



Quebec

A Dynamic and Profitable Business Environment

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Home

If your company specializes in optics-photonics, Québec offers you the best conditions to prosper. With **world leaders** such as EXFO, ABB Analytique, Teraxion, Nortel Networks, Forensic Technology and MPB Technologies, Québec is at the forefront in markets relating to photonics applications such as instrumentation (tests and measurement, analytics), imaging, vision systems, optical communications and high-performance fibre optics.

For 50 years, Québec has been a competence centre focused on innovation and knowledge, offering companies exceptional advantages and resources:

- world-class research centres that are drivers and technology partners of the industry;
- a variety of companies active on international markets;
- qualified and available manpower;
- specialized teaching institutions;
- financial assistance programs.

"With a large number of industrial and university research centres and the availability of skilled workers, Québec is a logical location for a technology company like StockerYale Canada. In addition, we are close to our markets." - Nicolas Cadieux, General Manager, StockerYale Canada, 2008

Your company is growing; expand in Québec.

October 2008

Sector Profile

The optics-photonics sector in Québec comprises more than a hundred companies employing almost 5 000 people (2007). Sales in the sector were roughly \$600 million in 2006.

Optics-photonics in Québec by the numbers

Number of companies (2007)	118
Jobs (2007)	5,000
Employment growth rate (2006-2007)	12.4% *
Major research centres (2007)	8
Research jobs (2007)	1,685
Sales in 2006 (millions of dollars)	600
Growth rate (2005-2006)	20.2%

Source: Quebec Photonic Network

* ADESE, market analysis, 2007.

The Québec City region stands apart with world-class centres of expertise like the National Optics Institute (INO), DRDC Valcartier, the Centre d'optique, photonique et laser (COPL) and the Canadian Institute for Photonic Innovations (CIPI), a Canada-wide network of universities and research centres specializing in photonics.

Québec's importance in optics-photonics at the international level is attributable, among others, to the diversity of its areas of expertise. Companies in Québec are specialized in a wide variety of fields and research done by universities and R&D centres covers almost every aspect of optics-photonics.

Québec City and Montréal have hosted international events such as Photonics North (2006 and 2008), LPM (2008) and the annual gathering of the International Electrotechnical Commission TC86 (2007).

In addition, according to a KPMG study (2008), labour costs are, on average, 12.3% lower in Québec than in other G7 countries for the electronics industry. Another good reason to do business in Québec.

Industry-leading Companies

More than a hundred companies contribute to the development of the optics and photonics industry in Québec and employ highly qualified workers. The largest are:

Company	Number of jobs
EXFO	700
Lyrtech	220
Perkin Elmer Optoelectronics	175
ABB Analytical	167
Forensic Technology	135
StockerYale	118
Avensys	115
MPB Communications	89
TeraXion	85
LxSix Photonics	80
ART Research et Technologies	67
Creaform	65
Servo-Robot	65
Fiso division of Roctest	60
OptoSecurity	60
Infodev Systèmes Électroniques	55
Optel Vision	55
Silonex	55
Telops	46

Source : MDEIE, 2007 figures.

Industry-leading Companies Equipment Makers

ABB Analytical specializes in infrared spectroscopy. The company makes spectrometers for the analysis of various substances such as hydrocarbons, pharmaceutical products and food. It mainly serves oil companies, aluminum producers, pharmaceutical companies and food companies.

Creaform incorporates 3D processes and technologies in innovative solutions meeting 3D needs: 3D digitization, reverse engineering, inspection, design, analysis, digital fabrication and medical applications.

EXFO is recognized around the world for its expertise in testing and measurement. The telecommunications division, which is its main sector of activity, offers complete and integrated testing solutions to network services suppliers, cable television distributors, makers of telecommunications systems and component makers in nearly 70 countries.

Gentec-EO is a manufacturer specializing in laser beam measurement. Gentec Electro-Optics has over 35 years of experience in this field and is a leader in laser energy and power measurement.

Infodev designs and makes automatic counting systems using electronics and optics.

Optel Vision develops, makes and integrates complete innovative processing chain inspection systems for many companies.

PerkinElmer is a world leader in technology. It designs, makes and commercializes products for the health sciences and opto-electronics markets.

Silonex forms effective partnerships with its customers to develop unique and innovative microelectronic detection solutions.

Telops produces new opto-mechanical and electro-optical systems for telecommunications, defence and aerospace companies.

Industry-leading Companies Optical Components

Avensys is a world leader in the production and marketing of optical components and modules used in the development of telecommunications applications, fibre lasers and optical sensors.

CorActive makes specialized optical fibres for telecommunications, remote detection, strategic defence, security, industrial and medical machining.

LxSix Photonics develops and produces cost-effective telecommunications components and optical sensor solutions for various markets and applications: the oil and gas industry, processes and control, security and intrusion, and structural integrity markets.

Neoptix specializes in fibre optic temperature sensors used in industry, medical applications and scientific instrumentation.

Opsens is a leader in fibre optic sensors and specializes in advanced technologies such as white-light polarization interferometry (WLPI) and semiconductor band gap (SCBG) detection.

PhasOptx has developed a miniature, reusable, robust technology that is used to connect optical fibres without glue.

Roctest/Fiso Technologies makes fibre optic sensors and signal conditioners and is a world leader in technology for measuring the physical and chemical parameters of optical fibre.

Servo-Robot designs and makes process control systems for automated and robotic manufacturing. Servo-Robot is the uncontested leader in improving the performance of assembly processes thanks to its unequalled 3D laser vision technology.

StockerYale is a pioneer in the development of sophisticated lighting products, special optical fibres and diffractive optical elements.

TeraXion specializes in products for generating and conditioning optical signals used by original equipment makers in critical applications in the industrial, telecommunications and defence markets.

Industry-leading Companies Québec Optics-photonics Association

Quebec Photonic Network

The Quebec Photonic Network (QPN) is a non-profit group whose mandate is to contribute to the advancement of the optics and photonics industry in Québec. The QPN focuses on research, technologies, manufacturing, manpower, commercialization, investment and entrepreneurship.

Labour

In 2006, the number of jobs relating to optics-photonics in Québec was close to 5,000, including 1,685 in research. The industry generated revenue of roughly 600 million Canadian dollars. The number of jobs directly relating to photonics rose 12.4%* from 2006 to 2007.

* ADESSE, market analysis, 2007.

Training

Students enrolled (fall 2007) and diplomas granted (2007)

Engineering programs – Québec

Programs	University studies Undergraduate		University studies Graduate		Total	
	Student enrolment	Graduates	Student enrolment	Graduates	Student enrolment	Graduates
Electronic engineering	2,974	703	1,288	365	4,262	1,068
Engineering physics	291	60	69	18	360	78
Computer engineering	1,009	288	161	35	1,170	323
Physics	492	111	418	101	910	212
Total	4,766	1,162	1,936	519	6,702	1,681

Source: MELS, Statistiques détaillées de l'éducation, May 2008.

Research & Development

Research Institutes and Centres

The eight optics-photonics research institutes, laboratories and centres in Québec City rank among the largest in Canada. With their researchers, students and technicians, they make a substantial contribution to the region's high level of expertise and technological innovation.

National Optics Institute (INO)

A world-class centre of expertise in business applications for optics and photonics for nearly 20 years.

Areas of research:

- Biophotonics
- Bolometers
- Specialty fibre optics, fibre sensors and optical design
- Thin optical layers

Centre d'optique, photonique et laser (COPL), Université Laval

The largest university research centre in optics-photonics in Canada.

Areas of research:

- Guided optics and fibre optics
- Imaging, metrology and optical instrumentation
- Photonic materials
- Optical communications
- Lasers and ultrashort pulses

Defence R&D Canada - Valcartier (DRDC Valcartier)

DRDC Valcartier is the largest of six research and development centres under the Department of National Defence.

Areas of research:

- Optronics systems
- Information systems
- Combat systems

Centre international de recherche et de formation en neurophotonique (CIRFN), Université Laval

CIRFN encompasses some thirty specialists in neurophysiology, optics-photonics and lasers, new materials and nanotechnology with the objective of studying cellular and molecular processes in living neurons using photonics.

Computer Vision and Systems Laboratory (CVSL)

Computer vision as well as industrial and biomedical applications.

Laboratoire de systèmes mécaniques intelligents (LSMI)

Areas of research:

- Automated optics
- Fibre optical sensors
- Vibration control

Centre de robotique industrielle (CRI)

Robotics machine vision

The Canadian Institute for Photonic Innovations (CIPI) has its headquarters in Québec City. This Canadian network of centres of excellence administers a research program of more than CDN\$4 million per year supporting 15 projects in partnership with contributors from the public and private sectors. It employs 90 researchers and more than 300 graduate students at 20 Canadian universities.

Measures to Stimulate R&D

Certain Québec tax measures enable companies to realize considerable savings on R&D costs. The real cost of a CDN\$100 R&D expenditure may be as low as CDN\$40.

Net cost of CDN\$100,000 R&D expenditures incurred in Québec by a large corporation or by a foreign-controlled corporation in the manufacturing sector

Example 1: A corporation incurs expenditures of \$100,000 on R&D; i.e., \$65,000 for the salary of a researcher, \$15,000 for subcontracting services in Québec and \$20,000 for materials.

Example 2: A corporation incurs expenditures of \$100,000 on R&D; i.e., \$60,000 for the salary of a researcher, \$30,000 for materials and \$10,000 for equipment.

	Example 1	Example 2
Expenses	\$	\$
A - Salaries	65,000	60,000
B - Subcontracting services	15,000	—
- Materials	20,000	30,000
- Equipment	—	10,000
C - Total R&D expenditures	100,000	100,000
Québec tax credit		
(A + B/2) X 17.5%	12,688	10,500
Federal tax credit		
Total expenditures (C)	100,000	100,000
Overhead (A X 65% ¹)	42,250	39,000
Less Québec credit	<u>(12,688)</u>	<u>(10,500)</u>
D - Expenditures eligible for credit	129,562	128,500
E - (D X 20%)	25,912	25,700
F - Total tax credits	<u>38,600</u>	<u>36,200</u>
Net cost for the corporation (C-F)	<u>61,400</u>	<u>63,800</u>
Tax savings (when profits are earned)		
Federal ((C - F) X 19.5%)	11,973	12,441
Québec ((C - E) X 11.4%)	<u>8,446</u>	<u>8,470</u>
G - Total tax savings	20,419	20,911
Net cost for the corporation (C-F-G)	<u>40,981</u>	<u>42,889</u>

¹ Proxy method used to calculate overhead. Under this method, overhead actually incurred is replaced by 65% of R&D salaries.

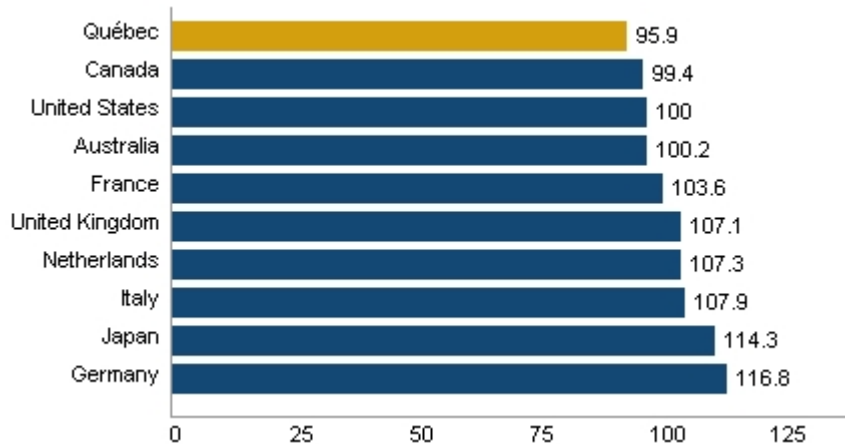
Source: Investissement Québec and Raymond Chabot Grant Thornton, April 2008.

Operating Costs

According to an international comparative study published by KPMG in 2008 covering 17 industrial sectors in 136 cities, the major cost drivers that vary with location are, on average, 4.1% lower in Québec compared to the United States and 11.1% lower compared to the G7 countries.

Comparison of annual operating costs – Québec and industrialized countries

Model: Telecommunications industry. Index: United States = 100



Source: KPMG Guide to International Business Location, 2008 Edition.

Financial Solutions and Taxation

Financial Solutions

Investissement Québec can assist you with your expansion plans, providing consulting services as well as financing assistance. In addition to being an economic development agency, we are also a financial institution. We have several financial solutions for you.

SMB Financial

We can provide a loan guarantee, i.e. a repayment guarantee on a loan, a line of credit or a letter of credit granted by a financial institution. We also offer loans. Two components of our SMB Financial program are likely to interest you:

- Interim financing of tax credits
- Technological and design innovation

Strategic Support for Investment Program

If your company is planning an investment or seeking to develop a new product, we can provide various types of loans, a loan guarantee or a non-repayable contribution.

The Strategic Support for Investment Program (PASI) favours investments that target diversification or consolidation of a particular sector, and product development that is distinctive because of its innovative nature and commercial potential.

Investment Tax Credit

A business that acquires new manufacturing and processing equipment before January 1, 2016 can receive this tax credit, which can vary between 5% and 40% depending on the region.

Financial Solutions and Taxation

Corporate Tax Rates

The corporate tax rate in Québec is 30.9%-one of the the lowest in North America. The tax situation in Québec is also highly competitive in terms of job creation and capital investments.

Comparison of Income Tax Rates, 2008 Manufacturing Companies

	Effective tax rate (%)				
	Basic federal ¹	Province/ State	City ² / Some states	TOTAL	Outside referenced city
Québec	19.50	11.40 ³	–	30.90	–
Ontario	19.50	12.00	–	31.50	–
California	30.91	8.84	–	40.75	–
North Carolina	32.59	6.90	–	39.49	–
Illinois	30.50	7.30	–	37.80	–
Massachusetts	31.68	9.50 ⁴	–	41.18	–
Michigan	30.49	6.32	1.00 ⁵	37.81	37.14
New York	27.26	7.10 ⁶	10.05 ⁷	44.41	37.66
Pennsylvania	27.47	9.99	6.50 ⁸	43.96	39.60
Texas	34.65	1.00 ⁹	–	35.65	–

1. In the U. S., the general rate of 35% depends on the company's income. For U.S. manufacturing companies, a deduction corresponding to 6% of profits related to production activities or of taxable income is available for 2007, 2008 and 2009, resulting in a reduction in the effective rate of 2.10%.

In Canada, the federal tax rate is 11% for Canadian-controlled private corporations with taxable income of less than CDN\$400 000. Reduced rates also apply in certain provinces for small businesses. The general rate of 19.5% in 2008 will fall to 19% in 2009, 18% in 2010, 16.5% in 2011 and 15% in 2012.

2. Most of the rates used for cities are those for 2007, since some rates for 2008 were still not available when this document was published.

3. 11.9% as of January 1, 2009.

4. The rate includes the surtax of 14%. Furthermore, a tax on company capital must be added to the 9.5% rate, calculated at the rate of 0.26%.

5. Many cities in Michigan impose an income tax generally at a rate of 1%. However, the cities of Saginaw, Grand Rapids and Highland Park impose rates of 1.5%, 1.3% and 2% respectively.

6. Corporations are subject to a tax based on the highest of the four amounts. The income tax rate is 7.1%

7. New York City. A 17% surtax applied to the state tax (7.1%) for the metropolitan New York area was added to the city rate of 8.85%. The three rates may not all apply to all corporations.

8. Philadelphia. A tax on gross income calculated at the rate of 0.1540% applies on top of income tax.

9. As of January 1, 2008, Texas has imposed a 1% Franchise Margin Tax. The tax applies to the lowest of the following three margins: (1) gross profit margin; (2) total revenue less remuneration; or (3) 70% of total revenue. For years prior to 2008, Texas imposed a tax equivalent to 0.25% of taxable capital or 4.5% of taxable surplus, whichever was higher.

Source: Investissement Québec and Raymond Chabot Grant Thornton, June 2008.

Financial Solutions and Taxation Tax Holiday for Foreign Researchers

Foreign researchers employed by a company in Canada that does R&D in Quebec benefit from a provincial tax holiday on their salary for five consecutive years. It is a declining tax holiday computed as follows: 100% of employment income the first two years, 75% the third year, 50% the fourth year and 25% the fifth year. This measure also applies to other foreign experts; e.g., managers working in innovative fields.