



**ALFT provides unique, patented capability to deliver proven, cost-effective and portable soft X-ray sources to enable the development of new applications and commercial opportunities, and advance scientific research.**

Established in 2002, **ALFT** is the result of more than 20 years of research and development in advanced light source technologies. To date, **\$20 million** has been invested in developing its world-class soft X-ray solution.

With its demonstrated reliability, excellent output stability, multiport source and continuous operation, **ALFT's** soft X-ray technology is the **MOST** advanced solution on the market today.

Soft X-ray sources facilitate and enable advancements in the research and development of new applications spanning a broad range of industries; including security, aerospace and defence, environmental analysis, diagnostic and medical imaging, bio-technology, nanotechnology, microelectronics, microfabrication, genomics, proteomics, and environmental and life sciences.

**ALFT's** experienced management team brings to the company more than **90 years combined industry-**

**related and business experience**, and hail from established industry and research leaders such as *JDS Uniphase, National Research Council of Canada, and The Institute of High Energy Electronics, Chengdu, China.*

*The team is comprised of the following individuals.*

- ▶ **Robert R. Dotten**, GM
- ▶ **Emilio Panarella**, CTO
- ▶ **Robert S Taylor**, COO

#### HEADQUARTERS

*Based in Kanata, Ontario, **ALFT** is privately owned and operated.*

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ADVANCING INNOVATION & INDUSTRY  
THROUGH SOFT X-RAY SOLUTIONS





**EMILIO PANARELLA**  
CHIEF TECHNOLOGY OFFICER



Mr. Panarella originally founded *Advanced Laser and Fusion Technology, Inc.*, – a spin-off from *NRC's* plasma radiation program – which would become **ALFT**. His vision to use hot dense plasma as a commercially viable source for electromagnetic radiation (specifically soft X-ray generation) was the driving force behind the company's creation.

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From 1964 to 1987, Mr. Panarella held various positions at the *National Research Council of Canada* ranging from Assistant Research Officer to Senior Research Officer, while working as a plasma physicist in energy production from fusionable plasmas. *In the 1980s, Mr. Panarella advanced the concept of the two-stage spherical pinch implosion – now an accepted concept in fusion for energy production.*

Mr. Panarella is an elected Fellow of the *American Physical Society* and of the *New York Academy of Sciences*. He is a Senior Member of the *Institute of Electrical and Electronic Engineers*, as well as a member of several learned societies, such as the *European Physical Society*, and the *Canadian Nuclear Society*. He is the editor of the journal *Physics Essays*, an international journal dedicated to fundamental questions in physics. *He has published well over 100 papers, and holds a patent on the generation of soft X-rays from vacuum sparks.* He has been invited to speak at several leading institutions, including *Los Alamos National Laboratory, Imperial College, and Centre de Recherches Nucleaires*. He obtained a Doctorate in Navigational Sciences from the *University of Naples, Italy, Department of Navigational Sciences* (an interdisciplinary Department between Mathematics and Physics that pays special attention to problems of Navigational Astronomy and Astrophysics). He was made an Honorary Citizen of Camogli, Italy in May 2001, and was the winner of the '*Premio Camogli*' in May 2003.



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**ROBERT S TAYLOR**  
CHIEF OPERATING OFFICER



Mr. Taylor joined the **ALFT** team in 2003 coming from *JDS Uniphase Corporation* where he held the position of Director of Exploratory Research (Electronics) from 2001 to 2003. Mr. Taylor led the hardware and firmware team in the design and building of the first prototypes of JDS Uniphase's advanced communication modules and controllable components.

From 1995 to 2001, Mr. Taylor led the automation efforts at *JDS Uniphase Ottawa*. During the last three years of his tenure, Mr. Taylor was the Director of Manufacturing Technology, responsible for automation, manufacturing equipment design and equipment calibration. *Under the direction of Mr. Taylor, the Manufacturing Technology department enabled JDS Uniphase to achieve its dramatic growth curve from annual revenues of \$42 million to \$3.2 billion.*

Prior to joining JDS Uniphase, he was the QC/QA manager at *Optotek Limited* where he brought the company to ISO2000 certification.

Mr. Taylor has a B.A. Sc. in engineering physics from the University of New Brunswick and has taken several post secondary courses in Business Administration.



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**ROBERT R. DOTTEN**  
GENERAL MANAGER



Since joining **ALFT** in 2003, Mr. Dotten has led the restructuring of the company's new research and manufacturing facilities. Mr. Dotten draws on his extensive and diverse experience to lead **ALFT's** marketing and business development initiatives.

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Prior to **ALFT**, Mr. Dotten led the *Corporate Centre for Excellence for Alignment Systems with Optical Process Automation* – a division of *JDS Uniphase*. During his time with the division, Mr. Dotten spearheaded a comprehensive review of the alignment systems throughout the company to establish corporate policies encompassing the theory, design and procurement of alignment systems for *JDS Uniphase*.

Before assuming this role within the Automation division, Mr. Dotten led the design and manufacturing of internal production tools; electronics, mechanical fixturing; and software packages. These tools were responsible for JDS's ability to meet the production levels the industry required. The proprietary tools were developed to provide JDS with an advantage in the production and testing of optical components. The last three of the six years he spent in this role was as Manager of Manufacturing Technology. Mr. Dotten oversaw relationships with outsourcing firms including managing their deliverables and quality control. Mr. Dotten also managed a team of technicians to not only build, but test, maintain and calibrate production tools to meet production demands and ISO requirements.

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Robert Dotten has a B.Sc. in Pure Mathematics from the University of Western Ontario and a B.Sc. in Engineering Physics from the University of Waterloo.

**alft** Inc.

ADVANCING INNOVATION & INDUSTRY  
THROUGH SOFT X-RAY SOLUTIONS





# PRESENTS THE VSX-C SERIES SOFT X-RAY SOURCE

## PRODUCT SPECIFICATIONS

Release 3.0

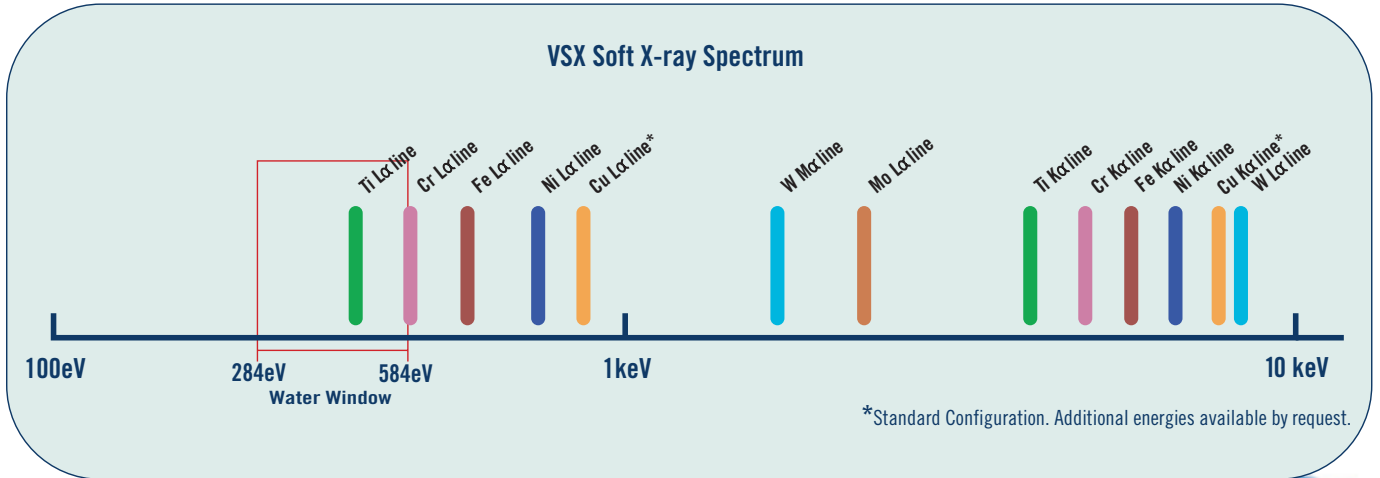


### FEATURES:

- ▶ EXCELLENT OUTPUT STABILITY
- ▶ MULTIPORT SOURCE
- ▶ DEMONSTRATED RELIABILITY
- ▶ CONTINUOUS OPERATION

The **VSX-C** is a compact soft X-ray source that will fit into the smallest lab or application. This dedicated source is capable of producing 0.7 W radiation with user selectable peaks of 930eV or 8.05keV in standard configuration. Additional energy levels are available on request.

Please see reverse for technical specifications.

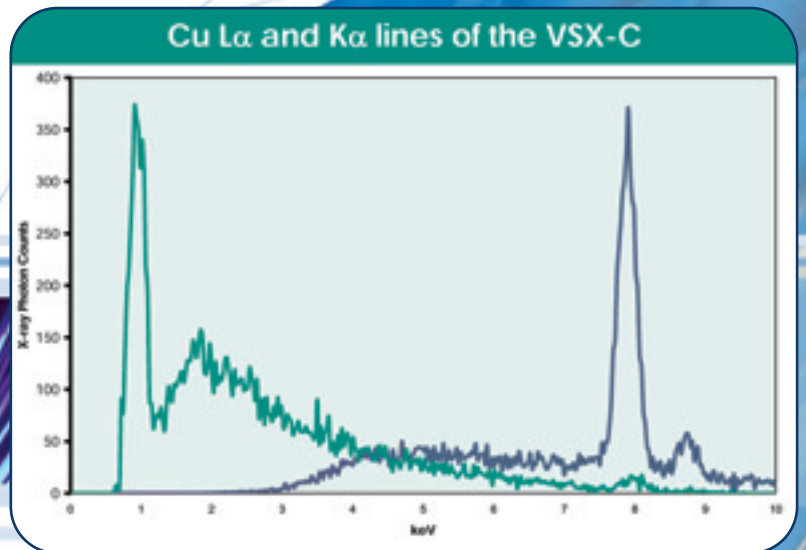


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▶ For additional information please contact:

**ROBERT DOTTEN**

(613) 287-0470 • rob.dotten@alft.com





## PRODUCT SPECIFICATIONS Release 3.0

MODEL: VSX-C		TECHNICAL SPECIFICATIONS	
ITEM		NOMINAL	NOTES
<b>1. RADIATION</b>			
1.1.	Source power, in $4\pi$ steradian	0.7 W	All energy and power levels at the source, before filter window
1.2.	Photon energy (peak)	930eV and 8.05keV	Cu L $\alpha$ See spectrum for other energies
1.3.	Flux	$10^{10}$ Photons/sec	Through focal spot of polycapillary optics
<b>2. BEAM</b>			
2.1.	Beam Height	1.4 m	Standard Beam Height
2.2.	Number of ports available	3	Two 2 1/2" Conflat Vacuum fittings Removable 9 1/2" door
2.3.	Distance from source to window	10 cm	
2.4.	Spot size through optional focusing optics	50-125 $\mu$ m	Using polycapillary optics to capture light from divergent source
<b>3. OPERATIONAL</b>			
3.1.	Continuous Operational Lifetime	>40 Hours	Approximately one hour to replace consumable parts
3.2.	Safety	CSA Certified	
3.3.	Radiation Levels	Negligible	With ports capped
<b>4. FACILITY REQUIREMENTS</b>			
4.1.	Power	208 VAC. 3 phase. 35 A 110 VAC. Single Phase. 15 A	
4.2.	Cooling	Chilled water supply. 20°C	
4.3.	Gas supply	20 psi clean nitrogen	
4.4.	Network	standard ethernet plug (RJ45)	
<b>5. MECHANICAL</b>			
5.1.	Dimensions: L x W x H	48" x 32" x 70"	
5.2.	Weight	500 lbs.	
5.3.	Mounting	Vibration Isolation Feet	Integrated wheels for easy movement
<b>6. CONTROLS</b>			
6.1.	User Interface	Web-Based	Remotely controlled via any web browser on network
6.2.	Operation Modes	Fully Automatic Manual	One button operation Full user control
6.3.	Safety Interlocks	Two Available	
6.4.	Soft X-Ray Active	Normally Open Switch	Used to signal external systems when X-Ray output is active