

## CASE STUDY

# ATLAS COPCO RD20 REFURBISHMENT



# INTRODUCTION

If you're in the market for a shallow oil and gas rig like the Atlas Copco RD20, options can be a little limited. With only a few dozen of these drill rigs made a year, buyers often need to get creative in order to find the specialized equipment needed for a job. More often than not, the best option is purchasing a refurbished shallow drill rig rather than buying new.

Companies like Rig Source specializing in drilling sales, rentals and refurbishment services can help make the process of finding or creating that perfect rig a little easier. Rig Source provides buyers the ability to go directly to an industry expert with a specific project in mind, and walk away with the customized rig they need without having to wait or hunt down equipment.

The case study to follow will cover the groundbreaking refurbishment of a limited quantity Atlas Copco RD20 by Rig Source, and explains the step by step process of how the shop team tackled the restoration from start to finish.



**Before:** The Atlas Copco RD20



# THE BACKSTORY

In 2014, Rig Source was contacted by a customer looking to purchase an Atlas Copco RD20 drill rig to be used for oil drilling work in Indonesia. At the time, Indonesia was seeking to become a self-sufficient country for oil and gas drilling in depths of up to 6000ft., and there were strong beliefs that there was money to be made in the industry. New developments also opened the doors for private companies to get involved since there were a number of oil fields in Indonesia that had been abandoned. Rig Source's customer planned to reopen these abandoned wells with their new equipment.



**Before:** Front View of the Substructure



**Before:** The Mud System

## THE ENVIRONMENT

Environmental conditions played a big factor in the type of equipment that could satisfy the needs of Rig Source's Indonesian buyers. The land gets about 3000 mm of rain per year making land conditions rather wet and less than ideal for moving equipment to and from drilling sites. The Atlas Copco RD20 is an extremely mobile rig fitting into a crane carrier for transport, has a low center of gravity, and is simplistic to operate and maintain which fit the country's environment well.

## THE SEARCH

Once the buyer's needs were examined, Rig Source conducted a wide-ranging search for the used Atlas Copco RD20 utilizing their extensive network in the drilling industry. That search lead Rig Source to Canada where they found the RD20 that would become the perfectly tailored unit for the Indonesian drilling project. The used Atlas Copco RD20 rig had been sitting for around a year and a half, but already had around 60-70% of the add-ins the buyer would need.



**Before:** The Control Panel



# THE REPAIR PROCESS

## INITIAL INSPECTION

When the used RD20 drill rig arrived at Rig Source work started immediately beginning with a thorough inspection to get a baseline of the unit's status. Each part of the Atlas Copco RD20 was inspected to determine exactly which parts may be kept and which ones need to be replaced. Given the scale of the RD20 – the rig weighs 90,000 pounds – this initial review was a significant task, to say the least.

## REPAIRS & PARTS SELECTION

Once complete, Rig Source joined forces with the buyer in order to gather feedback and prioritize repairs for the overall mechanics of the drill. Rig Source presented a parts list with different replacement options for the buyer to choose from (such as having the part refurbished, buying a completely new part, or where possible, leaving the part as-is). Providing a comprehensive parts list helps clients repair items within their budget, while also keeping track of remaining parts they can anticipate will need replacement during upcoming maintenance.

While it's possible to mix and match parts, this particular Atlas Copco RD20 refurbishment received all original equipment manufacturer parts. The bonus to using original equipment manufacturer parts is that they are of higher quality and have exact fit – meaning no adjustments or fabrication of parts is necessary.



## LIST OF COMPLETED REPAIRS

Below is a sample of restoration work that took place on the Atlas Copco RD20 drill rig which took approximately two months to complete.

- |  |   |
|--|---|
| <input type="checkbox"/> Cleaned and emptied stations of miscellaneous items   | <input type="checkbox"/> Re-sheeted top deck of substructure, cut off/welded on new diamond plate & replaced mesh     |
| <input type="checkbox"/> Hooked up hydraulic hoses and electric cables to test generator house, substructure, dog house, and mud mixer | <input type="checkbox"/> Manufactured new hand rails, 20ft. ramps and stairs  |
| <input type="checkbox"/> Freed ball valves   | <input type="checkbox"/> Adjusted and applied new seals for clean out doors on mud mixer                              |
| <input type="checkbox"/> Removed door at BOP area  | <input type="checkbox"/> Rebuilt hydraulic cylinders  |
| <input type="checkbox"/> Repaired oil leaks, cord holders, fuel pump motor, hinges, lights & doors                                     | <input type="checkbox"/> Painted substructure, mud mixer, fuel station, dog house, rod loaders, and generator station |
| <input type="checkbox"/> Restored pulley, pins and lock on rod loaders   | <input type="checkbox"/> Installed new batteries on generator station   |
| <input type="checkbox"/> Replaced motor mixer and damaged SO cord going to motor   | <input type="checkbox"/> Installed new paddle in tank for mud mixer & repaired shaker chute                           |
| <input type="checkbox"/> Changed Appleton cord end and receptacle located in generator station   | <input type="checkbox"/> Set winches back to factory specifications   |
| <input type="checkbox"/> Replaced starters for fuel station, shaker, and mud mixer   | <input type="checkbox"/> Updated control panel with explosion proof switches  |

## FINAL INSPECTION

Before the Atlas Copco RD20 restoration could be considered complete it required two final inspections to ensure every last inch of the rig was fit and capable of its upcoming work. Rig Source completed an in-house unit assessment to verify the rig and additional components were functioning properly, but also put the RD20 unit through an American Petroleum Institute (API) inspection. The API inspection consists of checking the welds, x-raying the tower, inspecting any load-bearing components and checking upright devices that go above a person's head to make sure they're sound. The final step was for the Atlas Copco RD20 to pass Indonesian bylaws. For that, Rig Source invited an Indonesian inspector come to inspect the RD20 which passed on its first attempt.



*After: Front View of the Substructure*



*After: Rear View of the Substructure*



## THE SHIPPING

Transporting the Atlas Copco RD20 rig overseas was a remarkable experience for both Rig Source and their buyer. Coordinating a drill rig shipment of this magnitude required a great deal of planning by Rig Source as they worked diligently to lock in shipping companies, obtain permits & ensure they had all necessary customs information. The RD20 was hauled from Rig Source's yard with eight truck loads and then carried by boat for approximately 45 days until it arrived in Indonesia. Upon arrival, the buyers picked up the unit and sent it to work in their rainy jungle like conditions.

## CONCLUSION

When all was said and done, refurbishing the Atlas Copco RD20 drill rig ended up costing the buyer about half as much as it would have to buy new. In fact, the restored Atlas Copco RD20 will eventually go on to pay for itself and even turn a profit fairly quick since Rig Source was able to keep the start-up costs low. Not to mention this RD20 was available when buying a new unit wasn't an option due to production.

Since new isn't necessarily better, especially when it comes to drill rigs, restoration of used oil and gas rigs is a definite option for buyers seeking a highly functional, mechanically sound, and customized units. The refurbishment of this Atlas Copco RD20 drill rig just happened to be a prime example of the turnkey refurbishment solutions specialty drilling service companies like Rig Source can offer to serve your drilling needs.



**After:** The Freshly Painted and Labeled Control Panel





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