

EN-50: Supply and Demand

- One of the design principles in the interlinking between HVAC applications, adopted in Vykon HVAC, is the concept of supply and demand (or supply and delivery). Vykon HVAC super applications are organised in broad categories called heat suppliers and heat deliverers. Heat suppliers are heating plant and cooling plant, of which there are boilers and chillers. Heat deliverers are heat delivery and cooling delivery, of which there are applications such as radiator group, domestic hot water and delivery system.
- Fundamentally the heat suppliers will **supply** heat (hot or cold) according to the demands from one, two or more heat **delivery** or cooling **delivery** systems. Interlinking configuration therefore is straightforward in that all the delivery applications are linked as 'demands' into each of their relevant supply applications. When the heat supplier knows all the demands, it can organise supply accordingly such as supplying heat to meet the largest demand.
- Vykon HVAC also provides an additional level of application interlinking whereby the delivery systems are enabled, or disabled by the operational condition of the supply applications. Effectively a link that is a reversal of what has already been described. This engineering note looks at these two levels of interlinking between supply and delivery applications.

Application interlinking - demand

Figure 1 illustrates the application demand interlinking between the heat delivery system applications and the heat plant application. Notice how the heat plant responds by satisfying the greater demand:

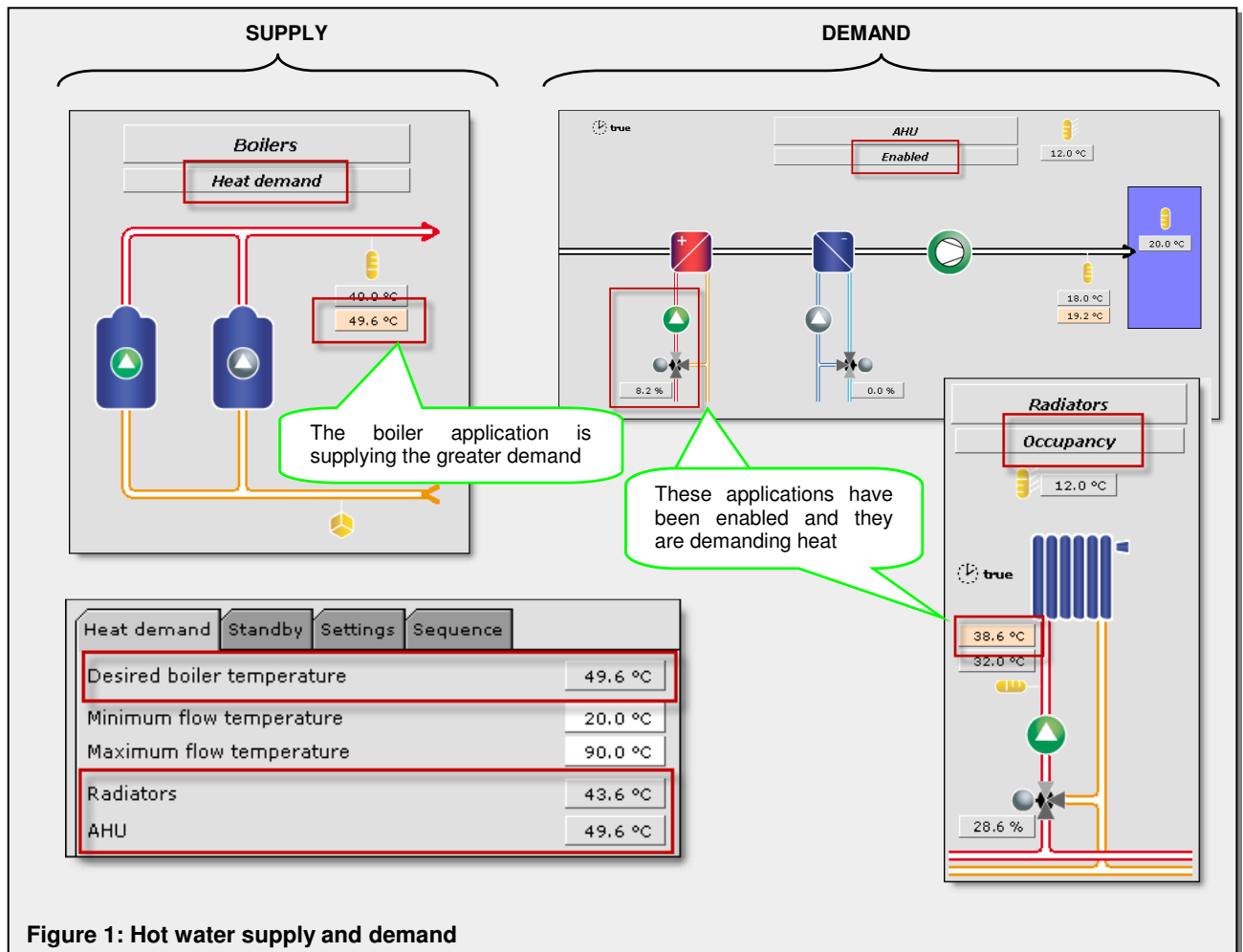


Figure 1: Hot water supply and demand

Figure 2 similarly illustrates the application interlinking between the cooling delivery system applications and the chiller plant application:

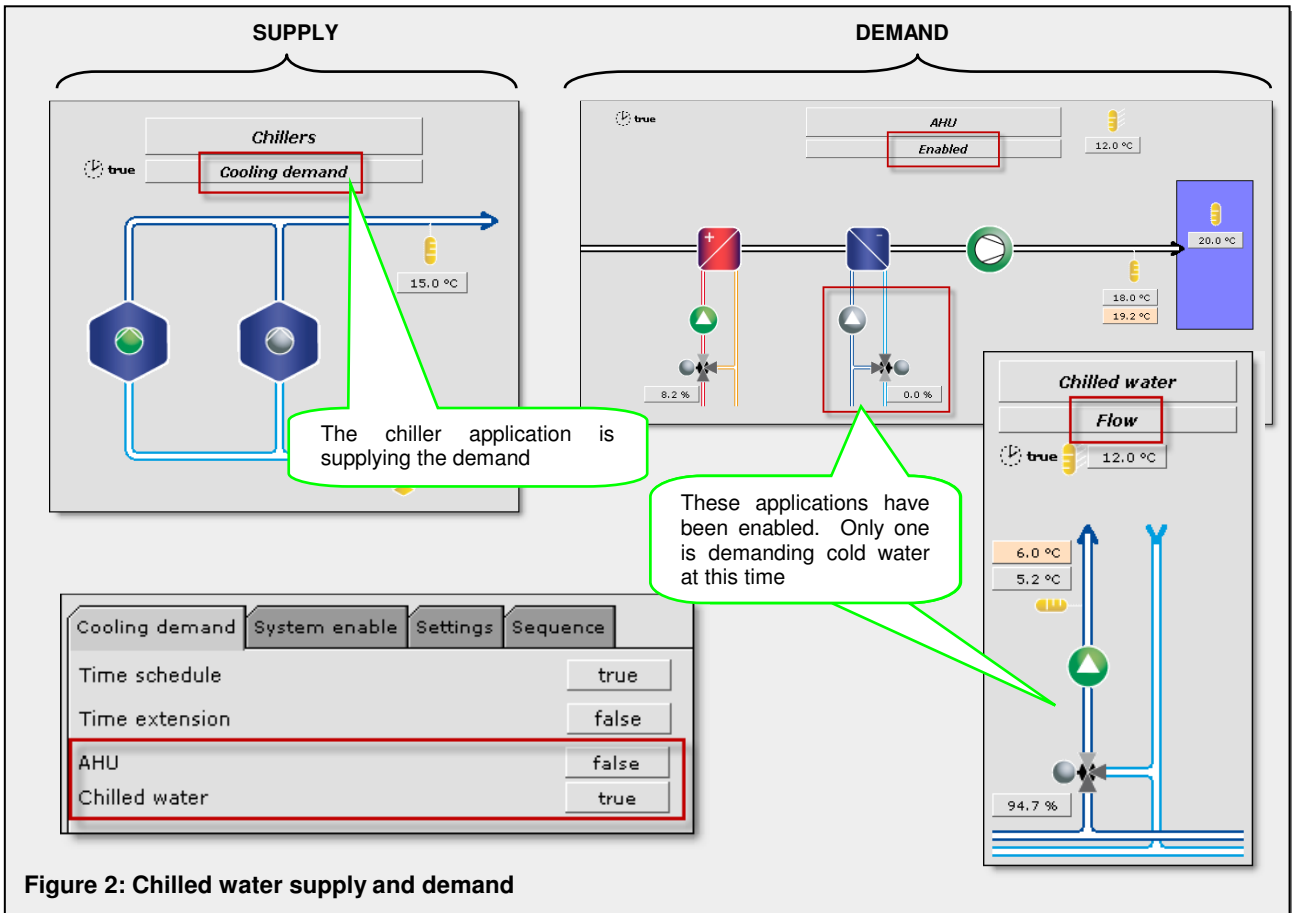


Figure 2: Chilled water supply and demand

Application interlinking – system enable

The boiler plant and chiller plant applications have some system enablers which generally protect the plant from such events as pressurisation water failure or emergency stop button activation. Figure 3 illustrates that these have been added:

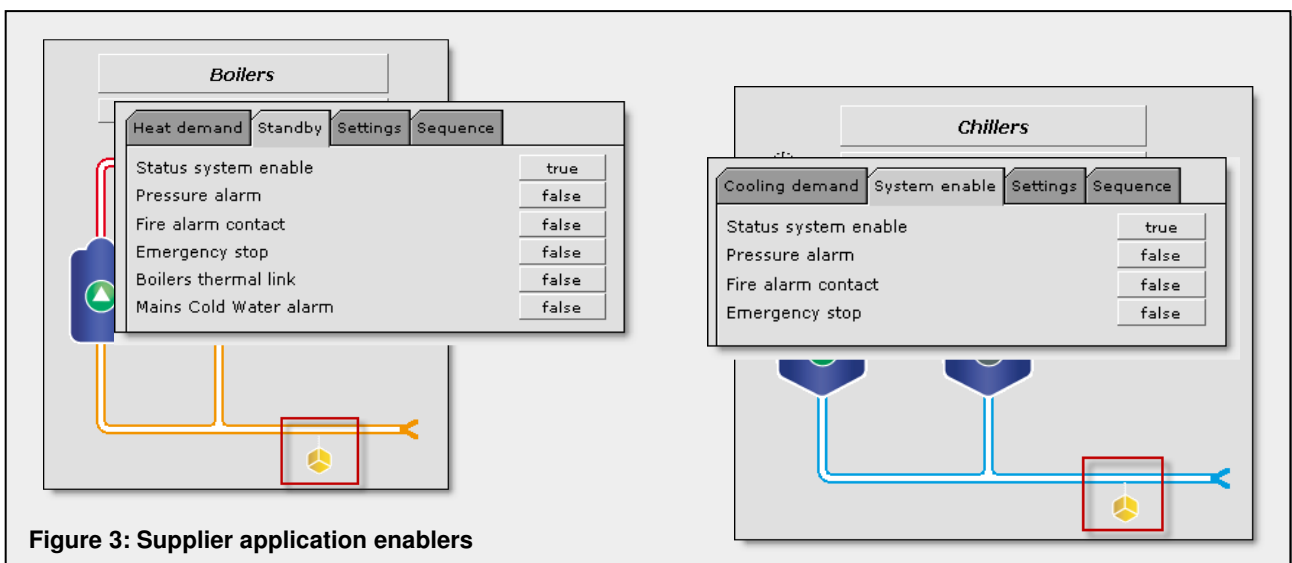


Figure 3: Supplier application enablers

Figure 4 illustrates how, when the delivery applications have their 'System enable' linked back to the heating and cooling plant applications, they will also be disabled when these plants are disabled. This is an important mechanical plant protection mechanism to prevent for example the delivery system pumps from running dry when there is water failure:

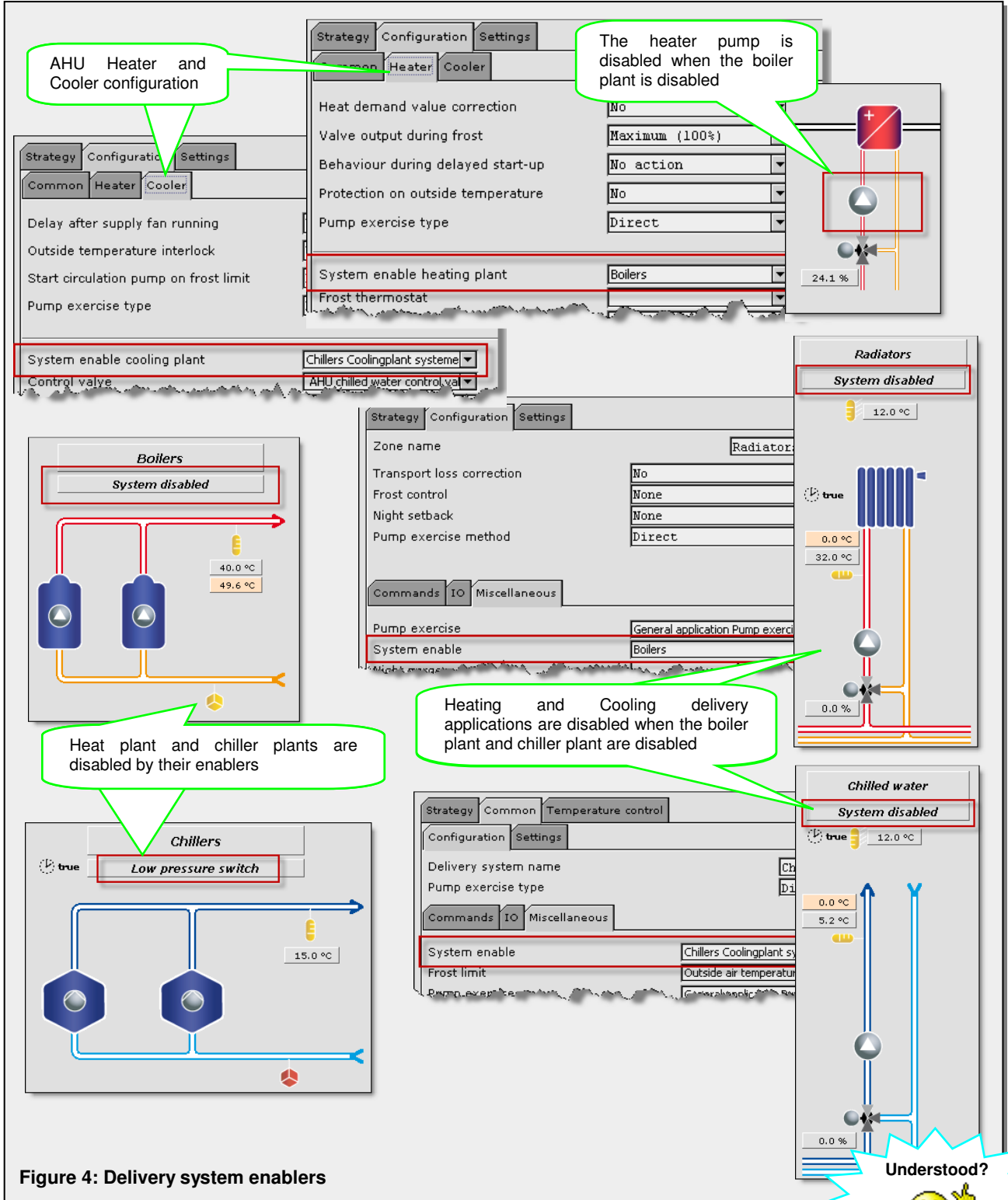


Figure 4: Delivery system enablers