

## You May Think You Know, But There May Be Something You Don't! The Importance of Proper Rigging Training

Hazards are ever-present in the steel plant environment, and a heightened awareness and emphasis on safety is a necessary priority for our industry. This monthly column, coordinated by members of the AIST Safety & Health Technology Committee, focuses on procedures and practices to promote a safe working environment for everyone.



### Author

**Heath Hooker**  
mechanical maintenance  
supervisor, Nucor-Yamato Steel Co.,  
Blytheville, Ark., USA

In 2016, the team at Nucor-Yamato Steel Co., located in Blytheville, Ark., USA, was tasked with figuring out what we needed to do to become “world class” with respect to rigging and load handling activities. As a maintenance mechanical supervisor with more than 20 years of experience with rigging and load handling, I have been qualified as a rigging inspector, master rigger, lift director, and basic rigging and inspection trainer. With this experience, I volunteered to help our team with this mission.

Our journey started by forming a rigging committee that was comprised of team members from each department of our mill. The rigging committee began by visiting other Nucor divisions and researching industry leaders in order to observe and explore industry best practices. The committee also established and prioritized the goals and objectives for the team. These goals included: determining who needed rigging training and to what level; establishing a method for identifying the qualified riggers who were on-site at any given time and their level of training; developing a plant-wide rigging manual to cover rigging equipment and operational practices; moving to a single supplier of rigging equipment; documenting internal and third-party inspections; providing proper storage areas for rigging equipment; and ensuring that what we had started was sustainable.

Beginning with training, the rigging committee decided that 10 team members would be sent through a “train-the-trainer” course in order to teach a high-level basic rigging and inspection course to all production team members at our site. Our basic rigging and inspection course

consists of classroom training with written examination of competency. We offered this course three times per week until every production team member was trained. Now, the course is offered once a month for all new hires, and completion of a refresher course will be required every three years.

More advanced rigging training was provided by an outside source who helped us develop our basic rigging and inspection course. The rigging committee started with a goal that 10% of production team members would be trained to the intermediate/journeyman level. This level focuses on identifying the center of gravity and sling selection based on sling tension. The training is hosted at our plant site, where we have a dedicated area for hands-on training for team members to demonstrate proficiency and competency in rigging selection and application for the various loads we have on-site.

The rigging committee also established the goal of having eight team members trained at the advanced/master rigging level. This class was custom-designed for our needs and incorporated critical lift planning along with other load handling activities, such as floating loads and bull rigging. We did not mandate who would be trained to the intermediate and advanced levels. Instead, we relied on volunteers, and we have had tremendous participation from our team, which has allowed us to achieve our stated goals.

We have also developed a system that provides our team with a list of qualified riggers who are on our plant site at any given time and their training levels. This allows our team to know who is available on-site at

Comments are welcome.

If you have questions about this topic or other safety issues, please contact [safetyfirst@aist.org](mailto:safetyfirst@aist.org).

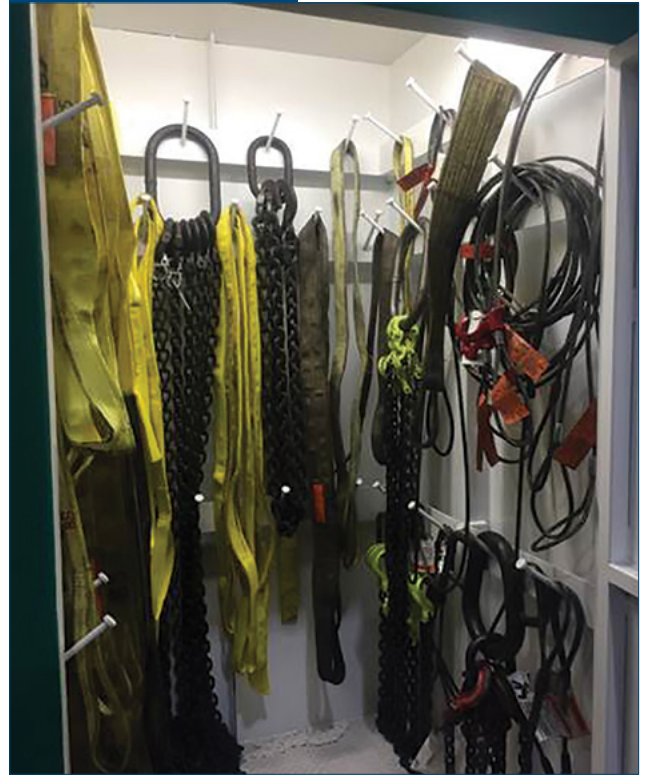
Please include your full name, company name, mailing address and email in all correspondence.

Figure 1



*Rigging training course at Nucor-Yamato Steel Co.*

Figure 2



*Example of a rigging storage locker.*

that time to assist with any rigging or load handling questions or issues.

Another primary focus of the rigging committee was to develop a plant-wide rigging manual to serve as a reference source. As a result of our efforts, we have created a comprehensive manual that identifies the categories and types of rigging equipment used at our site as well as the safe operational practices aimed at eliminating as much risk as possible while performing load handling activities. Also, applicable American Society of Mechanical Engineers (ASME) standards are readily available for team members to reference as necessary.

Many of the takeaways from the rigging committee's research, benchmarking efforts and training are now standard practice at Nucor-Yamato Steel Co. One such practice is rating loads to two legs on a four-leg bridle in order to ensure that, during movement with the crane, the entire load being supported is well within the strength of the rigging equipment. In reality, the majority of our lifts are not engineered lifts where the lift points are the exact same distance from the center of gravity and the same distance from each other. Another possible issue when using four individual slings is that they are not all the same length. When this is the case, one cannot guarantee equal leg loading. This becomes a problem with moving a lifted

load with inertia, as two legs become load-carrying, and the other two legs are used for balance.

Through this process, we have also evaluated our use of swivel hoist rings versus shouldered eye bolts. Additionally, because many of our overhead cranes do not have load cells or readouts on them, we have increased the use of independent load cells within the rigging for certain load handling activities.

We have also made changes with respect to purchasing rigging equipment. Our rigging committee decided that all standard rigging equipment would be purchased through one supplier. We felt that this would provide us with easier traceability and require more ownership from the supplier with respect to the equipment they were providing. When it came to third-party inspections, however, we decided to use an outside entity that was not our supplier. This decision was made to ensure that the inspection process and recommendations remained separate, independent and without consideration of equipment sales.

Finally, the rigging committee addressed our site's need for proper rigging storage. To do so, we placed approximately 40 rigging lockers throughout the mill so that rigging equipment would be readily available in all areas. The rigging lockers vary in size from a small CONEX container to a 4 x 8 x 8 ft. locker. We also maintain a very large selection of rigging within our storeroom.

Overall, the work of the rigging committee and the changes that have been implemented at Nucor-Yamato Steel Co. have been significant. Through this process, we have trained more than 800 team members in basic rigging and inspection. Of those, approximately 100 team members have received intermediate/journeyman rigging training, 45 are qualified rigging inspectors, and eight have been qualified as advanced/master riggers and lift directors. We have also held our on-site contractors to the same level of expectation that we have for our own team, as outlined in our rigging training and manual. While we have made substantial progress with our program, we are always striving to continuously improve.

Extensive, thorough training has allowed us to be more proactive with respect to evaluating our rigging and load handling practices. Enhanced training may help you and your team to find opportunities to change certain practices that you originally thought were correct. Examples may include the de-rating of shouldered eye bolts or side-loaded shackles, understanding the importance of using appropriate sling

protection, the D/d ratio of wire rope and chain, and understanding how to use different types of hitches for various applications.

Make sure that you and your team have the proper training for the tasks being performed. And remember, just because you have not had a failure does not mean that you are doing it right.

### Disclaimer

The views and opinions expressed in this article are those of the author and do not necessarily reflect the official policy or position of Nucor-Yamato Steel Co. or Nucor Corp. ◆



We're  
on **multiple**  
channels.

Tune in to the steel conversation!

