastiques et des composites [plastics and composites industry labour sector committee], there were 442 establishments in Quebec in 2015. This puts Quebec in second place in Canada, behind Ontario. Since 2011, Quebec establishments have decreased 4%, mainly due to industry consolidation. Like elsewhere, we are seeking economies of scale and productivity gains, not to mention that competition doesn't discriminate.

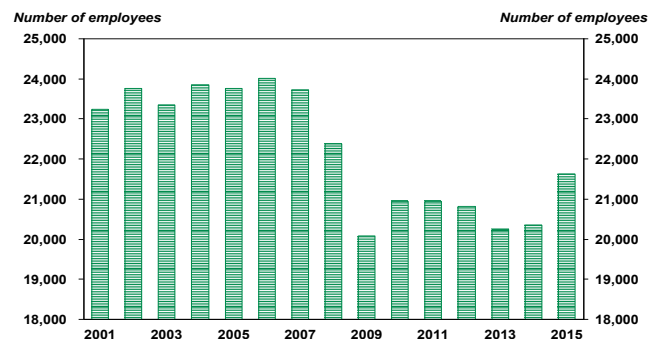
Table 1 on page 2 provides a breakdown of the companies whose activity was mainly based on plastics or composites² in 2015. Plastics won out with 347 establishments (76%). The Montreal, Montérégie and Chaudière-Appalaches regions dominated with 64% of the total number of establishments and 84% of the labour in Quebec. According to the PLASTICompétences survey, the industry is 99% composed of SMEs (with fewer than 500 employees).

¹ PLASTICompétences, Diagnostic sectoriel 2015 de l'industrie québécoise des plastiques et des composites, 2015, 200 pages, www.plasticompétences.ca/wp-content/uploads/2012/05/Diagnostic_sectoriel_PlastiCompétences_2015_Publication.pdf.

² Wikipedia: "Composites are made up of individual materials referred to as constituent materials. There are two main categories of constituent materials: matrix and reinforcement." Reinforcement (generally composed of fibres) imparts mechanical strength, whereas binders or matrices, most often a plastic (thermoplastic or thermoset resin), surround and support the reinforcement materials.

The recession of 2009 was deeply felt, but the industry has bounced back since then. A few indicators provide proof. The number of salaried workers in Quebec increased in 2014 and 2015 (graph 1), from 20,247 to 21,626 between 2013 and 2015 (+6.8%). Note that, during this same period, there was a slight increase in Canada (+3.7%). The slide in salaried employment was greater in Quebec than in Canada between 2007 and 2009. Lastly, the performance of the plastics and composites sector bucked the general trend from 2013 to 2015, compared with manufacturing for Canada and Quebec, at respectively -0.3% and -0.9%. Of the 15,000 production (plant) employees in Quebec, there are twice as many non-specialized as specialized workers.

Graph 1 – Salaried jobs in the plastics sector have risen in Quebec these past few years



Sources: Statistics Canada and Desjardins, Economic Studies

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Table 1
Distribution of companies by sector per administrative region

Administrative regions	Total		Plastics		Composites	
	%	Number	%	Number	%	Number
Montreal	30%	133	33%	115	16%	18
Montréal	22%	98	24%	82	15%	16
Chaudière-Appalaches	12%	51	9%	30	23%	24
Lanaudière	7%	32	8%	26	6%	6
Laval	5%	24	6%	22	4%	4
Laurentides	5%	23	4%	15	9%	9
Centre-du-Québec	5%	22	5%	18	4%	4
Estrie	4%	18	3%	12	7%	8
Capitale-Nationale	4%	16	3%	12	4%	4
Mauricie	2%	9	2%	8	3%	3
Saguenay-Lac-Saint-Jean	1%	5	0%	1	4%	4
Bas-Saint-Laurent	1%	4	1%	3	1%	1
Abitibi-Témiscamingue	1%	4	1%	2	2%	2
Outaouais	0%	1	0%	1	0%	0
Côte-Nord	0%	1	0%	1	0%	0
Total*	100%	442	100%	347	100%	104

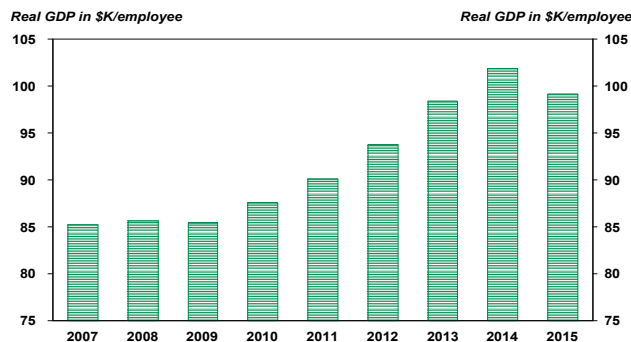
*Note: The total number of companies answering the surveys (phone, n: 127 and web, n: 61) is not equal to the sum of plastics sector companies (phone, n: 101 and web, n: 49) and composites sector companies (phone, n: 28 and web, n: 14), because two companies in each survey (phone and web) said that they worked in both plastics and composites, and are therefore included in each of these two sub-groups. This has an influence on the percentages presented in the tables and graphs.

Source: Statistics Canada, company list provided by PLASTICompétences, phone survey SOM Inc. 2015

Among the indicators on the rise, the inflation-adjusted real GDP of the plastics and composites industry strengthened. In 2015, it was \$2.1B, up 3.5% over 2014, whereas real GDP was estimated at 1.0% for the Quebec manufacturing sector overall. Between 2009 and 2015, the rise in real GDP for the plastics and composites industry and for overall manufacturing was 25.0% and 9.5% respectively. Moreover, real GDP per salaried employee grew until 2014, showing that productivity gains were made (graph 2). In 2015, GDP per salaried employee decreased slightly, but was still higher than in 2013.

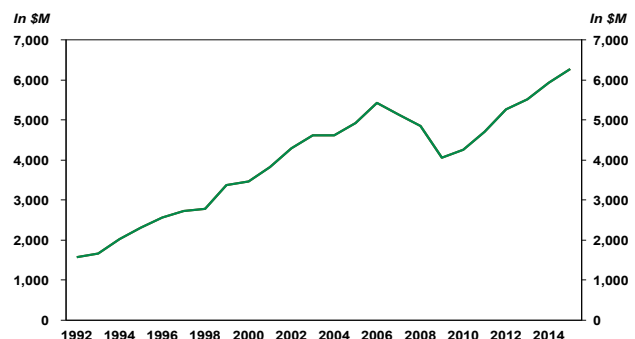
Plastic product manufacturing sales have grown since 2009 and have now surpassed pre-recession levels (graph 3). Not all sectors have benefited from this improvement, however. For example, the production of pipes and pipe fittings saw its best year in 2006, before the collapse of the U.S. housing market, and the plastic auto parts market is struggling to reach its year 2000 peak. The partial transfer of North American production southwards has not been kind to Quebec manufacturers. The very weak growth of the manufacturing sector in Quebec (packaging that surrounds production) and the slowing of the housing market on this side of the border are other pitfalls that threaten the plastics and composites industry.

Graph 2 – GDP per Quebec employee has increased since 2007, but edged down in 2015



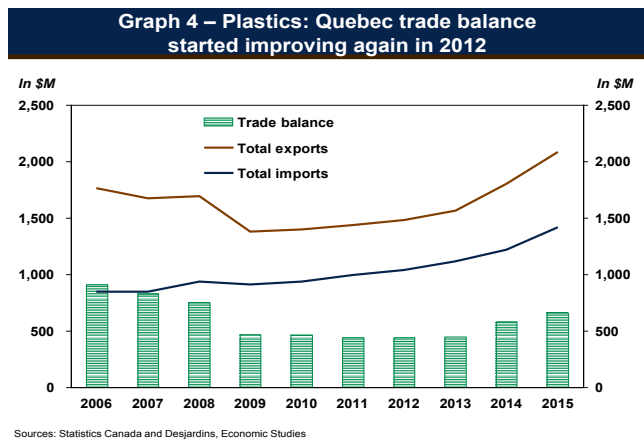
Sources: Statistics Canada, Institut de la statistique du Québec and Desjardins, Economic Studies

Graph 3 – Plastics: Quebec manufacturing sales have surpassed pre-recession levels



Sources: Statistics Canada and Desjardins, Economic Studies

The industry has also seen an increase in its commercial balance since 2012, despite the rise in imports (graph 4). The value of exports, like that of imports, hit a low in 2009. Despite increasingly fierce competition, the Quebec industry has maintained a positive trade balance over the past few years. Exports are recovering, especially to the United States, and are also increasing to China and Mexico, but to a lesser extent.



A quick glance shows that the plastics and composites industry performed well coming out of the recession. However, recent gains have not completely overcome the threats looming over the industry. Here is a brief overview of the challenges it faces.

AN OBSTACLE COURSE

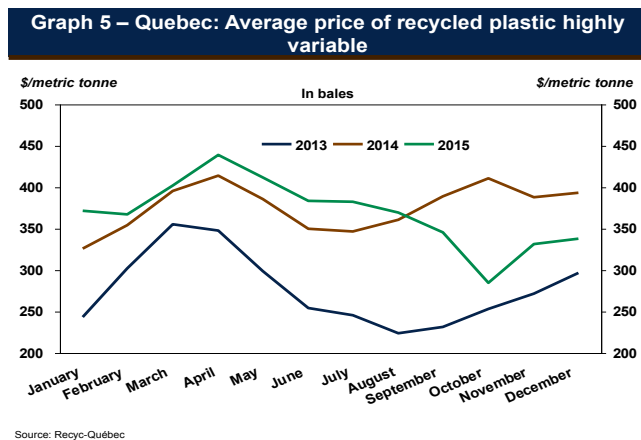
We saw that the Quebec industry made gains over the past few years, but it is not the only one to covet North American market. In this regard, competition is lively and the purchase of foreign plastic products continues to increase in Quebec. The United States is the main country of origin, with a little over 42% of Quebec imports in 2015. China ranks second with a share of about 31%. From 2006 to 2015, products purchased from these two countries respectively increased by about 40% and 135%. Despite the depreciation of the Canadian dollar last year, which makes imports more expensive, they also increased (13.4% and 20.6%). This shows the appeal of these two countries’ production.

The loonie’s slide is not all rosy; while it can slow down imports somewhat and promote exports, it is a challenge for all manufacturers that purchase resins on foreign markets.

The currency is not the only headache plastics and composites manufacturers have to deal with—recruiting workers also poses numerous difficulties. According to the 2015 PLASTICompétences survey, the recruitment of production employees is problematic. Recruiting employees with the required skills and experience is not a new problem, but the situation seems to have gotten worse. Replenishing the ranks of workers is a challenge even for non-specialized tasks, and for management jobs.

According to the manufacturers,³ 6,200 jobs will have to be filled over the next three years in production alone. The breakdown is 4,400 replacements and 1,800 new jobs. It is estimated that 1,100 of these will be specialized production jobs (500 new) and 5,100 non-specialized (1,300 new). Workforce training and development solutions have already been implemented. An accredited plant-school training program is even being contemplated, similar to what is done in Germany.

Among the challenges to be faced are that of the industry’s environmental image. Outside the industry, few people know that there are initiatives and programs aimed at considering plastics as part of the solution, rather than an environmental problem. The Ecoresponsible certification program is one of them. Plastics recycling is a world unto itself and the recovered resin competes with virgin resin, whose price fluctuates with that of oil. To illustrate, graph 5 presents the changes in the price of recycled plastic bales in Quebec from 2013 to 2015. At a glance, one can see that there are many fluctuations—just one of the factors that manufacturers using this material must deal with.



³ PLASTICompétences, Diagnostic sectoriel 2015 de l’industrie québécoise des plastiques et des composites, 2015, 200 pages, www.plasticompetences.ca/wp-content/uploads/2012/05/Diagnostic_sectoriel_PlastiCompétences_2015_Publication.pdf.

TECHNOLOGICAL CHALLENGES

In addition to competition, labour and environmental challenges, there are those related to technological changes. There too, developments are rapid. The Quebec plastics and composites industry itself recognizes that it must adopt new technologies to stay in the game. The sector must also be increasingly productive and cut its labour costs.

Efforts must focus on the research and development of new products, as well as on improving product quality. Standards are increasingly high and new materials are disrupting work methods and how innovative products are created.

What about the arrival of 3D⁴ printers? There is a tendency to associate 3D printing with plastics, but for some time now other materials including metallic powders, glass, food and new materials have been used. Regardless, its presence and potential place in the production of goods cannot be overlooked. Despite the “verbal inflation” surrounding its promises, it must be recognized that its function has already surpassed the construction of prototypes and mock-ups. Production for immediate use in factories or homes is a reality. However, the use of 3D printers is not yet as popular as one might think. Researchers are working on making it easier to use and finding other applications for it in fields as diverse as aerospace, construction, medical, clothing and food.

According to Gartner, a U.S. IT research and analysis firm, deliveries of 3D printers reached more than 244,500 units in 2015, and will grow to almost 500,000 units in 2016. It forecasts that deliveries will double each year from 2016 to 2019. Is custom production starting to pull ahead of mass production? This remains to be proven, but developments are to be followed closely.

CLOSING THE RANKS AND RESPONDING TO CHANGE

Because of the many challenges facing the industry, it must work as a team. To do so, industry players are joining forces and coordinating their actions to recruit labour, enhance productivity, innovate, and work with environmental stakeholders.

The plastics and composites industry is one that had a good cruising speed coming out of the last recession. Keeping up this pace is necessary, at a time where restrictions are multiplying. While recruiting workers is a headache, tracking clients' needs and meeting environmental requirements calls for flexibility. Being technologically up to date remains a priority, however, and provides part of the answer to these challenges. Methods and materials are changing quickly, and it would be a shame for Quebec manufacturers to be left behind because they did not keep up with advances.

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⁴ Wikipedia: “3D printing refers to various processes used to synthesize a three-dimensional object.” A computer-aided design (CAD) tool is used for this purpose. The 3D file generated is sent to special software that slices it up and sends it to the printer, which lays down successive layers until the final object is obtained. The principle is fairly close to that of traditional 2D printers: the nozzles used to deposit the material are the same as those used in office printers. It's the piling on of layers that creates volume.