

Afrox's Multi-User Pressure Panel: a customer perspective

Following nearly 12 months of onsite use for general overhauls (GOs) on boilers by Hydra-Arc, Afrox's Multi-User Pressure Panel (MUPP) is now ready for wider industrial deployment. *African Fusion* talks to Matthew Alfonso, Hydra-Arc's onsite manager, about the history and value of this safe, efficient and convenient shielding gas delivery solution.

Hydra-Arc is heavily involved with maintenance on Sasol's Secunda plants and, according to Alfonso, is always on the lookout for safer and better ways of doing things.

"We are responsible for the maintenance on 17 boilers on the Secunda site, nine on the Eastern plant and another eight on the Western plant, doing all of the GOs. For these, the boilers are taken out of service and, once safe, an inspection team moves in to identify areas of damage – where the wall thickness of tubes has become too thin, for example. Our Hydra-Arc teams then go in and start removing compromised parts and replacing them with new components that have to be welded into the existing boiler network," Alfonso informs *African Fusion*.

Hydra-Arc takes responsibility for removing and replacing structural and pressure parts. "This involves a significant amount of TIG welding (GTAW): for the superheater tubes, the convection seal welding and air heaters, for example. So we use tons of gas," he says, adding: "On a GO,

we typically do 1 200 to 1 300 1.5-inch butt welds on a boiler's superheater."

Describing the difficulties encountered when TIG welding on a boiler, he first points out that the work has to be carried out at height: "We are working on platforms at levels of 30 to 65 m high. This creates big issues with gas cylinders, particularly lifting them up and near the boiler to enable our welders to access the shielding gas needed for the repair procedures being undertaken," says Alfonso.

The available space between boiler components is very limited, as is the crane availability for lifting and lowering all of the people, materials and equipment needed on the working platform. Hydra-Arc was finding it "a real mission" to get gas up to these levels and "we were losing up to four hours of productivity every day due to having to transport full gas cylinders up and empty ones down," Alfonso explains.

Gas cylinders on raised platforms also create significant safety risks. Not only did the cylinders need to be moved around at height, from the crane area to where the

gas was needed, but excessive numbers of hose connections running along the platforms creating tripping hazards. This expanded the number of the safety inspections required as well as the increasing the chances of hose leaks.

Having identified these problems, Hydra-Arc brought them to the attention of Afrox's development team. "During one of their routine visits, we asked Johann (Pieterse) and Arnold (Meyer) to come up with a way of getting gas to our welders working at heights, without having to use cranes or to move cylinders along raised platforms every time a welder moved to a new area," Alfonso reveals.

"Afrox went off and developed and tested a design for us to try and we were given an excellent solution that is easy to use onsite and very practical," he adds.

Afrox's MUPP solution leaves the gas cylinders on the ground in a safe, secure and convenient fenced off area. Then a single steel hose connects the gas to a pressure-regulated MUPP with eight connection points on each level of the boiler being repaired.

"We are able to locate an MUPP at every level where work is being carried out. Then each welder simply connects his or her gas hose to a point on the MUPP for regulated access to the shielding gas needed. And up to eight welders can connect to the same panel without cross interference. Every welder can pre-set their gas flow and this will be retained, no matter how many other welders are welding using different flow rates at the same time," he points out.

"Our Hydra-Arc welders can now plug-in and weld as easily as they would on the ground, without having to worry about changing empty gas cylinder on raised platforms," says Alfonso.

For most of the past year, Hydra-Arc has been using two MUPPs at levels of intensive work. "The system makes a lot of sense wherever there is a lot of welding to be done in a congested space and where it is inconvenient to store gas cylinders nearby. This Afrox solution enables eight gas cylin-

ders to be replaced by one MUPP. The only question is the amount of welding work and gas required," he adds.

Using an MUPP means that gas cylinder changes can all happen at ground level – and a nine inter-connected bank of cylinders is currently being used at Secunda. "Once delivered, a single steel hose gets shifted from the empty bank of cylinders to the newly delivered bank, enabling welding to proceed within minutes of the changeover. Then all of the welders working off the MUPP are able to proceed for another few days, uninterrupted by gas issues," notes Alfonso.

"At any one point we may have 20 welders and 18 to 20 pipefitters working at height within a GO area – and that does not include labourers. That four or five hours of lost productivity due to moving gas cylinders up and down can pay for an MUPP system in a single day, so the cost of each MUPP system is almost completely irrelevant.

"This solution has made a huge difference to us and we have now incorporated its use wherever it makes sense. We can't say it gives us a huge saving across the total cost of a boiler overhaul, but it is innovations such as these that allow a company like ours to improve on cost competitiveness.

Alfonso says that, in the power industry, things tend to be done the way they have always been done, so it becomes very difficult to be better than anyone else. "It is only through hard work and excellent partnerships with people from companies such as Afrox that effective change becomes possible," he suggests. "We are working in a different and unsafe world at the moment. Onsite work is becoming more and more expensive and we need to find better ways of doing the things we have always done.

"Afrox has always been a good supplier, but now it is also developing a deeper understanding of the difficulties we encounter in using its products. I always say that 10% of my work is welding and 90% is about coordination, getting welders and the resources they need to the places where the welding needs to happen. This is the biggest part of the work and we are very pleased that Afrox is contributing to making this easier for us," he adds.

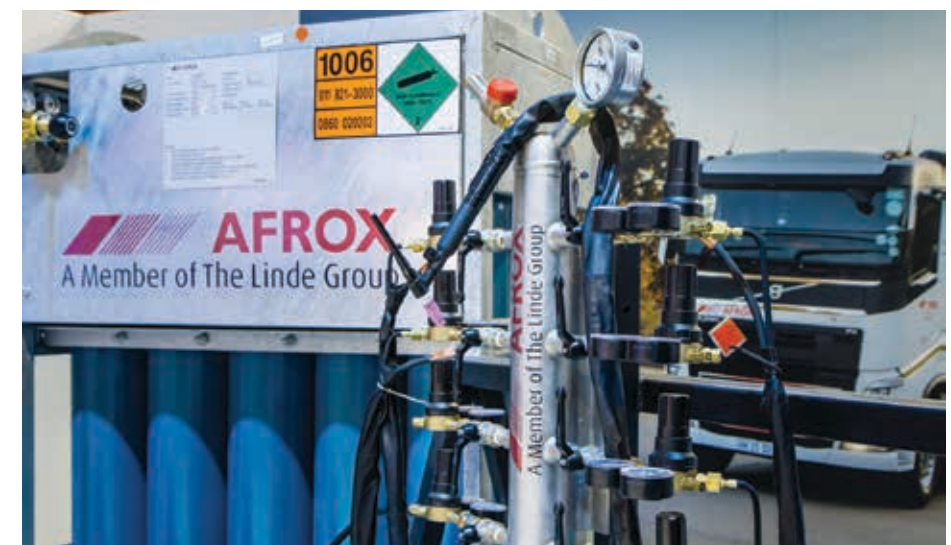
"Giving welders everything they need while removing all of the things that are in their way is a win for safety, efficiency and productivity. With the MUPP project, Afrox has certainly helped us to achieve this," he concludes. ■



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Afrox's Multi-User Pressure Panel (MUPP) uses a single steel hose to connect a manifold of gas cylinders on the ground to a pressure-regulated MUPP on the platform for eight welders, who are each able to set different gas flow rates.



Gas cylinders on raised platforms create significant safety risks because cylinders need to be moved from the crane area to where the gas is needed.