

Automated powder sieving for 3D printing improves the efficiency of university research

University of Amsterdam selects the Russell AMPro® Lab Sieve Station for its Technology Centre

Additive manufacturing
powder

The [University of Amsterdam \(UvA\)](#) is consistently ranked among the world's best universities in global rankings and has a leading reputation in international science. The university is home to over 34,000 students, 3,000 PhD researchers, 6,000 staff, and over a hundred nationalities.

The UvA's Faculty of Science is supported by a dedicated Technology Centre comprised of 20 research support engineers who help researchers solve technical problems using innovative solutions. The Technology Centre identifies intelligent ways to develop unique equipment or materials to enable scientific research projects.

The Technology Centre uses [additive manufacturing](#) as many of the research projects require equipment that is not commercially available. For example, one project was to produce a bespoke temperature-controlled chemical flow cell that researchers could use with an X-ray spectrometer.



The Russell AMPro® Lab Sieve Station installed in UvA's Faculty of Science

To support the UvA's work to develop metamaterials - materials with unconventional behavior and properties not found in nature - engineers have used metal 3D printing to create material samples.

The UvA Technology Centre has also engineered a range of small robots called unit cells. These react to their neighbors and can be programmed with unique properties, such as propagating waves in one direction and dampening them out in the other.

The challenge

With only a small team of engineers and multiple research projects to support, the Technology Centre was keen to ensure engineers spent their time on the tasks where they added the most value.

An area ripe for efficiency improvement was the time-consuming task of powder sieving for 3D printing. The engineers had to manually sieve each batch of powder, which took a significant amount of time - a batch of 10 kilograms of powder took 90 minutes to sieve. During that time, engineers were prevented from working on other activities.

A further challenge for the Technology Centre was to support projects that required 3D printing with aluminum powder. Due to the powder's explosive nature, the engineers needed an inert environment to carry out the sieving process safely.

The solution

While researching methods for overcoming its metal 3D printing challenges, the Technology Centre discovered the solutions provided by Russell Finex.

A Russell Finex sales engineer met with the Technology Centre and recommended the **Russell AMPro® Lab Sieve Station**. The machine uses a non-vibratory sieve with a feed control system to decant small bottles of reclaim powder and sieve and remove oversize contamination. The bottle-to-bottle system also has connections for customers' bottles on feed, fines, and oversize.

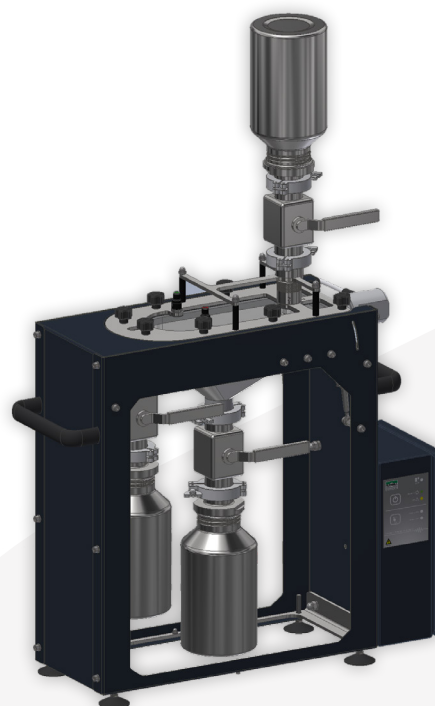
During a successful trial of the Russell AMPro® Lab Sieve Station, the research support engineers could see how much it improved the efficiency of powder sieving. As a result, the UvA purchased the machine for the Technology Centre.

Engineers have gained valuable time they would otherwise have spent manually sieving powder. A whole batch of powder now only needs about 10 minutes of the engineer's time, compared to the 90 minutes it took previously. The Russell AMPro® Lab Sieve Station has freed up engineers to concentrate on other projects while sieving occurs.

“With the Russell AMProLab, we can do much more at the same time. It's a key enabler for our efficiency.” said Daan Giesen, Research Support Engineer

The Russell AMPro® Lab Sieve Station has also allowed engineers to sieve explosive powders without creating health and safety risks. The machine contains an inert gas purging system with a sensor for monitoring oxygen levels before and during the sieve cycle.

Giesen continued, “The AMProLab has given us an inert environment for our powder sieving. We can flush the chamber with nitrogen and measure the oxygen levels to sieve the metal powder safely.”



The Russell AMPro® Lab Sieve Station

Key benefits:

- **Non-vibratory sieve station**
High-performance ultrasonic technology to prevent mesh blinding
- **Inert gas purging**
Sensor to monitor oxygen level before and during sieving
- **Adjustable feed system**
Complete control for decanting bottles of reclaimed powder

About Russell Finex

Founded in 1934, Russell Finex designs and manufactures sieving machines for a range of industries. With its head office in the U.K. and subsidiaries in Belgium, the U.S.A., India, Brazil, and China the company supplies to over 140 countries. **Contact** Russell Finex today to find out more about its range of sieves, separators, and filtration equipment.