NIBA The Belting Association®

Belt Line

A publication of NIBA-The Belting Association

Impact Mitigation: What is the Best Answer?

Buddy Wilson, Motion Industries - Motion Industries Conveyance Solutions Division

For as long as operators have been making little rocks from big rocks, impact damage to conveyor belt has been a leading cause of reduced belt life and production uptime. There are many "solutions" to this problem, and as many opinions as how to solve the problem. Below is yet another "opinion" with some food for thought. Many operators fall back to the idea that it's okay to swat a fly with a sledgehammer (thanks Gary Mecham). They seek out the thickest belt possible to guard against damage due to impact. While this can work, it is not always the most efficient solution. If this is not the answer, then what is it!?! Setting aside carcass and compounding technology specifically designed for abusive applications, our task today is to discuss other mechanical means to assist in the mitigation of impact energy and to better protect the belt.

To understand how to best protect the belt, we must first understand how impact energy works. For our purposes, the following parameters should be defined:

- Material Composition
- Material Size
- Material Density
- Drop Height
- Belt Speed (FPM)
- Throughput (TPH)

(It's only 6" minus)

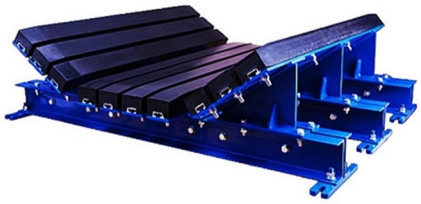
Once the above parameters are defined, then it is time to think about how the belt should be protected from potential impact damage.

From a mechanical standpoint, there are several potential solutions to avoid or mitigate impact damage. This requires you to put thought into how impact energy is dispersed in a single impact event. The first law of thermodynamics tells us that energy cannot be created or destroyed. Now that you are asking yourself why this is important, let me explain.

When impact energy hits a belt it continues to travel through the belt, through any conveyor belt support equipment or component, and continues into the earth. With that in mind, one could imagine that energy passing through the belt and into a piece of conveyor belt support equipment or component. The conveyor belt support equipment, conveyor frame, and even the sleepers or foundations for the conveyor are much more rigid than the belt. Therefore, when the impact energy (delivered by the material) passes through the belt, much of it bounces back through the frame and support equipment and then up through the belt once again. This action and reaction causes much of the impact damage found in conveyor belts in abusive applications.

What options are available?

Many operators turn to the use of impact beds to reduce damage to their belt from impact. Impact bed systems come in many shapes and sizes with varying levels of protection. A typical arrangement would look like the example below.



As you can see, the arrangement includes multiple composite impact bars and a heavy steel frame. While it may be an unpopular opinion, impact beds like these are not generally recommended by belt manufacturers to assist in protecting the belt from damage due to impact. This follows the same logic as noted above where impact energy will go through the belt, into a harder piece of conveyor equipment and ricochet back through the harder or higher modulus material, delivering more damaging impact energy to the belt. This is partly due to the static nature of the equipment. The construction of the impact bed allows for little to no flexure under impact.

Another alternative is often the least expensive and many times one of the most effective.

Installation of properly-sized impact idlers offers a better impact energy mitigation than a static impact bed. This is wholly dependent on the quality of the impact idler, the arrangement of the installation and the quality of the installation. It is critical that the impact idlers selected are from the same manufacturer and of the same style and type to ensure the best support of the belt.

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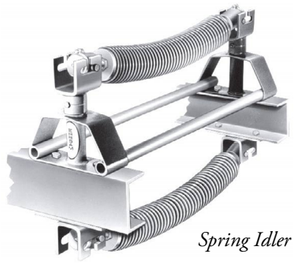
Impact idlers offer two forms of dynamic energy mitigation. The first is within the design of the impact roll. The rubber impact sections are engineered to absorb impact energy though deformation under stress. The second is via rotation of each individual impact roll. In this dynamic condition, the impact energy is more efficiently distributed thus reducing the effects of acute impact energy.

A third option includes the use of catenary or garland impact idler sets. By using the catenary design, impact energy is distributed in three (3) ways. Like a standard impact idler, the impact energy is distributed via impact roll deformation and idler roll rotation. By utilizing a catenary arrangement, the idler is free to move from front to back under turbulent loading conditions. The rolls are mounted on chains lending to increased operational flexibility. The idler sets are then channel mounted to the conveyor frame with hooking devices. This allows for an increased distribution of impact energy throughout a larger area compared to other idler styles that are hard mounted to the frame.

A final set of options include two dinosaurs that have become harder to find. Until recently, the spiral idler was nearly extinct. A retrofit version has recently been resurrected and operators are better for it. The design employs the same principals as the catenary or garland idler allowing the support sections to swing freely in highly-turbulent applications. However, the end stands mount to the top of the conveyor frame, but the key is the support roll itself. It is a wound spring that allows not only rotational distribution of energy, but the spring design is much more forgiving than a conventional idler roll. A similar design, known as the Limber Roller, employs a flexible line of spaced impact discs on a continuous rope or chain. Unlike catenary or garland idlers that utilize impact rolls, the limber roll employs individually spaced rubber discs. These rolls are mounted on an idler frame instead of being channel mounted and are similar to the spiral roll.



Spring Idler

Operators are tasked to maximize production with the lowest cost per ton. Belt failure is a leading cause of increased cost per ton in an aggregate plant. The preceding information outlines just some of the potential options that minimize impact damage to a belt. However, we hope this opens your eyes as to how impact energy works and the simple solutions that are available. ●

PRESIDENT'S MESSAGE

Chip Winiarski
NIBA President

As we begin 2023, I see a lot of reasons to be optimistic about the future of the belting industry. There are some very real (and valid) concerns about the future after a slowdown in US manufacturing last quarter, plus ongoing supply chain issues and interest rates hikes. These are certainly challenges, but they are faced by all industries and the belting industry is resilient. The top articles in NIBA's Belt Line Brief last year featured articles on innovation, technology, M&A, and leadership. These topics represent the opportunity ahead of us and I look forward to seeing how member companies adapt and change to the future.

At NIBA, we will continue to promote high quality technical education and networking opportunities.

Technical education is available to member companies both online and in-person. The in-person Technical Seminar schedule for 2023 is on page 4 and at www.niba.org/technical-seminars. Check out the courses in the Spring (April/May) and Fall (Oct/Nov) and secure your spots today.

Our in-person seminars include valuable hands-on demonstration and practical application exercises that help employees advance their learning. If employees are new to your company or not quite ready to attend a training, they can take our 101-level certificate courses. NIBA can set up a team in our system for each member company to manage employee access and run reports. Contact a member of the NIBA team to learn more.

Registration for the NIBA 2023 Annual Convention in Nashville (Sept. 12-15) will open in mid-April. Attendance last year exceeded pre-COVID events, so I'm excited to see the additional growth this year. We are expecting 650+ attendees from over 20 different countries. This will be the premier meeting place for the belting industry this year so please register early.

Please note that NIBA scholarships – Presidential and Memorial – are both currently open for applications. Current employees or children of employees can apply by March 24 for $4,000 and $2,000 awards.

Last, I want to say thank you to all NIBA member companies that have renewed their membership for 2023. We have seen a tremendous response so far during this renewal cycle and look forward to attracting many new members. Complete our member referral form online at www.niba.org/referral to refer a new member and get a discount on your NIBA 2023 registration. ●

MEMBER SPOTLIGHT

McConnell Sees Belting as the Heartbeat of Commerce

Dick McConnell
National Accounts /OEM Manager, Flexco

Please introduce yourself
Dick McConnell, National Accounts/OEM Manager for Flexco (retired after 35 years in the industry)

Tell us about your company
Flexco is a global leader in the manufacturing and development of conveyor products designed to maximize belt operation. Founded in 1907, Flexco focuses on product performance, building strong industry relationships, while maintaining an outstanding corporate culture for their employees.

Describe what you do on a day-to-day basis
My role was to cultivate capital project opportunities, define decision makers throughout the sales cycle, and create value propositions; the goal being to get Flexco placed as original equipment. Throughout this career path, I also assisted with development and delivery of various training platforms in efforts to give back to the industry.

What was your first industry job and how did it lead you to where you are today?
My first role in the belting industry was being a Territory Manager with Flexco in north central United States. The focus was on end user conveyor performance and distributor relationships.

What is one piece of advice you wish someone had given you before you started in the belting industry?
Don't settle for half measures as solutions. Create value whenever possible and don't be afraid to walk away.

How did you hear about NIBA?
Initially through Flexco executive management involvement. I came onboard in 2004 at the invitation of Angela Field, then Chair of the Technical and Education committee.

How has NIBA impacted you, both personally and professionally?
NIBA has afforded me insight into the industry through networking opportunities, training development, and lifelong professional and personal relationships. Learning of the successes and pain points in the belting world are vital. There are few better resources than the NIBA membership to that end.

In your opinion, what sets NIBA apart from other associations?
There are other end user specific organizations which bring professional value. However, NIBA offers connection with manufacturers and distribution. These are two key business channels. Building relationships requires access, NIBA is that platform.

Why should someone attend the NIBA Annual Convention? Tell us about your favorite moment from a past NIBA Annual Convention.
First, for me, it is an opportunity to get out of my own space. The Convention creates a "break" in the professional routine all while enjoying the surroundings of an upscale setting. Networking plays a big role. In addition, I always benefitted from listening and learning about all manner of industry trends, both good and not so good. It helped focus on the big picture rather than just my corner of it. And there's a great fun factor as well! One of my favorite moments was when Don Gardner was president and got Louise Mandrel to sing a couple of songs. Another was meeting Newt Gingrich when he was a guest speaker. The list could go on.

What is the belting industry's biggest challenge?
From my perspective, it's human resources. Finding and training the right people for the industry. It is a concern for manufacturing, distribution, and the end user.

How can NIBA help to resolve it?
There is an existing effort to expand and deliver, through various means, training for developing life skills in the belting industry. There should be a focus on attraction to the industry as well. The belting world is not glamorous, but few other industries affect so much of the heartbeat of commerce. There's always something new to experience.

Why should someone build their career in the belting industry?
Moving product moves the world. NIBA is the resource for the product movers. ●

Hands-On Training. World-Class Trainers.

NIBA Technical Training Seminars deliver hands-on lessons that solve real-world problems

Real-world knowledge is among the most valuable assets your team can have. And with workforce constraints and high demand, access to training is more essential than ever.

But on-the-job training isn't always enough.

Qualified trainers are not always accessible. And a dedicated and safe space for your team to learn theory and practice alongside their peers? That's even harder to arrange.

That's where NIBA Technical Training Seminars come in. NIBA brings expert trainers, world-class facilities, and belting professionals of all levels together for hands-on learning that teaches practical skills that deliver immediate returns.

"From the CEO perspective, it was the answers to the questions, the knowledge and experience of the trainers, and the hands-on demonstrations that gave me confidence my people were in good hands," said Stephenie Davis, CEO of Davis Industrial. "And I was able to see the fruits of that investment immediately upon their return."

Experienced trainers lead each seminar - sharing lessons learned from more than 75 years of combined experience. From common mistakes to complex solutions, they've earned hard-won knowledge. And they're eager to share.

That's why attendance at each NIBA Technical Seminar is limited to ensure personalized instruction for each individual attendee – regardless of their experience level.

"It was great to see the mix of attendees learning and collaborating — from those on only their second day of work, to those with more than 30 years' experience in the industry," Davis said. "It didn't matter that some were in sales or management or even field technicians, they all discovered something new."

Tickets to the spring NIBA Technical Training Seminars are on sale now. ●

2023 Training

NIBA holds six in-person trainings each year. This year's include:

May 2-3 | **Technical Training: Key Principles of Lightweight Belting** - Grand Rapids, MI

May 4-5 | **Technical Training: Lightweight Splicing** - Grand Rapids, MI

April 11-12 | **Technical Training: Track, Train, Troubleshoot** - Raleigh, NC

October 10-11 | **Technical Training: Key Principles of Lightweight Belting** - Grand Rapids, MI

November 6-7 | **Technical Training: Track, Train, Troubleshoot** - Decatur, GA

November 8-10 | **Technical Training: Heavyweight Splice** - Decatur, GA

LEARN MORE:
niba.org/technical-seminars

MEMBER-TO-MEMBER NEWS

News submitted by and for NIBA members

PERSONNEL

ERIKS North America appointed **Annette Camuso-Sarsfield**, SPHR, SHRM-SCP, as its Chief Human Resources Officer. They also appointed **David Brown** as Chief Financial Officer. Both most recently worked at A. Stucki Company, a manufacturer of highly-engineered freight car components, in Pittsburgh, PA.

Richard Wall of **Beltservice Corporation** announced he will retire at the end of 2022 after 18 years as a Field Salesperson.

ANNOUNCEMENTS

Applied Industrial Technologies celebrated their 100-year anniversary after Joseph Bruening founded the business on January 11, 1923.

Belt Tech Industrial announced a new lightweight belting division that will provide for industries such as: food grade, plastics, corrugated box, package handling, glass, meat processing, gas and oil, furniture manufacturing, lightweight wood processing, wastewater treatment, lightweight grain handling/processing, medical equipment manufacturing, landscape companies, recycling, pharmaceuticals, metal separation, airports, and others.

ACQUISITIONS

Belt Power, LLC completed the acquisition of Dunham Rubber & Belting Corporation ("Dunham").

ERIKS North America acquired DeeTag, Ltd., a distributor and fabricator of hydraulic and industrial hose assemblies. ●

WE WANT YOUR NEWS!
Send to staff@niba.org or complete the form at niba.org/members/submit-news

2022-2024 NIBA Strategic Framework

Vision
Support member companies and the belting industry by promoting the value between distributor/fabricators and their suppliers.

Mission
NIBA promotes the common business interests of all distributor/fabricators and manufacturers of conveyor and flat power transmission belting and material.

Strategic Outcomes

Technical Education	Recognized Brand	Leadership Development
NIBA is known for high-quality education, with an expertise in lightweight and heavyweight technical content and hands-on training (Industry, Product, and Application based) that helps employees of member companies improve industry knowledge.	NIBA is recognized within the belting industry (internally) and among end users (externally) as the premier national organization for distributor/fabricators and their suppliers.	NIBA provides programs and volunteer opportunities for employees of member companies to network and help grow their business.

FY22 Strategies

Increase member engagement in the NIBA trained certificate course program.	Create new content for non-members and end users that promotes the value of NIBA's distributor/fabricators.	Continue with initiatives where people feel they belong and are included in the association.

FY22 Tactics

• Identify internal audiences for each member company to create content that matches their interests. • Preview certificate course content and host how-to sessions to help increase member engagement. • Introduce at least one new lightweight and heavyweight certificate course each year. • Return to in-person technical seminars in 2022 and increase the trainer roster.	• Create NIBA promotional materials for industry trade shows. • Utilize infographics to prospect for new members with a focus on distributor/fabricators and component manufacturers. • Increase international member attendance at the Annual Convention.	• Support new and existing programming for the Women of NIBA, Next-Gen, and other mentoring opportunities. • Develop new entrepreneurial tools as a member benefit (i.e. analytics, customer info, industry demographics, economic trends) • Provide more than just technical education for members (i.e. sales professionals, leadership training)

Responsible Committees

• Education Technical • Marketing	• Membership • Marketing	• Program • Marketing

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NIBA Scholarships

Supporting future leads in business and in life

NIBA is fueled by passionate leaders whose dedication is inspiring.

That's why we support future leaders through NIBA Scholarships.

Each year, NIBA rewards deserving students with tuition funds to help them focus on their education and future.

Deadline: March 24, 2023

The NIBA **Memorial Scholarship** celebrates the memory of past officers, directors, and committee members for their dedication and leadership.

This $2,000 scholarship awards students with exemplary leadership in their schools and communities.

The **Presidential Scholarship** honors past NIBA Presidents for their dedication to NIBA and memberships.

It celebrates the students' academic achievements and work ethic with a $4,000 scholarship toward tuition.

TO APPLY
VISIT NIBA.ORG/NIBA-SCHOLARSHIPS