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Global Sieving & Filtration Specialists

Leading aerospace manufacturer improves its productivity with the Russell AMPro® Sieve Station

GKN Aerospace optimizes powder handling solution, reducing risk of contamination in its powder handling process and improving operator safety.

Global aerospace supplier group GKN Aerospace is a leading manufacturing company, producing innovative systems and components for aircraft ranging from business jets, single-aisle aircraft, and large passenger planes.

GKN Aerospace's journey into the additive manufacturing market started 15 years ago, and since then the company has gone from strength to strength. Whilst it began this process by investing in EBM technology, GKN Aerospace subsequently researched laser bed technology. It has since moved into full-scale production, with an innovative facility that manufactures leading-edge AM components – using both EBM and laser powder bed technology to do this - for the aerospace industry.

Kevin Payne, Head of Production for Additive Manufacturing at GKN Aerospace, states: "We want to make parts faster, better, lighter, and cheaper, to benefit our customers. Additive Manufacturing technology and its benefits are almost untapped right now, and we see it as being a really disruptive technology that will affect everything we do in the aerospace industry."

Having previously purchased a Russell Compact Self-Loading Sieve™ for its EBM line, GKN Aerospace turned to Russell Finex again for a solution. As part of its journey into laser powder bed fusion technology, the company wished to further optimize its process and was recommended the innovative Russell AMPro® Sieve Station as the best machine to suit its needs.

GKN Aerospace uses two different types of powder for its builds: titanium and inconel. It is important to its process to ensure that the powder is qualified properly before and after use in order to ensure its quality. In fact, an integral part of the additive manufacturing process for the company is to ensure that powders are properly and effectively reclaimed, as well as making sure the powder is maintained within its quality lifecycle – meaning that the AM process is safe with powders being contained, and the process efficient and fast in order to get the maximum use of the powder possible.

The method originally used was labor intensive, time consuming, and presented serious manual handling issues.

Figure 1. The Russell AMPro® Sieve Station is easy to move, and operate, in order to reuse and reclaim AM powder from the build process.

- **Prevent cross-contamination -** Russell Compact Sieve® style technology with minimal contact parts, allows for easy cleaning of the unit
- **Ensure maximum powder recovery -** Removes all out of spec powder, recovering all reusable powder ready for use
- **Minimize operator involvement -** Fully automated and enclosed system with a simple one-button operation for complete process integration

This included contamination concerns as a result of the powder being transferred to and from multiple containers and involved the risk of powder being lost.

The Russell AMPro® Sieve Station addressed and solved several concerns for GKN Aerospace with regards to its powder handling process.

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Importantly, the control offered by the Russell AMPro® Sieve Station, alongside the repeatability aspect of the powder handling process for GKN Aerospace has proved invaluable.

The reuse and requalification of AM powder is a feature that is integral to its process, and since using the Russell AMPro® Sieve Station GKN Aerospace has made considerable gains, in terms of its efficiency. The potential for cross contamination of AM powder has been eliminated due to the O_2 monitoring system, preserving the quality of powder alongside its vacuum conveying system, whilst the use of minimal contact parts ensures that the machine is able to be cleaned fast and effectively.

Figure 3. A key feature of the Russell AMPro® Sieve Station is its one-button automation system, which allows the operator to concentrate on other important value-added tasks.

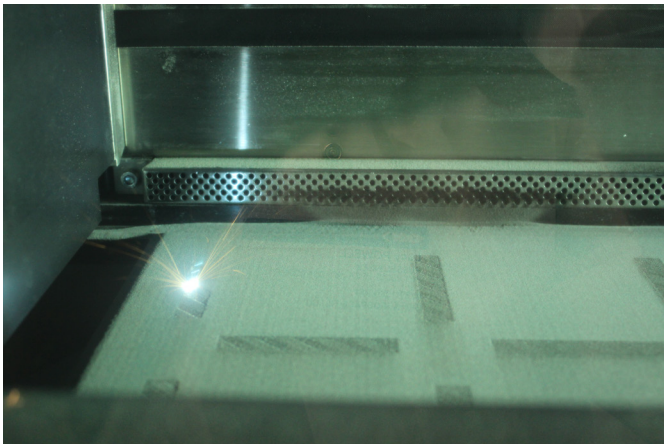

Figure 2. The Russell AMPro® Sieve Station is used to recover titanium and iconel powders, used in GKN's builds.

Chief Manufacturing Engineer Ross Studzinski comments: "Using the AMPro has made the turnaround time for builds faster and more efficient. This has been a brilliant investment for our production process, as it has allowed our operators to concentrate on other tasks, speeding up our overall process and improving our material's quality".

Concerns about operator safety were addressed with the installation of this innovative machine. Its one button automated system easily allowed for operators to walk away from the machine during the sieving process and allowed them to focus on other value-added tasks – such as working on preparing multiple builds. This minimized their exposure to powders whilst maximizing their safety.

With the installation of two Russell AMPro® Sieve Stations, time has also been saved. As a result, operators can carry out these other tasks, meaning more AM processes can been conducted in parallel with each other.

This in turn has saved on average around three hours of sieving and handling, allowing for guaranteed turnaround times effectively doubling GKN Aerospace's efficiency, whilst maintaining the safety of its technicians. Russell Finex is an innovative, global leader in the design and manufacture of machines which are supplied to over 140 countries. Its ability to provide customized solutions for its customers, and ensure collaboration and support was highly important as part of its relationship with GKN Aerospace.

As Studzinski states: "At first it was hard to find a partner that was willing to provide something that was off the shelf, but also something where they were happy to integrate. But with Russell Finex it's been a collaboration from the beginning to the end, and still continues to this day."

Having operated in the AM industry since the beginning, Russell Finex has worked with an array of global manufacturers to provide innovative equipment that will continue to meet the needs of an expanding, changing market. Payne adds: "GKN Aerospace and Russell Finex have been working together for many years and as a result of that collaboration we've ended up with a fantastic piece of equipment that's been in service now for over a year."

With over 85 years' experience in the manufacturing industry, Russell Finex has used its expertise and knowledge to develop the Russell AMPro® Sieve Station, alongside its brand-new range of additive manufacturing equipment. With a variety of different machines to suit a company's every requirement, such as the Russell AMPro® Lab, Russell AMPro® Lite, and closed-loop systems, Russell Finex will continue to develop and expand its knowledge, adapting and ensuring it meets the needs of a new and growing industry.

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