



DOMSON DIGEST

MARCH 2010

OVERHEAD CRANE INSPECTION

Using NDT to Spot Structural Damage

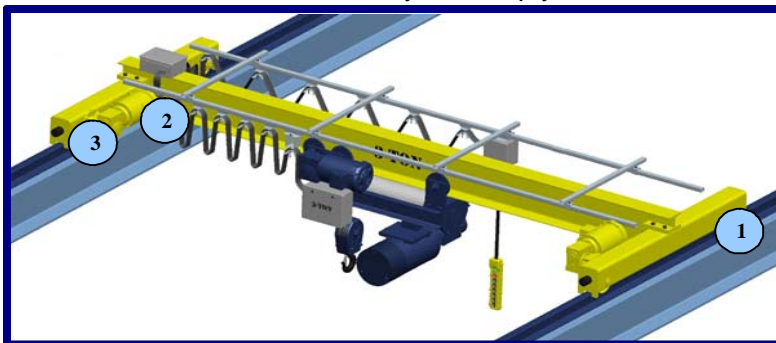
Recently we had the opportunity to provide our inspection services to a local facility with a number of overhead cranes. These cranes had been inspected every year by an overhead crane service company but had never had a full non-destructive inspection of the structure before.

The results speak volumes about the importance of regular structural inspections utilizing visual and non-destructive testing (NDT). All of the cranes had cracks throughout their structure, in welds and parent material. Photos of the cracks and their locations are shown below.

Some of these cracks were so large, they posed a significant risk of structural failure. Emergency repairs were required immediately to prevent an imminent failure. Engineering was required to develop more permanent repair methods, including potential complete replacement of an end truck in one case.

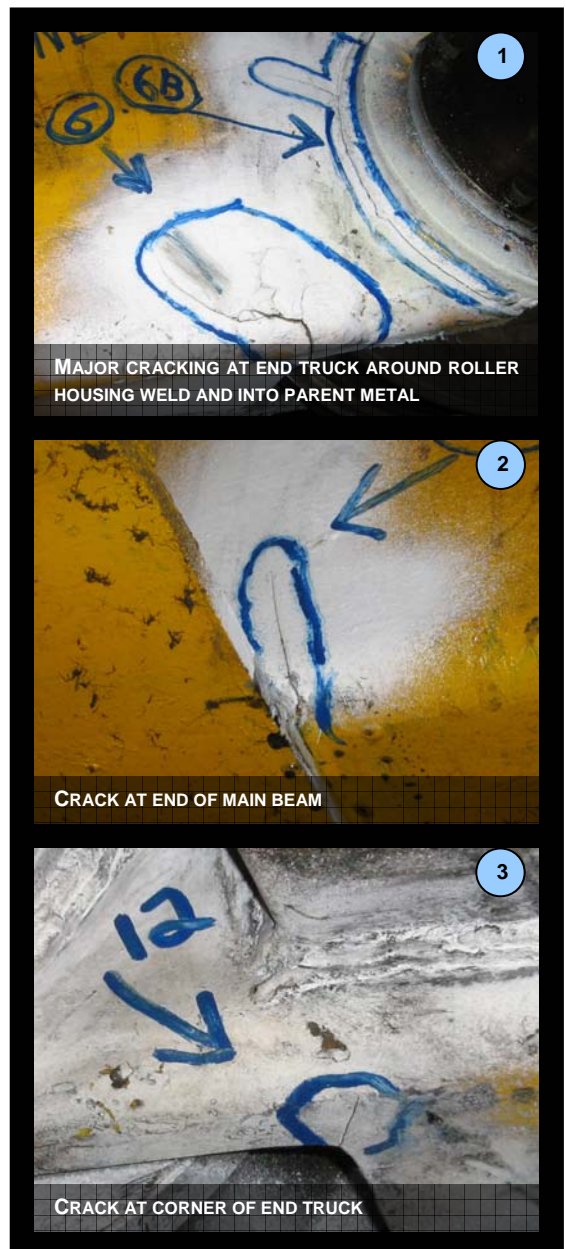
So, how can this happen if the cranes were inspected every year? Well, it's not the first time we've seen it.

The problem is, overhead crane service technicians are trained mostly to service the electrical and mechanical components of a crane. And they're very good at it, but, they have little to no training in structural inspection and often do not have any non-destructive testing capability. Expecting them to find structural cracks that are often difficult to see with the naked eye is simply unreasonable.



What is a Visual Weld Inspector?

Anyone can do "visual inspection", right? Wrong! Properly trained and experienced weld inspectors are certified by the Canadian Welding Bureau (CWB). Call us for your visual inspection requirements.





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By the time cracks get big enough to see with the naked eye, repairs may be extensive and costly. This is why it's important to perform **regular** inspections of all the highly stressed areas using **non-destructive testing** to ensure the safety of the equipment. This makes good sense from a safety standpoint, but in the long run it can also save money on repairs and downtime. This is especially true for an operation where the crane is needed to feed production.

Ontario Occupational Health and Safety Regulation 851 for Industrial Establishments, Sec. 51 states that a lifting device must be thoroughly examined by a competent person to determine its capability of handling the maximum load as often as the manufacturer prescribes, but at least once a year. Generally, this inspection is performed by an overhead crane service company as is appropriate.

However, a dedicated structural inspection should be considered as well to ensure the safety, long term economy of the crane, and to minimize unexpected downtime. This is particularly true if your crane is:

1. More than 5 years old and has never been structurally inspected using NDT
2. Critical to production
3. Engaged in heavy service (loads near 50% capacity, high speeds, or more than 10 lifts / hour)

If your overhead crane matches one or more of the criteria above, we recommend supplementing your regular inspection with a **thorough structural NDT inspection**. The inspection should include:

- End trucks
- Bridge beam(s)
- Trolley
- Hook and block
- Winch shafts
- Rail clips
- Structural columns
- Runway beams

The crane shown in the photos had **never** been structurally inspected using NDT. Fortunately nothing catastrophic had happened yet, but in the end, it's just not worth the risk – or the cost!





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Let Our Professional Staff Help You

Visual And Nondestructive Testing

- ✓ Visual Weld Inspection
- ✓ Ultrasonic Inspection
- ✓ Corrosion/Thickness Surveys
- ✓ Magnetic Particle Inspection
- ✓ Liquid Penetrant Inspection
- ✓ Hardness Testing

Inspection And Certification Of Lifting Equipment

- ✓ Mobile Cranes & Access Equipment
- ✓ Monorails & Overhead Cranes
- ✓ Wire Rope, Chain Or Nylon Slings
- ✓ Forklifts & Material Handlers
- ✓ Tower Cranes
- ✓ Shackles, Hooks, Lifting Eyes

Engineered Lift Planning For Critical Lifts

- ✓ Plan and Elevation Drawings
- ✓ Verify Clearances
- ✓ Provide Detailed Lift Sequences
- ✓ Perform NDT Testing
- ✓ Rigging Design and Drawings
- ✓ Ground Pressure Calculations
- ✓ Design Of Specialized Equipment
- ✓ Pre-Lift Inspection of Crane Set-Up

Design And Supply Of Custom Equipment

- ✓ Lifting Beams
- ✓ Forklift Booms
- ✓ Fork Extensions
- ✓ Manbaskets
- ✓ Coil Hooks
- ✓ Tongs
- ✓ Gantry Cranes
- ✓ Jib Cranes
- ✓ Unique Equipment

Engineered Equipment Modification & Repair Procedures

- ✓ Custom Engineered Solutions To Adapt Existing Equipment To New Applications
- ✓ Restore Structurally Damaged Equipment To Original Strength And Function

Failure Analysis & Accident Investigation

- ✓ Determine The Reasons Behind A Misadventure Or Equipment Failure
- ✓ Meet Ministry Of Labour Requirements For Accident Reporting
- ✓ Reduce Insurance Costs Through Subrogation Of Accident Responsibility
- ✓ Expert Witness Services In Court Proceedings

KEEPING THE LIFT INDUSTRY LIFTING!