



JFE



thyssenkrupp



bluemint® Steel

Breaking the Ice

Starting to Build a Collaborative Supply Chain for Our Future

During the Apollo 13 space mission a serious failure occurred, forcing the spacecraft's ventilation filtration system to overload. A team of NASA engineers was pulled together to solve the problem. If they failed, a buildup of carbon dioxide would kill the three astronauts on board. The team had a clear mission, and had the pressure of time to inspire their work. The dire consequences of failure gave them the energy and creative capacity to invent a workable solution that the Apollo crew put into place. The astronauts, and the mission, were saved.

The NASA team had less-than-ideal circumstances and resources to solve the problem. They needed to be inventive and creative. They did, however, have ideal conditions for collaboration. Their mission was clear, self-interest was low and there was no competitive tension.

In our mission to save the health of the planet from excess carbon gases, we do not have such ideal conditions for collaboration. In fact, we have serious obstacles to the cooperation and collaboration needed to solve our complex challenges. One team, organization or individual cannot create a solution on their own. We must have the cooperation of many minds to produce results much greater than any individual achievement that could be realized. We have individuals, companies, governments, technical and social teams that all need to contribute to the solution in an inspired and collaborative way. Today, many of these individuals and groups have had crossed purposes, misaligned objectives, strong social disagreements and been driven by self-profit motives. Many have been in strong competition with each other for their organizations or groups to survive. Winning is often seen as a zero-sum (I win – you lose) game. So, we have very challenging conditions for collaboration.

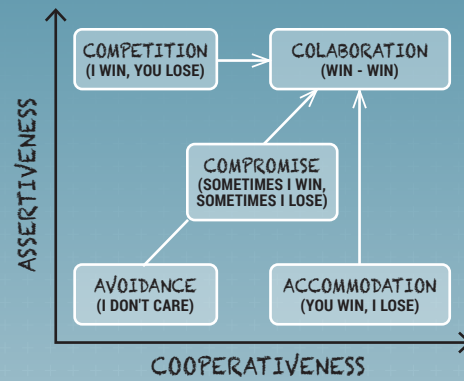
We must, however, find a way to overcome these challenges and redefine what collaboration even looks like.

More than 30 years ago, the Thomas-Killman model for collaboration was developed, and has been used extensively since. The goal is ultimately a win-win for all parties by increasing the level of cooperativeness while driving toward a solution, even if tension arises. At JFE, our first step is confirming that all parties need to work together to redefine what winning is, and open our minds to the fact that we've limited our own beliefs and thinking. In doing so, we understand that multiple parties working together can create unlimited possibilities.



“ Great discoveries and improvements invariably involve the cooperation of many minds.

Alexander Graham Bell



For our future generations, we must agree on a common mission. This is essential to create transformative change and solutions at the pace needed for the health of our planet. Even if our teams have been at competitive or crossed purposes or objectives in the past, together, we must find shared value — including economic value—along with the common mission of decarbonization.

JFE Shoji Power Canada's initial approach has been to build the common mission within our supply chain, and to define what a winning supply chain looks like. To do so, we must work through our entire supply path, from electrical steel production mills to the transformer equipment component manufacturing and assembly. This means our focus is on:

- Decarbonizing steel making;
- Decarbonizing the processes to make the steel core components; and
- Building the logistics solutions needed to move these materials and components through a collaborative process.

To put this collaboration into place, we require strong partnerships, with a common mission.

During 2021, German-based steel producer thyssenkrupp (TK) was advancing well through the investment and technical challenges of producing reduced-carbon steel products, including carbon-reduced electrical steels for transformers. These materials, branded bluemint®, were brought to the market at the end of 2022 and JFE Shoji was first in line in North America to purchase these materials. The Canadian supply chain team at JFE Shoji has worked for many years to build a strategic relationship with the TK electrical steel (TKES) team.

The deeper conversation regarding bluemint® started with a series of meetings in Japan. Through these deep collaboration sessions between the JFE Shoji and the TKES teams, we found a common mission to supply carbon-reduced steel products to electrical transformer OEMs (Original Equipment Manufacturers), and ultimately North American utilities. As steel production represents around 12% of global carbon emissions, this is a critical step in decarbonizing our whole supply chain. JFE and thyssenkrupp are both environmental leaders and have committed billions of dollars in investments to clean their processes.

At the same time, our team at JFE Shoji started the work to present the idea of lower-carbon steel core parts to its strategic power transformer clients. This requires the leadership of each of the companies to have a similar priority placed on ESG (Environmental, Social and Governance) initiatives. Most companies have ESG policies in place, or are currently developing them. However, the courage to act on those policies, potentially incurring higher expense in a highly competitive market, can feel risky. The leadership team at PTI Transformers, with two production facilities in Canada (Regina and Winnipeg), is highly committed to its ESG principles, and has been recognized as one of Canada's Best Managed Companies by Deloitte. PTI started business in 1989 as a small maintenance reconditioning shop. It has now grown to be a critical part of the electrical equipment supply chain to many Canadian and US utilities. JFE Shoji has been honoured to be a strategic supply partner with PTI Transformers for more than three decades. Our collaboration on "green," carbon-reduced electrical steels continues to be a natural fit.



The will of companies, communities and governments to invest in our renewable future, and consequently the electricity grid is there – and we need to make sure that the means of manufacturing the needed equipment, such as transformers, are themselves sustainable.

Georgios Giovanakis, Group CEO
Thyssenkrupp Electrical Steel



Photo: JFE



Together, PTI Transformers, TKES and JFE Shoji are delighted that the product of our collaboration will produce one of the first certified carbon-reduced power transformers in North America, set for release this summer. The steel production has been completed by TKES, the materials are now in Canada and will start being processed and cut into a 50Mt power core in May of 2023. The large power transformer core will then be shipped to Winnipeg, and the transformer will be built over the following couple of months in PTI's fabricant plant. Finally, the transformer will be proudly put into service by the end of 2023 by SaskPower.

It has taken a great commitment and collaboration from all parties to "break the ice" for this first carbon-reduced transformer. Now, moving beyond one unit to become a larger and more extensive supply chain will require some hard work on all sides. We will need to find the path that will serve the greater needs of a healthier planet. It's one small step that we envision becoming much larger in the upcoming years. It must start with collaboration, a strong collective mission and a will for us all to win.

There are many challenges ahead, but I am confident that we will find a successful path forward, together.



” This is a great example of the partnerships and collaboration required to help with the decarbonization goals in our industry. We, at PTI, are very excited to play a part in this initiative with JFE and TKES and deliver an environmentally responsible transformer to a local customer.

George Jr Partyka, CEO
PTI Transformers

” With PTI, JFE Shoji and thyssenkrupp Electrical Steel, we see very clear examples of companies taking responsibility to reduce their carbon emissions and to support a sustainable energy and steel industry transition.

Georgios Giovanakis, Group CEO
Thyssenkrupp Electrical Steel

Photo: JFE