

CKN Knowledge in Practice Centre:About

Draft

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Welcome to the CKN Knowledge in Practice Centre!

The Knowledge in Practice Centre (KPC) is one pillar of the Composites Knowledge Network's mandate to assist Canadian enterprise with composite materials so that we can grow the industry and the economy together. Before introducing you to the Knowledge in Practice Centre, let's first get you familiar with the [Composites Knowledge Network](#).

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The Composites Knowledge Network (CKN)[\[edit source\]](#)

The Composites Knowledge Network is a non-profit organization that is a [Knowledge Mobilization Initiative Network](#) under the Canadian Government's [Networks of Centres of Excellence \(NCE\)](#) program.

Vision Statement[\[edit source\]](#)

The vision of the Composites Knowledge Network is to be Canada's authority in translating world-class knowledge on composite materials and structures to industry quickly and effectively to benefit small businesses, their employees, and the communities they serve.

Goals of the Composites Knowledge Network[\[edit source\]](#)

The Composites Knowledge Network's goals are to:

1. Reduce the barriers Canadian businesses face in accessing leading-edge composites manufacturing knowledge
2. Intensify the uptake of composites technologies in new sectors
3. Increase the domestic visibility of composites innovation in real time
4. Intensify Canadian skills mobilization and job creation
5. Build and strengthen collaborations with and between knowledge users
6. Increase collaboration across disciplines and sectors, with particular impact in marine, industrial, sports and recreation, infrastructure, and the aerospace and automotive industries

7. Help Canadian businesses increase revenues and by extension grow the economy
8. Boost the international visibility of Canadian composites expertise
9. Unite a cohesive, collaborative and synergistic Canadian composites industry
10. Help make Canada a world leader in advanced composites manufacturing

Pillars of the Composites Knowledge Network[\[edit source\]](#)

The Composites Knowledge Network will complete its goals through four main avenues (or pillars) of activity:

1. The Knowledge in Practice Centre

- You're here right now! This is the place to come for practical guidance on analyzing all aspects of designing and manufacturing composite parts

2. Application + Impact Mobilization Events (AIM Events)

- Through AIM events CKN interacts directly with you - the knowledge user - to provide science-based training in all aspects of composite part development. By utilizing the KPC during these events, we'll guide users through the content so that they can improve their understanding of how the content of the KPC can be integrated into their own work.
- Initially planned to be a series of in-person training events across Canada, these events have now been moved online to facilitate distancing and even greater outreach.

3. Canadian Composites Alliance (CCA)

- Colloquially the "CKN Concierge Service", the CCA aims to give Canadian SME's an edge over international competition by providing individualized and direct support to get them the equipment, resources and expertise they need locally.
- By building an alliance of Canadian composites SME's with a wealth of products, equipment, services and expertise, the Canadian Composites Alliance is a way of integrating our industry nationwide. This enables us to enhance our effectiveness and promote collaboration and utilization of Canadian business to grow the industry in Canada.
- We're still working on the framework for the CCA, but if you would like support in the interim, please [contact us!](#)

4. Composites Communications

- Our newsletters, emails and social media posts on [Twitter](#) and [LinkedIn](#) will keep you informed about new content in the KPC, upcoming AIM events that you can attend, and information on the Canadian Composites Alliance

The Knowledge in Practice Centre[\[edit source\]](#)

The Knowledge in Practice Centre is the cornerstone of the Composites Knowledge Network. It houses resources for all levels of the composites industry; from people learning about composites, to experienced manufacturers looking to update their processes and methods. It is a repository of state-of-the-art composites knowledge and best practices with a focus on providing Canadian industry with the information it needs to effectively analyze design decisions. With this knowledge, Canadian companies will be better equipped to produce the best composite parts at low cost (improve margins to generate growth) and highest quality (building growth by reputation) while meeting market demands for production volumes (supply) and functionality.

The Knowledge in Practice Centre does this through text, images and figures, videos and oral history formats. By curating the content in the Knowledge in Practice Centre and providing references to important literature (textbooks, standards, trade magazines, technical manuals, academic journals and theses about composite materials), our aim is to give our knowledge users the information they

need to make effective and efficient choices for their products and their factories.

Building Blocks of the KPC[\[edit source\]](#)

The KPC is broken out into the following 7 areas or volumes:

- [Introduction](#): This area provides an introduction to composite materials and composites manufacturing processes with an emphasis on understanding the link between designing and manufacturing with composites
 - Articles: Introduce key concepts around composite materials and processes while highlighting the concepts and importance behind the systems approach needed to analyze composite materials effectively by considering equipment, tooling & consumables, part geometry and material simultaneously
- [Foundational Knowledge](#): This area contains information about the fundamentals and underlying science of designing and manufacturing composite parts
 - Articles: Introduce the fundamental science and parameters that influence the outcomes of composite part manufacturing
 - Methods: Provide information on how to measure or analyze parameters that will affect the system response
 - Worked examples: Provide completed examples of applying the methods
- [Systems Knowledge](#): A practical look at the systems approach required for analyzing and manufacturing composites; this area focuses on how the equipment, tooling & consumables, part geometry and materials (collectively, system objects) interact to achieve desired outcomes; and how to manage, optimize and control the system
 - Articles: Introduce and expand on how the system objects interact during processing to affect the outcomes of manufacturing
 - Methods: Provide information on how to measure or analyze systems interactions and their outcomes
 - Worked examples: Provide completed examples of applying the methods
- [Systems Catalogue](#): This area provides details on the system objects that interact during processing (equipment, tooling and consumables, part geometry and material)
 - Articles outline all the objects (equipment, tooling & consumables, part geometry & material) relevant to composite materials and their processing
- [Practice](#): Putting the knowledge into practice, this area houses science-based guidance to support decision-making processes for new product development, building up composite factory capabilities and optimizing or troubleshooting existing composite factories.
 - Practice documents provide guidance by summarizing how to combine foundational knowledge, systems knowledge and their relevant methods to tackle challenges that engineers face in their everyday work with composites
- [Case Studies](#): This area houses real-life case studies and shows how the content in the [Practice volume](#) has been leveraged to solve real-world problems
 - Case studies examine real-world examples of applying the guidance provided in the practice documents so that engineers can better understand how to apply the that guidance. The case studies also provide a view into the common challenges facing industry and the ways in which they have solved them.
- [Perspectives](#): This area contains a mixture of media forms and external links to provide context and insight to help knowledge users gain perspective and apply the guidance provided by the KPC
 - Articles include historical perspectives on composites research and manufacturing, curated links to external multimedia content and recordings of the AIM events

Engineered materials (designed to have specific properties) made from two or more constituent materials with different physical or chemical properties. The constituents remain separate and distinct on a macroscopic level within the finished structure.

In the context of knowledge in practice, knowledge refers to the systematic use of science based knowledge in composites manufacturing practice.

There is a distinction between experience based knowledge and science based knowledge:

- Experience based knowledge ('know-how') is an understanding of potential outcomes and their relationships that is founded on pragmatism and experience accumulated over time in individual programs, companies and in the industry more broadly.
- Science based knowledge ('know-why') is an understanding of potential outcomes and their relationships, based on the important processing physics, that is mature enough to be codified using the appropriate governing laws and constitutive equations.

Small and medium-sized enterprises (SME).

Any manufacturing and/or decision making activity that occurs during any stage of the development design cycle (e.g. conceptual design to production).

In the context of Knowledge in Practice, practice refers to the systematic use of science based knowledge to reduce composites manufacturing risk, cost, and development time.