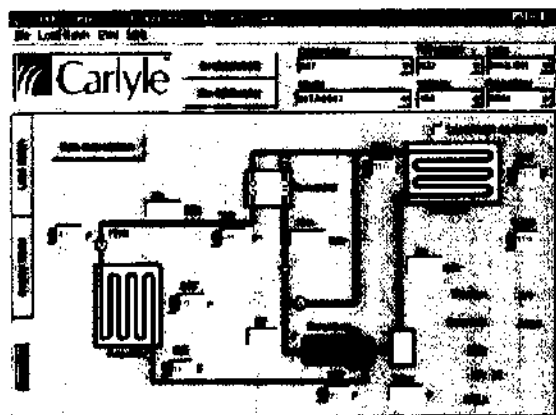


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Carlyle Technical Bulletin 00-4

Updated Carlyle Compressor Selection Program



Version 1.55 of Carlyle's compressor selection program will be introduced in our new web-site. Information on the new web-site can be found in Marketing Bulletin 00M-2, dated 5/15/00. Customers can download the new program to their computer from the following URL:

[www.carlylecompressor.com/Technical Info/Carwin.htm](http://www.carlylecompressor.com/Technical%20Info/Carwin.htm)

The use of the web-site will allow quicker distribution of compressor information updates, such as this new selection software. Users of the software are able to register on-line and will be notified via e-mail on all future updates to the program.

This updated software only has one change from version 1.54. The new version calculates mass flow and capacity using different assumptions when lower than 65F return gas temperature is used. Currently, Carlyle and most other compressor suppliers use 65F return gas temperature as the standard rating condition. Carlyle ran compressor performance data at numerous points below 65F and found the assumptions used in our older software were far too conservative. The new 1.55 program calculates the new performance based on this testing. Performance data calculations at 65F remain unchanged. The new selection will increase

mass flow and capacity when lower than 65F values are used. For example, for low temperature operating conditions, at 20F instead of 65F return gas temperature the mass flow and capacity may increase by up to 5% versus the earlier program.

For OEM system designers that calculate performance at lower return gas temperatures the new software should be used to ensure you are using the most up-to-date and competitive information.

In using both the old and new software, a frequently asked question is what is the difference between compressor and evaporator capacity (or Evaporator Refrigeration Effect as shown in the program). The difference is in the amount of superheat used to determine the capacity. If the refrigerant temperature leaving the evaporator is the same as the return gas temperature entering the compressor, the evaporator and compressor capacity is the same.

Typically, the refrigerant temperature leaving the evaporator is below the return gas temperature entering the compressor. In low temperature systems, with relatively long piping runs between the evaporator and compressor, this difference can be 40 to 75F. The difference between the two capacities is the heat picked up in the suction line. This heat must also be rejected to the condenser, but is not useful in meeting the evaporator load. An example of useful capacity is an increase in superheat that results in an increase in the amount of liquid subcooling to the evaporator TXV.

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Below is a typical refrigerant Pressure—Enthalpy diagram that shows the difference in the two capacities.

The Carlyle selection program gives both values to allow the system designer to make the most appropriate compressor selection.

