

MACTECH

CASE STUDY

PROJECT: INLAND RIVER TOWING COMPANY

Complete a steering system overhaul on a lower Mississippi triple screw towboat by totally replacing hydraulic power units, piping, dead ends, hydraulic cylinders, and quadrant modifications, as well as machine all quadrant and jockey bar bushing, bores with pin replacement. The new linkage system will be completely greaseless when the project is completed. The steering system consists of three steering quadrants, six flanking quadrants, two dummy flanking quadrants and associated jockey bars.

MACTECH'S ROLE:

Line bore all bushing bores for quadrants and jockey bars and machine and install new greaseless bushing material. Also, manufacture new wear rings for jockey bars and new pin keepers. Assemble complete steering system and install new pin keepers.

EQUIPMENT USED:

- BB2250 line boring package with 48.00" bar
- BB1750 line boring package with 60.00" bar
- Flexible modular fixtures to overcome tight clearance areas
- Custom dummy pins for system mock up
- Tooling kits specific for steering system
- Portable welding machine



Towboats jockey bars

MACTECH'S VALUE ADDED TO THE PROJECT:

Mactech has the proper tools, experience, and processes to complete the job in place without removing all the steering components from the boat. Mactech had a complete understanding of how this steering system works and what the customer was trying to accomplish.

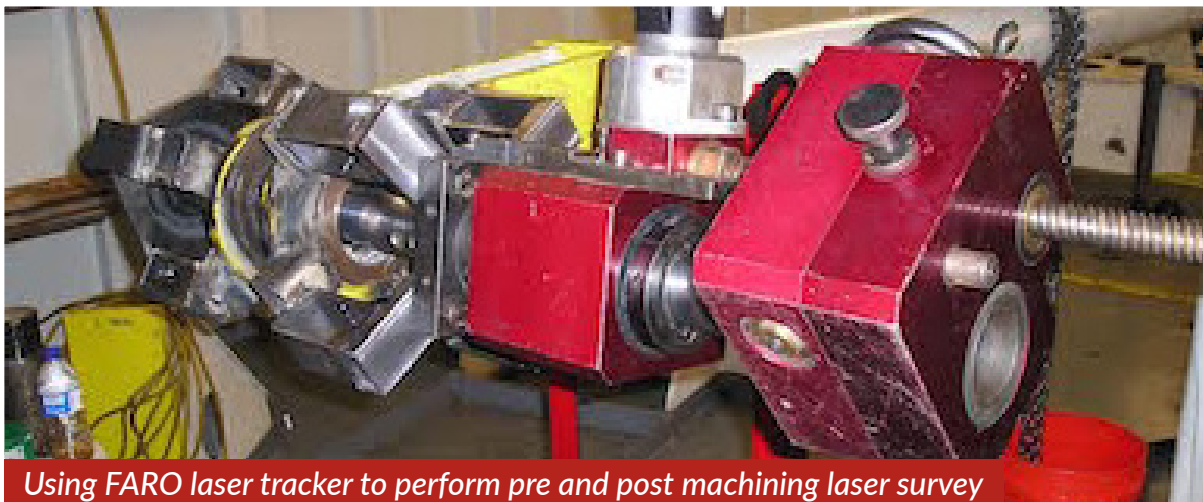
ALTERNATIVE METHODS:

Remove all the steering components from the boat and transport to a shop for the machining. The steering components would then have to be transported and loaded back onto the boat for reassembly. This would require much more man hours and assets than completing the machine work in place.

Performing the machine work in place also allows you the ability to machine the components in operating position and maintain tighter clearances between bushings and pins.

STEPS TAKEN TO COMPLETE JOB:

1. Measure and record all as found bushing data and provide to the customer
2. Mock up steering linkage in operating position
3. Line bore all bushing bores to a common size
4. Manufacture new bushings to proper sizes and clearances
5. Install new bushing into quadrants and jockey bars
6. Manufactured new wear plates for each pin joint
7. Assembled the steering system complete
8. Manufactured and installed new pin keepers on each pin
9. Provide end user with report of bushing sizes and clearances



Using FARO laser tracker to perform pre and post machining laser survey

CHALLENGES AND ADVANTAGES:

Flanking quadrants were very close to the floor and allowed for a limited space for machining all with welding, electrical, and machining work happening simultaneously in a small area. Every bore in system had to be machined to a nominal size $+.002/-0.002$.

Mactech equipment is very flexible and works well in difficult spaces with innovative fixturing. The company's unique processes of controlling bore sizing were essential over the duration of the project. Good planning, staging, and communication to accommodate other craft working in the same area added to the success of the project.

IMPORTANT STATISTICS:

- Line bored (52) holes to nominal sizes $+.002/-0.002$
- Manufactured (52) new bushing
- Manufactured (28) new wear plates
- Manufactured (15) new pin keepers
- Maintained average $.004$ " bushing to pin clearances in the entire system

Number of Bores and Sleeves Installed

- 52 bores
- 52 sleeves
- 18 spacers
- 12 pin keepers



RESULTS:

The repairs were completed on time and without using any costly dry dock time. The customer is very happy with new greaseless steering linkage.

THE INDUSTRY LEADER IN FIELD & OFFSHORE MACHINING SOLUTIONS

Mactech is the leading global provider of machining tools, technologies and on-site & off-shore solutions for the industrial machining industry.



EXCEPTIONAL PEOPLE AND EQUIPMENT



PASSIONATE CUSTOMER COMMITMENT



EXPERTISE FROM EXPERIENCE

RENT FROM MACTECH



COST EFFECTIVE

Renting is less capital intensive than a full product purchase



HANDS-ON EXPERIENCE

Your team gets a chance to handle the equipment before making a purchase decision



FLEET MAINTENANCE

Access to a fleet of products that are maintained and ready to go

WE HAVE AN EXTENSIVE FLEET OF RENTAL MACHINES AVAILABLE:

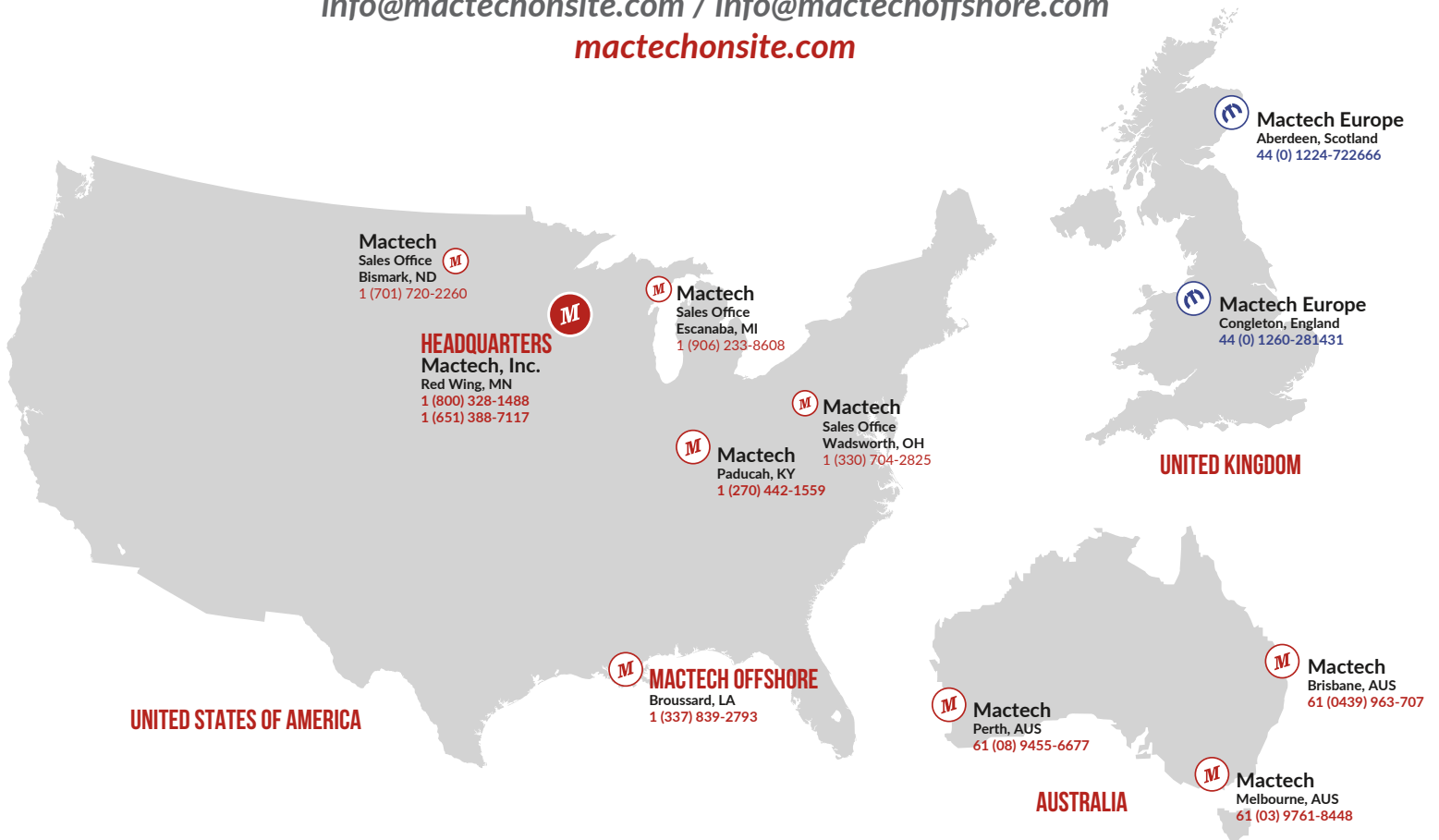
- ▶ 200+ Clamshell pipe cutting machines 2"-110"
- ▶ 40+ Diamond Wire Saws
- ▶ 100+ Portable Drills - up to morse #5 taper
- ▶ 25+ Flange facing machines 1" - 240"
- ▶ 10 Shaft lathes 1"-24"
- ▶ 30+ Line boring machines 3/4" - 10" diameter
- ▶ 50+ Portable milling machines - XYZ, gantry, boring

MACTECH

CASE STUDY

MACTECH LOCATIONS

For more information on contacting you nearest sales or rental agent, contact us at:
info@mactechonsite.com / info@mactechoffshore.com
mactechonsite.com



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