AEROSUD

# Aerosud

## FLYING HIGH


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*With more than 3,000 Airbus A320 and around 4,000 Boeing 737 aircraft having come off the production lines fitted with parts manufactured by Aerosud, the South African brand has truly come of age*


Airbus A400M taxiing

Aerosud is the biggest manufacturer of aircraft parts and assemblies on the African continent, producing 1.5 million parts and assemblies a year and on the back of an established track record of quality and delivery it has become a single source supplier for almost all of the products it supplies. It is a fantastic success story, so much so that the company was declared a strategic industrial national asset by South Africa's government owned Industrial Development Corporation (IDC).

On the back of this success, the present time is one of unprecedented opportunity for further growth, says Dr Paul Potgieter, Executive chairman of Aerosud Holdings. "We decided that it is now time to reposition for the future, and we identified two main goals, the first of which was to upgrade our broad-based black economic empowerment (BBBEE) status. This is a company that is acutely aware that as a South African company we have to operate with compliance and be seen by the government as a responsible industrial partner." The second goal was to position Aerosud Aviation strategically to achieve the capital investment needed to grow for further expansion, he explains.

*"Both Boeing and Airbus have ramped up production of their narrow body single aisle planes from 18 or 20 a month to numbers in the 40s"*

The result was that in June 2014 the business went through a comprehensive restructuring process. Having a history of involvement in the military side of aviation, Aerosud now found it had evolved into a major civil aviation supplier servicing contracts with Airbus, Boeing and tier 1 groups like USA based Spirit AeroSystems and the French

An Aerosud employee on the assembly line

company Labinal. It made sense to unbundle these activities, so two standalone companies were formed. Aerosud Aviation remains as a wholly owned company of Aerosud Holdings, while Aerosud Aerospace Systems is now aligned to Aerosud Holdings' shareholder, the military and security systems specialist Paramount Group.

At the same time IDC confirmed its commitment to the industry by taking a 26 percent shareholding in Aerosud Holdings, strengthening this highly entrepreneurial private company strategically by aligning it with government industrial growth objectives. However IDC is also going to be a vital financial partner going forward, like a bank but more of a true partner than a commercial bank could ever be, as Johan Steyn, Managing Director of Aerosud Aviation, puts it. "In fact we have been working with IDC since 1996, but now they have an equity stake in the business and by doing that they have reconfirmed and extended their commitment to fund Aerosud going forward." For IDC, he adds, there is a direct link between Aerosud as a company that exports close to 100 percent of its production and the government's need to promote South Africa's leadership in the production and beneficiation of titanium and other high tech minerals.

Steyn has a state of the art manufacturing facility under his oversight, one that has for more than twelve years been accredited to AS 90100, the global aviation standard of excellence. It is constantly audited by his customers, though the onus of this has been reduced and duplication cut by the NADCAP conformity assessment scheme that minimises duplicate audits that added to everyone's workload, without adding value. Three or four years ago saw the introduction of theory of constraints (TOC) concepts. "In the last 18 months we have started to roll out specific workshop level improvements on the back of TOC learnings," says Steyn. "It is about prioritisation mechanisms and the principles of managing flow improvements as opposed to capacity balancing - it is both an improvement initiative and a pillar of the business going forward. We have upskilled ourselves to take that process forward." It's an example of choosing what works for Aerosud, he adds, rather than do things as they have always been done in the industry, but there is no conflict between TOC and lean principles, he believes. "TOC is simply a stronger growth path than we believe we have achieved with lean."

*"We are seen by the aviation industry to be relevant, cost effective and competitive, and that can lead to new opportunities"*

Simulator at Aerosud's training centre

**Did you know?**

**$60 million**
Aerosud's 2014 turnover

**14,500**
Number of Boeing and Airbus parts delivered monthly

It is worth taking a closer look at one particular product range, track cans. These are highly specialised deep-drawn aluminium pressings. "Track cans are banana-shaped cavities that are let into the wing fuel tanks to receive the leading edge flap supports when these are retracted," he explains. "So they are absolutely flight-critical. We manufacture these for the A320 and A350 and they are high volume in our terms - there are 22 of them on each A320." This component is currently manufactured in the USA on a press developed in cooperation with the supplier there. The resulting 16-10-7BD Triform press has lowered part production costs by 25

percent, scrap rates have been reduced to less than one percent, weld quality has been greatly improved and the overall appearance of the final parts has been significantly enhanced. During the course of 2015 that press will be brought to South Africa where it will be operated by specially trained staff.

Aerosud is not struggling for work by any means - rather it is being dragged along by the booming aviation industry, says Dr Potgieter. “Both Boeing and Airbus have increased from producing 18 or 20 a month of their narrow body single aisle planes to numbers in the 40s. Because we are a single source supplier for these aircraft that means we have more than doubled production volumes of the components.” That growth is continuing, he says. These OEMs are now talking of ramping up to 60 a month, and Aerosud will have to get ready for that, increasing capacity, capital equipment and floorspace as well as staff and training, just to service existing contracts.

So far the company has been able to cope with the growth, but looking to the future,

*“We have been too vertically integrated, by virtue of necessity because we do not have a broad support base in South Africa. Now is the time to start doing something about that.”*


Aerosud has the largest CFRTP press system in the world with 600 ton capacity

Aerosud employ a core team of experienced engineers and designers

plant expansion and rationalisation have to be tackled Potgieter emphasises. He uses the word co-location a lot. The production facilities need to be on the same site for all kinds of logistical and communication reasons, but Aerosud is running out of space in its existing facility, and crucially it cannot accommodate and support local suppliers and develop what he calls a sub-tier supply chain. For these reasons he (along with everyone in the aerospace industry) is keen to see the fruition of the long-awaited Centurion Aerospace Village on Aerosud’s doorstep. “We have been too vertically integrated, by virtue of necessity because we do not have a broad support base in South Africa. Now is the time to start doing something about that.”

But if it is to spin out significant quantities of work to entrepreneurial new suppliers, Aerosud needs to be sure they are co-located. Then, he says, they will receive the benefit of equipment sharing, training, quality, safety and production best practices. The sooner the Centurion Aerospace Village becomes a reality, the sooner this can happen. And of course this closely aligns with the government’s and IDC’s goal to promote the development and growth of a strong SME sector in South Africa. As a long-term strategic partner, IDC is in a position to help Aerosud achieve these goals, he says.

Looking to future opportunities, this is a company with an amazing track record that the global aerospace industry can’t fail to have spotted. It won its Airbus contracts, both on the A400M programme and the A350 which between them account for 52 percent of this year’s turnover, without the benefit of offset leverage. “What that means is that we are seen by the aviation industry to be relevant, cost effective and competitive, and that can

Thermoplastic part production

*"With CFRTP the forming cycle of a component is between four and six minutes, compared with eight to nine hours of autoclave curing for a conventional composite component"*

lead to new opportunities. I think the global industry is taking notice!" Airbus, Boeing, Labinal and Spirit are names to conjure with - but there are many other OEMs and Tier 1 suppliers that could be drawn in, he feels. Additionally, the national carrier SAA is in a process of fleet renewal, which will inevitably lead to increased volumes from Aerosud.

There can be no complacency, no standing still in this rapidly advancing industry, he cautions. There will always be lower cost economies than South Africa and the long term sustainability of the company rests on its development of techniques that others can't match. One way of staving off the threat from global competitors is to become a risk-sharing partner in OEM projects, as happened with the A400M project (it is worth pointing out that though the M identifies this as a military variant, the components supplied by Aerosud have nothing to do with its military capability or weaponry). The other is to create new IP around relevant technologies like the production processes it developed for continuous fibre reinforced thermoplastic (CFRTP) composites. This process allows much more energy- and cost-efficient manufacture than can be achieved with conventional composites, he points out. "For example, to illustrate just one of its significant advantages, with CFRTP the forming cycle of a component is between four and six minutes, compared with eight to nine hours of autoclave curing for a conventional composite component."

It was a key moment this year when a new CFRTP press was commissioned, the biggest of its kind in the aerospace industry, developed by Aerosud and co-funded by Airbus. This facility will position Aerosud for the supply of large CFRTP parts and will undoubtedly add to the growth of the Aerosud manufacturing portfolio.

Though make-to-print may be the order of the day for some time to come at Aerosud the emphasis is thus shifting to new technologies. Expect announcements in the coming months on advanced titanium manufacturing processes, he hints. It is easy to understand why aerospace industry loves titanium. Titanium parts are light, weigh only half as much as steel parts, but its strength is far greater than the strength of many alloy steels. Laser based additive manufacturing (LAM) is an effective way to process titanium alloys, potentially a lot cheaper than machining from solid, reduces waste dramatically, and could be a lot quicker too for the manufacture of complex aerospace parts.

Meanwhile Boeing has announced the fourth renewal of its contract with Aerosud, Paul Potgieter says says. "Everybody talks about recurring business and this is it!"

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