Understanding the operation of a heating system

An effective and economical heating system is more than just the appliance. There are a number key factors to be considered that will effect the operation, performance and running of the heating system, these would include.

- The capacity of the appliance and its heat output.
- The heat loss of the room or your home.
- Zoning areas.
- The duct system.
- Using wisely.

The capacity & heat output of the appliance.
A heating appliance, whether it is a refrigerated air conditioner, a gas central heater or a space heater of some kind, all have capabilities and limits. A correctly sized heater is essential for comfort and economy. A heating unit will deliver a certain amount of kilowatts (kW) of energy, for example a Bonaire MB3 20I will deliver 20kW of energy.
As such an appliance must be sized to a room, an area or your home. Or the whole home An undersized heater will not heat an area adequately and will increase running costs.

The heat loss.
One of the first considerations when sizing the right appliance is to look at the heat loss of an area. Heat loss means how much heat is being lost from the area. The heating appliance will need to have a capacity greater than this amount.
Heat loss is determined from a number of factors.

- ✓ Ceiling insulation – if you have good efficient insulation you will have reduced heat loss.
- ✓ Well covered windows – Windows are the greatest cause of loss of heat, if you have many large windows with only light covering, the room will loose a significant amount of heat.
- ✓ Draft Sealing – The more draft that can enter a room the more heat loss.
- ✓ Floor coverings- can reduce heat loss, for example a tiled floor verses a carpeted floor, the carpeted floor will retain heat more.

All of these factors can reduce effectiveness and increase running costs of an appliance.
A qualified person will assess the heat loss of a home and correctly size an appliance and system to suit the area to be heated.
Sometimes builders may include in a new home package a heating system with a certain number of outlets as part of the package, this may or may not be sufficient to adequately heat the home and this should be discussed with your builder and their contract installers.

Zoning Areas – For ducted appliances.
Many ducted systems will allow zoning, which allow certain rooms or areas to be switched off. If the appliance is designed for zoning, it will turn down the energy consumption, giving a reduced heat output. As not all appliances can be zoned, you should consult the dealer or retailer to see if your appliance can be zoned.

The duct system - For ducted appliances
The duct system – If you have a ducted heating system of some kind, this means that the warm air generated by the appliance travels through ducting to registers or outlets. If the ducting has poor insulation thermal resistance, the more heat will be lost in the duct system, a minimum of R1.0 - R1.5 Insulation resistance should be used (depending on the appliance type) and you should discuss this with the installer of your system.

The duct system must also have good joints and connections, if air can escape or cool air can be sucked into a duct system, the system and unit performance can be dramatically effected.

Using your heating system wisely
A heating system is typically designed to heat a room or an area to approximately 20-21 degrees, every degree you set above this will increase your running costs by up to 15%
Lower the thermostat temperature by a degree.
Ensuring the insulation properties of the home are as such that the heat loss is minimised will add to the effectiveness of the appliance and reduce running costs.
Keep all doors to unheated areas closed.
Zone a system down only if the appliance can be zoned (and close doors to unopened zoned areas closed) will reduce running costs
If you have a ducted system, ensure the ductwork is in good condition to reduce heat loss and increase appliance effectiveness.

Running Cost of your heater
4 & 5 Star gas central heaters will consume less energy over a period than a 3 star as well as they can be zoned

Refrigerated air conditioning is efficient as typically you are getting up to 3kW of energy out for each kW of energy consumed.

Space heaters are designed to heat only a space relative to their capacity, opening up other areas will cause the appliance to run on high for longer periods and cause increased running costs.

Appliances, in accordance with the Australian Government, department of climate change and energy efficiency, have energy rating labels, these labels indicate the energy efficiency of the appliance as well as provide a guide of running costs for comparative purposes. A retailer should be able to show you the energy label of an appliance.
More information on energy labels can be found at www.energyrating.gov.au

If the home cannot reach the thermostat set temp refer to the facts above as running costs will be high.