

## **Ready for Industry 4.0: New Controlled Rotary Vane Vacuum Pump**

With its new R 5 RA 0760 A PLUS, Busch introduced a pioneering rotary vane vacuum pump to the market, suitable for many industrial applications. Able to run at constant speed or with pressure control, it is exceptionally energy-efficient. Acting either as the sole vacuum pump or as a vacuum module in a central vacuum supply, the R 5 PLUS makes sure a specified pumping speed is maintained at a prescribed rotational speed. It can also accurately sustain the required vacuum level, regardless of how the process conditions change. Thanks to its variable speed drive, the vacuum pump covers a pumping speed range from 440 to 760 cubic meters per hour and reaches an ultimate pressure of 0.1 millibar. All operating data is constantly recorded and saved. This data can be accessed directly on the built-in display or transferred via a Modbus TCP/IP client/server protocol. As a result, the vacuum pump can also be controlled remotely from a PC. Busch's new vacuum pump is thus ready for Industry 4.0.

The R 5 PLUS is designed to be operated in two different modes. Following an intuitive menu structure on the display, users can choose between the constant speed mode or pressure control mode. The most suitable operating mode depends on the type of application. If, for example, a process requires constant pumping speed, this can be set using the 'Constant speed' operating mode. If a vacuum pump is being used for various processes with different pumping speeds, this can be programmed, and the operator can simply switch the R 5 PLUS from 'Process 1' to 'Process 2' with the press of a button. This can be changed at any time by directly setting the rotational speed on the display.

In contrast, pressure control uses a defined ultimate pressure setting. The vacuum pump precisely maintains this ultimate pressure, regardless of how the pumping speed changes. This means that this operating mode is always used if constant ultimate pressure or a constant vacuum level is needed. Once the required vacuum level is in place, the R 5 PLUS continues to run at a minimum speed of 35 hertz, enabling it to respond to a sudden need for increased pumping speed by increasing the rotational speed. In the event of extended breaks, the vacuum pump can also switch on and off automatically, thanks to "Ecomode".

Both operating modes thus help the R 5 PLUS operate in a way that perfectly suits the process, resulting in extreme efficiency as only the power that is actually necessary is consumed.

The R 5 PLUS vacuum pump is based on Busch's proven rotary vane vacuum technology. Thanks to its stable volume flow curve, this vacuum pump can still reach 70 percent of its pumping speed at atmospheric pressure, even at a vacuum level of just one millibar. One of the fundamental benefits of rotary vane vacuum pumps is that power consumption drops as the pressure starts to fall. The rotary vane vacuum pump consumes the most power between the moment it is restarted and when it reaches a level of around 300 millibar. Within the working range between 10 millibar and the ultimate pressure of 0.1 millibar, the vacuum pump consumes a mere 40 to 60 percent of the specified rated power.

This feature alone makes the R 5 PLUS the most powerful and effective vacuum pump in its class. The R 5 PLUS can save even more energy thanks to the two freely selectable operating modes and demand-driven power adjustment.

A standard built-in PLC permanently records and stores all operating data. This enables not only complete, uninterrupted data recording, but also warning and alarm functions, among others. Using the self-explanatory menu structure on the display, operators can decide when these warnings and alarms are displayed and/or trigger an action. All data recorded by the PLC can be transferred to other PLCs, computers or SMS control units in either analog or digital form, meaning that the R 5 PLUS rotary vane vacuum pump enjoys full connectivity.

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Photo:

*The new rotary vane vacuum pump R 5 PLUS from Busch is exceptionally energy-efficient, while its connectivity features make it ready for Industry 4.0*



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Uli Merkle – April 24, 2019