

# KOMATSU

**P&H**

## **Dragline Services** Tubular Boom Welding



## Dragline booms return to productive service via Komatsu tubular welding process control



The cyclical loading, weather extremes, and other operational factors found in dragline overburden removal can cause metal fatigue and welded joint degradation in tubular booms and masts over a period of time. These tubular structures are some of the more complex configurations to maintain and repair.

Komatsu is equipped to assist in restoration of these structures and return them to functional integrity. This includes an inventory of replacement tubular sections for dragline booms and masts.

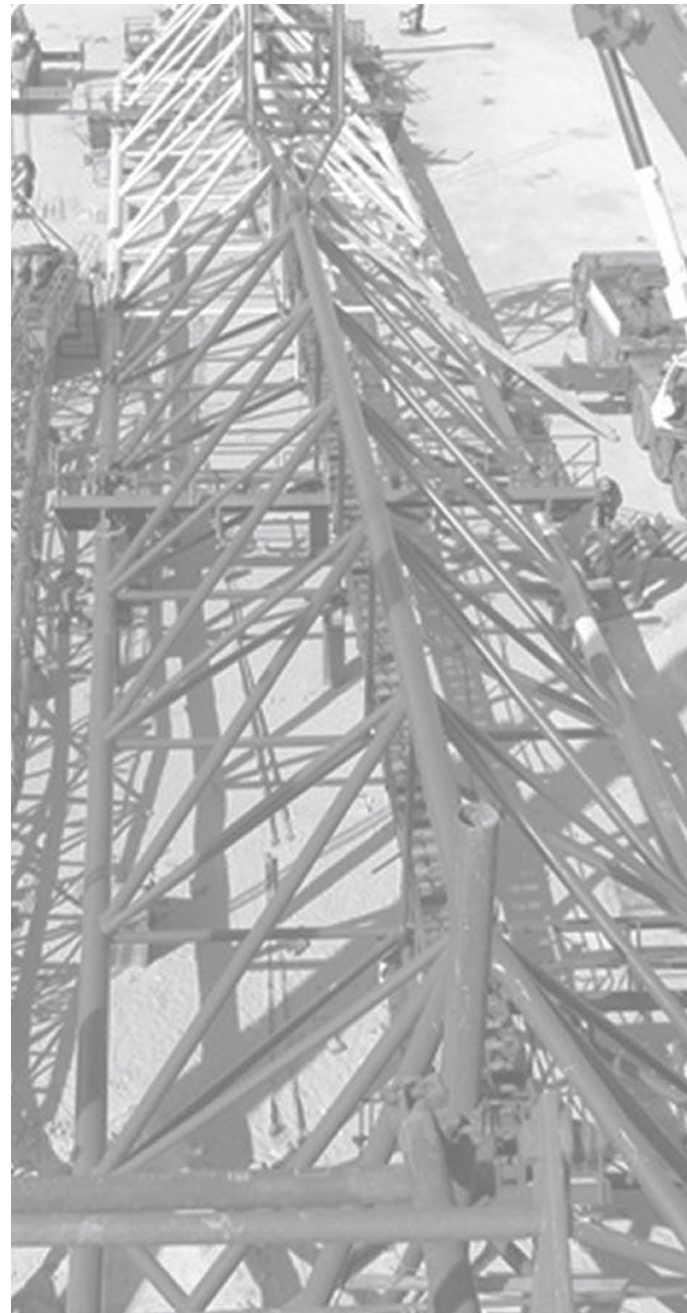
We apply a disciplined repair and rebuild process comprising a full range of inspection, testing, and diagnostics. This incorporates structural audits, proper material selection, and accurate preparation for fitting. We also do root cause analysis to determine source of boom cracking issues which encompasses:

- Review of past inspection reports, failure types and operating parameters in order to obtain a full condition analysis of booms and key stress areas
- Review of past repair procedures, techniques and their effectiveness
- Evaluate structural dynamic loading, root cause of failures and projection of failure areas
- Timeline plots showing crack initiation, repair dates, operational parameter or RSL changes and addition of electrical/mechanical upgrades that may be impacting boom or mast structures

To insure the quality of the repair, Komatsu welders are certified and tested to AWS D1.1 code. We also apply specialized pipe-fit machining, welding and non-destructive testing (NDT) equipment which is required for precision alignment, fabrication, and quality assurance inspection of the critical boom chord weldments. Boom alignment is also checked and optimized by a laser tracking process.

We maintain precise process control of welding pre-heat, root-pass welding, hot-pass welding, grinding, stress relief, NDT inspection and quality verification. Emphasis is placed on post-weld heat treat to reduce residual stress. This is considered a major factor affecting fatigue life of boom clusters since high tensile surface residual stress levels are known to contribute to crack initiation and propagation. We use stress relieving procedures based on the requirements of AWS D1.1 and developed for the post weld heat treatment of pipe butt welds.

As part of every job, Komatsu personnel apply strict safety management procedures and wear the necessary personal protective equipment for the work being performed.



## Offering a complete range of life cycle management support for draglines

Komatsu provides a complete range of services to support high volume mining operations that utilize walking draglines and other large equipment. Our capabilities are built upon many years of experience that have enabled surface mining operations worldwide to obtain increased productivity and reliability from their dragline assets.

The Komatsu dragline services group has more than 800 years of combined dragline experience and is one Center of Excellence for dragline service support including tubular structural welding. Our portfolio of includes:

- Tub repairs and replacements
- Hoist, drag, swing and propel transmission repairs and overhauls
- On-site machining and welding service support
- Structural repairs and overhauls
- Total machine overhauls and relocations
- Mechanical and electrical systems audits

Whether your dragline has experienced normal structural degradation from wear-and-tear, or possibly catastrophic damage, we are well-equipped and staffed to restore your dragline to a highly productive operational condition.



Before



After

## Komatsu Mining Corp. Group

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