

Advanced Manufacturing

Definition

Advanced manufacturing is a knowledge-intensive sector, and is defined as the integration and utilization of technologies in a system of production to improve processes and techniques to produce goods and services faster, cheaper and cleaner. It is a subsector of manufacturing where innovation and the adoption of new technologies play a significant role in the competitive positioning and long-term sustainability of a company's operation.

(Durham Region & Millier Dickinson Blais Inc., 2007)



Overview of the Industry

Advanced manufacturing differs from past forms of traditional manufacturing; advances in technologies have developed previously simple forms of manufacturing into more complex and skilled forms of labour. Advanced manufacturing now depends on a skilled and educated workforce. It is a knowledge-intensive and highly skilled sector with a strong diverse economic base (Invest Durham, 2013). Durham Region

serves as an ideal location to support the expansion and development of companies wishing to expand businesses in advanced manufacturing due to the already existing land, location, multimodal transportation and logistics sector, educated workforce, infrastructure and work/life balance (Invest Durham, 2013). Manufacturers have moved to adapt increasingly sophisticated methods, technologies and structures for developing and delivering their manufacturing services (Invest Durham, 2013).

The strengthening and deepening of the advanced manufacturing sector has resulted in the development of local infrastructures within the region to support the increasing demand (The City of Pickering, 2015). Many advanced manufacturers also participate in research and development (R&D), in order

to continuously keep up with innovative technologies. Ennis Traffic Safety Solutions, a global infrastructure leader, recently opened its R&D facility within the City of Pickering and is one of the examples of companies expanding to Durham Region (The City of Pickering, 2015). In the past five years the City of Pickering has seen over one million square feet of commercial and industrial space built (The City of Pickering, 2015). This is indicative of the key cluster sectors continuing to grow within the Region.

The location of Durham Region plays a large role in the success of the advanced manufacturing sector. The Region is located along major trade routes, which easily facilitates the transportation and logistics of goods and services. Durham Region is located along the 401 and 407 highways, which are vital Canadian trade routes.

These routes also connect the Quebec City-Windsor corridor and Montreal-Chicago corridor, which are pivotal to national and international trade. The location of Durham Region supports its ability to connect Canada, as well as international trades routes through water and ground transportation. The proximity to the Port of Oshawa and adjacent rail spur also facilitates effortless intermodal transportation between major locations in Canada and North America. The Port of Oshawa is located at the basin of the St. Lawrence seaway which enables manufacturers in Durham Region the ability to distribute their products nationally and internationally via water transportation. Durham Region is also home to two leading-edge post-secondary institutions, Durham College and the University of Ontario Institute of Technology. These two schools provide many programs such as engineering disciplines and technical trades programs to support the development of advanced manufacturing within the Region. These institutions provide local training to talent and support the continuous advancement of this sector. Advanced manufacturing requires a high skill level. It differs from

traditional manufacturing, as it often requires a post-secondary degree or training. Programs within the advanced manufacturing sector include robotics, engineering and technology-based programs. Industries that have previously remained in traditional manufacturing are now utilizing new technologies in this cross-sectoral cluster approach. The 2016 provincial budget has invested \$40 million in the advanced manufacturing sector. This investment in advanced manufacturing is aimed at developing highly skilled jobs and drive innovation within the sector. The provincial government has also launched programs to support traditional manufacturers in developing and transforming into more innovative, dynamic and productive companies. The 2016 budget is aimed at shifting Ontario to a knowledge-based economy through the development of high growth sectors such as advanced manufacturing. The Durham Workforce Authority considers advanced manufacturing a Subject Matter Working Group because it represents a high growth sector within Durham Region with potential for additional expansion. There

is a tremendous opportunity for extended and continuous growth in advanced manufacturing due to the strong and dynamic base of manufacturers already present in Durham Region. There are also opportunities in this sector to support traditional manufacturers to transition, develop and implement the use of advanced manufacturing technologies within their companies. This sector can also continue to grow through continuous educational support and development, in order to establish a dynamic and skilled workforce. This allows for long term development and employment opportunities within the Region.

[Canadian Business Counts – Durham Region](#)

Data within the Canadian Business Counts table represents counts of active businesses by industry classification and employment-size categories for Canada and the provinces and territories. The counts are compiled from the Business Register, Statistics Canada's central listing of Canadian businesses. The table below represents a sampling of active businesses, as of December 2015 within Durham Region in the advanced manufacturing sector. Sourced from Statistics Canada 2015.

| Description | Without employees | Total with employees | 1-4 | 5-9 | 10-19 | 20-49 | 50-99 | 100-199 | 200-499 | 500 + |
|--------------------------------|-------------------|----------------------|-------|-------|-------|-------|-------|---------|---------|-------|
| Total | 34,517 | 14,731 | 8,308 | 2,865 | 1,763 | 1,176 | 372 | 148 | 71 | 28 |
| Unclassified | 4,509 | 1,054 | 914 | 95 | 27 | 12 | 4 | 2 | 0 | 0 |
| Sub-total, classified | 30,008 | 13,677 | 7,394 | 2,770 | 1,736 | 1,164 | 368 | 146 | 71 | 28 |
| Total - Advanced Manufacturing | 434 | 499 | 176 | 90 | 93 | 82 | 33 | 16 | 8 | 1 |

Industry Overview (NAICS)

The North American Industry Classification System (NAICS) is an industry classification system developed by the statistical agencies of Canada, Mexico and the United States. Created against the background of the North American Free Trade Agreement, it is designed to provide common definitions of the industrial structure of the three countries and a

common statistical framework to facilitate the analysis of the three economies. NAICS is based on supply-side or production-oriented principles, to ensure that industrial data, classified to NAICS, are suitable for the analysis of production-related issues such as industrial performance.

NAICS is a comprehensive system encompassing all economic activities. It has a hierarchical structure and is composed of sectors (two-digit codes), subsectors

(three-digit codes), industry groups (four-digit codes), and industries (five-digit codes). At the highest level, it divides the economy into 20 sectors. At lower levels, it further distinguishes the different economic activities in which businesses are engaged. The chart below represents the top four advanced manufacturing industries in Durham Region. Sourced from Statistics Canada data tables custom purchased by the Durham Workforce Authority.

| NAICS Code | Description | Jobs in Durham Region (POW) | Durham Region Residents Employed (POR) | Total - All Class of Workers | Employees | Self-Employed #2 | Self-Employed | Median Wages and Salaries (POR) | Average Wages and Salaries (POR) | Median Wages and Salaries (POW) | Average Wages and Salaries (POW) |
|------------|--|-----------------------------|--|------------------------------|-----------|------------------|---------------|---------------------------------|----------------------------------|---------------------------------|----------------------------------|
| 325 | Chemical manufacturing | 1,060 | 1,735 | 1,840 | 1,830 | 15 | 15 | \$56,047 | \$65,154 | \$61,097 | \$68,973 |
| 326 | Plastics and rubber products manufacturing | 1,365 | 1,695 | 1,770 | 1,725 | 45 | 45 | \$45,739 | \$52,889 | \$40,712 | \$49,583 |
| 332 | Fabricating metal product manufacturing | 1,265 | 1,885 | 2,025 | 1,925 | 105 | 105 | \$45,642 | \$55,165 | \$46,797 | \$72,248 |
| 336 | Transportation equipment manufacturing | 8,525 | 7,425 | 7,600 | 75,65 | 30 | 30 | \$59,846 | \$61,210 | \$60,277 | \$62,570 |

Definition of Terms

Within this document data related to the industry is classified within two categories:

Place of Work (POW) and Place of Residence (POR).

Place of Work – is defined as individuals employed within Durham Region.

Place of Residence – is defined as Individuals who reside within Durham Region.