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| Date | 20.02.19 |
| Job number | DEUEN19-011 |
| Job description | Launch – VRV IV+ |
| Category | Press Release |
| Audience | Installers & contractors, building engineers, energy consultants, facilities managers |
| Sectors | Commercial, hotels & leisure, retail |
| Tags | VRV IV, total climate control, seasonal efficiency, Lot21, ErP |
| Tweet | The most intelligent #VRV system ever from @Daikin just got even better! |
| Version | V4.0 |
| Owner | Gill DeBruyne |

Daikin’s VRV IV technology continues to set the benchmark for intelligent efficiency

February 21, 2019

Daikin unveils the latest developments in its VRV IV technology with the launch of the new VRV IV+ series.

When it was introduced in 2012, Daikin’s pioneering revolutionary VRV IV system set a new standard in the industry, introducing new levels of seasonal efficiency and comfort. Offering an integrated solution to cover multiple applications, its design simplicity, flexible configuration, combined with ease of installation and commissioning, continues to position Daikin as the best partner of choice for climate control, with over 220,000 VRV IV units sold since its launch.

Advanced research and development have ensured Daikin’s VRV IV technology remains unmatched. Features such Variable Refrigerant Temperature (VRT) Technology, which automatically adjusts temperatures in line with loads and ambient temperature, while the continuous heating during defrost technology eliminates temperature drops during defrosting. Further system developments swiftly followed, such as the introduction of ranges including heat pump, heat recovery, cold climate and water-cooled models. With the launch of the new VRV IV+ series, Daikin has once again raised the bar. At the heart of the latest system, the compressor has been completely redesigned applying the latest technologies.

Seasonal Efficiency explained

With buildings accounting for 40% of the European Union’s (EU) total energy consumption, delivering low carbon buildings is key to meeting the EU’s challenging energy targets. It is important therefore, that designers have access to real life, seasonal efficiency data.

Ahead of its time in 2012, Daikin had already taken the decision to focus on achieving the best seasonal efficiency all year round for the VRV IV system. This was a departure from the usual practice of achieving performance at peak loads with the nominal point at 100% capacity (at 35°C for cooling and +7°C for heating).

Since that time, the EU has taken a more strategic stance on performance and efficiency. As of the first of January 2018, the Ecodesign Directive on Energy Related Products (ErP) came into force for commercial air heating and cooling products (ENER LOT21). The legislation sets minimum efficiency performance targets for cooling and heating products based on their actual year-round performance and not just on a single test result at peak load. This pushes manufacturers to deliver more efficient systems and helps users to select the most efficient option.

The calculation method applied to determine a system’s seasonal efficiency, rather than its nominal efficiency, is set in EN 14825. Using the number of hours that a temperature condition occurs throughout the year and the corresponding efficiency at that point, the result is expressed in the Eta value. The minimum efficiency for cooling is set to 133% and 181% for heating. Products that do not reach these efficiencies can no longer be sold in the EU.

The Eta value relates efficiency back to primary energy, allowing a direct comparison of fossil fuel products with electrically-driven products.

Raising the bar on seasonal efficiency

With the launch of the VRV IV+ series we continue to build on our strategy of delivering systems that are truly efficient in real life situations and we are already compliant with the new ENER LOT21 – Tier 2 due to come into force in 2021.

Central to the new VRVIV+ units, the compressor has been redesigned and fully optimised to ensure high performance at part loads, which is the main operation mode throughout the year.

A key issue which can occur during low load operation, is refrigerant leaks from the high-pressure side to the low-pressure side in the compression chamber, resulting in loss of efficiency. This is due to lower pressure applied to the back side of the moveable scroll of the compressor (Figure 1).  
This has been resolved in the new compressor by the inclusion of a back-pressure control port that sends a small amount of high-pressure refrigerant from the compression chamber to the back of the scroll (Figure 2). This way we ensure optimal separation of lower- and higher-pressure sides within the compression chamber, boosting seasonal efficiency to a new standard.

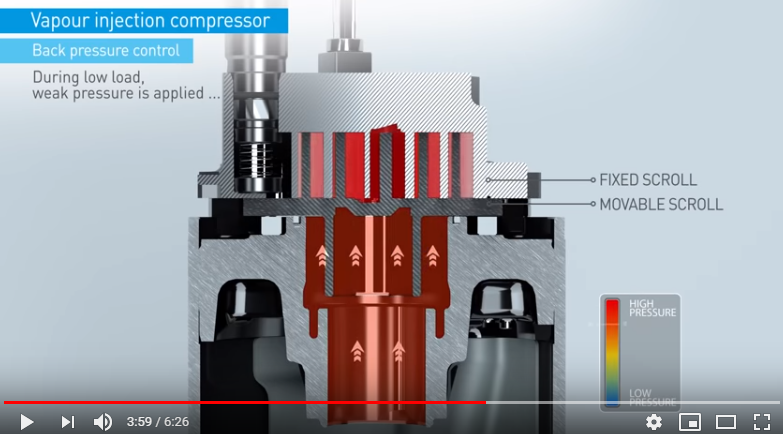
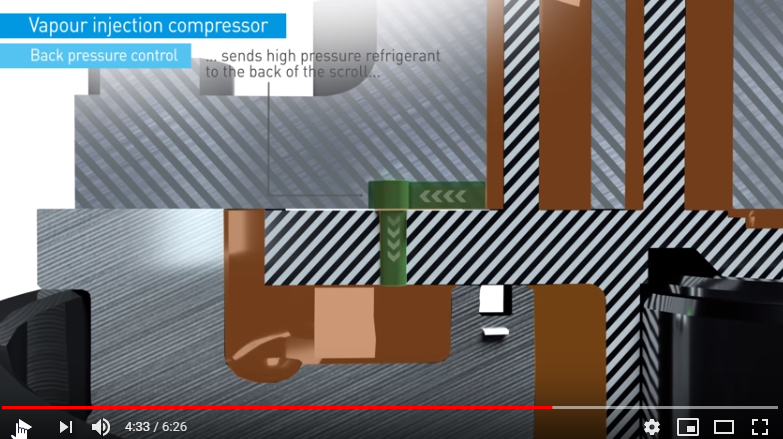
Figure 1:  


Figure 2:  


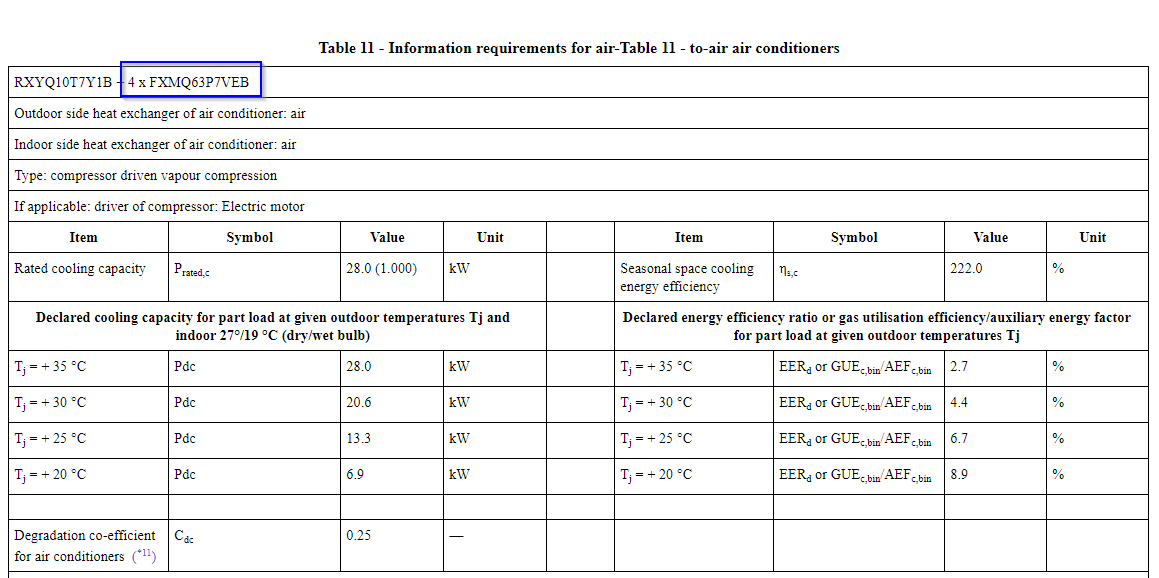
Following the principles behind ErP legislation

EN14825 does not specify indoor unit type or size, although the goal of legislation is to provide useful information to assist decision-making and improve efficiency in real life conditions. Typically, the larger the unit, the better the overall system efficiency will be (but this may not necessarily be a unit that is sold regularly).

Daikin publishes information on the most sold combinations of indoor unit with its VRV systems, to observe the aims of the legislation and provide useful data to the customers.

These units are: the FXFQ Round flow cassette, FXSQ medium static pressure concealed ceiling unit and the FXMQ high static pressure concealed ceiling unit.

When comparing efficiency values, it is important to check which indoor units are being used to ensure a fair comparison. The values for specific models can be identified using the supplied product fiches, which must be available in a free access website, set-up by every manufacturer.



**The new Daikin VRV IV+ series will be available from March onwards.**

For a more details on ENER LOT21 refer to: <https://www.daikin.eu/en_us/about/daikin-innovations/seasonal-efficiency.html>

Daikin’s ENER LOT21 data is available to download at: <https://energylabel.daikin.eu/eu/en_US/lot21.html>   
*To find the data of the new VRV IV+ series search for RXYQ-U (heat pump), RYYQ-U (heat pump with continuous heating) and REYQ-U (heat recovery) series)*

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EDITOR NOTES

About Daikin Europe N.V.

Daikin Europe N.V. is a major European producer of air conditioners, heat pumps and refrigeration equipment, with approximately 5,500 employees throughout Europe and 10 major manufacturing facilities based in Belgium, the Czech Republic, Germany, Italy, Turkey and the UK.

Globally, Daikin is renowned for its pioneering approach to product development and the unrivalled quality and versatility of its integrated solutions. With more than 90 years’ experience in the design and manufacture of heating and cooling technologies, Daikin is a market leader in heat pump technology. Daikin VRV and Daikin Altherma are the most sold heat pump systems in Europe, with over 500,000 systems delivered to date.

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FURTHER INFORMATION

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