Climate Control

Easy selection guide

Today's practice of making components smaller has resulted in an increase in watts loss within enclosures. This in combination with the harsh Australian climate results in higher and higher temperatures within industrial enclosures, subjecting important equipment to potentially harmful conditions. On the other end of the spectrum condensation build up due to rapidly changing conditions can also have adverse effects on industrial enclosures.

Follow the **"four easy steps"** to select the right climate control solution.

step 1

STEP 1: Existing Climate

Consider the existing climate of your industrial enclosure and what you want to change about it.

- Is there a need to cool the enclosure due to high ambient temperature or excessive watts loss due to components?
- Is there a high likelihood of condensation build up within the enclosure due to a rapid drop in temperature?
- Is there a need to cool below the maximum ambient temperature?
- Is there a legislative requirements eg. AS300.2018 cl 1.7.2 specifying ventilation devices in areas subject to condensation.

Using this information we can get a basic grasp on which climate control product range will be needed.

Refer to heating and cooling quick order matrix

step 2

STEP 2: Location of Application

- Is the product going to be in a wash-down environment?
- Is the product going outside? Is the area close to the sea i.e. salty air?

NHP has a range of thermoplastic, mild steel and 304 or 316 stainless steel climate control products. Combined with our offering of mild steel and stainless steel enclosures NHP will have the complete solution for any application.

Refer to heating and cooling quick order matrix

step 3

STEP 3: Rated Cooling/Heating Capacity

Knowing where and why a climate control product is needed will give enough information to narrow down to a particular climate control technology. In order to determine the correct L35L35 cooling capacity (Watts), heating capacity (Watts), heat exchange factor (W/K) or air flow (m^3/hr) NHP has the software solution. With an intuitive layout and access to product data sheets at your fingers the Cosmotec Cooling Software and Stego Heating software takes all of the variables needed and gives the exact requirements for your unique environment.

Download it yourself today from the NHP website or fill in one of our heating and cooling forms and have dedicated NHP staff come up with a solution.

Refer to heating and cooling software and forms on pages 18 and 19.

step 4

STEP 4: Type of Regulating Device

Selecting the right climate control product is only part of the solution – a choice needs to be made on how and when you are switching the product.

- Do you need a heating or cooling thermostat?
- Do you need a hygrostat to switch the device depending on humidity?
- What about a combined hygrostat and thermostat – a hygrotherm?

Refer to regulating devices on page 15.

Heating and Cooling Quick Order Matrix

NHP has a complete range of cooling and heating products to ensure your equipment is running at the right temperature. Choose from cooling, heating or regulating and monitoring to narrow your selection.

	INDOOR	INDOOR WASHDOWN ENVIRONMENT
COOLING TO AMBIENT TEMPERATURE	 *GSV, GSF Series*  *TB Series*  *XVA Series*	 *CVO Stainless Steel*
COOLING BELOW AMBIENT TEMPERATURE	 *CVE Series*  *ETE Series*  *EXW Series*	 *CVO Stainless Steel*
HEATING/ PREVENTING CONDENSATION IN SMALL ENCLOSURES	 *CSK060 Series*  *HGK047 Series*  *HG140 Series*	
HEATING/ PREVENTING CONDENSATION IN LARGE ENCLOSURES	 *CS Series*  *HVL031 Series*  *HGL046 Series*  *CR0270 Series*  *CR130 Series*  *HVI Series*  *DA28455*  *DD084*	

INDOOR WITH DUSTY ENVIRONMENT	OUTDOOR	OUTDOOR HARSH OR WASH-DOWN ENVIRONMENT
 XVA Series	 GSV, GSF Series	 CVO Stainless Steel
 CVE Series  ETE Series  EXW Series	 CVO Series	 CVO Stainless Steel


CSK060 Series


HGK047 Series


HG140 Series


CS Series


HVL031 Series


HGL046 Series


CR0270 Series


CR130 Series


HVI Series


DA28455


DD084

Comparison of Climate Control Technologies

There are many different ways of controlling the climate of an industrial enclosure. Depending on the situation any one of these can be employed to great effect.
The following list details the strengths and weaknesses of each of these technologies:

Filter Fans and Filter Grilles (GSV, GSF and TB)

Benefits	Drawbacks
• Easy installation and maintenance • Low cost • Low power consumption • Small footprint makes for a more aesthetically pleasing design • Quiet to run	• Not suitable for dusty or corrosive environments • Cannot cool below ambient temperature • Needs external control

Air Conditioners (CVE, ETE and CVO)

Benefits	Drawbacks
• Can cool below ambient temperature if sized correctly • Self-regulating to precise set point • Fully programmable controller with provision to trigger external alarm in indoor units • 304 and 316 stainless steel versions available for harsh environments • Removes humidity when turned on	• Can be noisy when running • Large footprint • Heavy

Heat Exchangers (XVA and EXW)

Benefits	Drawbacks
• Air to water unit can cool below ambient temperature if chilled water is available • Self-regulating with mechanical thermostat on air to water unit • 304 and 316 stainless steel versions available for harsh environments • Suitable for dusty environments • Low maintenance • Quiet to run	• Large footprint • Heavy • Air to water needs access to a water supply

Convection Heaters

Benefits	Drawbacks
• Easy installation and maintenance • Low cost • Low power consumption • Small footprint	• Does not distribute heat well • Needs external control

Fan Heaters

Benefits	Drawbacks
• Easy installation and maintenance • Low cost • Low power consumption • Distributes heat evenly within an enclosure	• Needs external control on most units

Ventilation – Selection

Filter Fans – Cosmotec GSV Series

GSV Series comes assembled

- High heat resistant and self-extinguishing ABS plastic housing
- Easy clip-on mounting with screwless terminals
- Long life ball bearing fans
- Efficient filter mats
- IP54 protection rating
- RAL 7035 colour
- Reversible fan motor on all sizes (air in or out)

Kryos³ - Filter Fans and Filter Grilles

Air volume[1)]	Power supply	Dimensions (mm)			Catalogue No.	Thermostat to suit	Filter Grille to suit
m³/h	V - ph - Hz	H	W	D	Air in		
35	230-1-50/60	119	119	57.5	**GSV1000220**	**KTS01141**	**GSF10**
67	230-1-50/60	152	152	75	**GSV1500220**	**KTS01141**	**GSF15**
108	230-1-50/60	204	204	98	**GSV2000220**	**KTS01141**	**GSF20**
190	230-1-50/60	250	250	118	**GSV2500220**	**KTS01141**	**GSF25**
270	230-1-50/60	250	250	99	**GSV2501220**	**KTS01141**	**GSF25**
500	230-1-50/60	318	318	139	**GSV3000220**	**KTS01141**	**GSF30**
700	230-1-50/60	318	318	135	**GSV3001220**	**KTS01141**	**GSF30**
850	230-1-50/60	318	318	160.5	**GSV3002220**	**KTS01141**	**GSF30**

Exhaust Fans – Cosmotec TB Series

TB Series

- Epoxy painted steel frame with RAL 7035 grey colour
- IP44 protection rating (IP54 also available on request)
- High dynamic pressure, efficient air flow
- Long life ball bearing fan with impedance protected motor

TB - Exhaust Fans Top Mounting

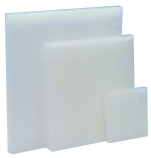
Air volume	Power supply	IP	Dimensions (mm)			Catalogue No.	Thermostat to suit
m³/h	V - ph - Hz		H	W	D		
575	230-1-50/60	44	108	460	380	**TB19000220 [1)]**	**KTS01141**
860	230-1-50/60	44	108	460	380	**TB22000220 [1)]**	**KTS01141**
1450	230-1-50/60	44	160	540	400	**TB25000220 [1)]**	**KTS01141**
2365	230-1-50/60	44	300	600	550	**TB35000220 [1)]**	**KTS01141**

Accessories

Protective fan cover

Grille and filter

Cooling thermostat



Spare filters

Note: [1)] Unimpeded air flow

Indoor Air Conditioners – Selection

- IP54 (seal maintained between air conditioning unit and enclosure) with optional IP55 gasket available on the side mount models
- CFC free R134a refrigerant, long life ball bearing fans and hermetic compressor with integral motor protection
- Side mount: XCB digital controller with display, with provisions to trigger external alarm (except CVE03).
- Top mount: ECB digital controller with display, with provisions to trigger external alarm (except ETE03)
- Factory set at 35° C
- Modbus communications, remote temperature probe and A/C sequencing cables available for side mount models
- Smart Energy Management (SEM) means up to 25% less energy usage than other models
- Full condensate protection
- WAGO fast connection system for quick electrical installation
- Three cut-out sizes across the side mount range makes for quick and easy design and installation

CVE Series mild steel

Indoor Side Mount

Cosmotec CVE Series (Available in 304 or 316 Stainless Steel on Request)

Cooling capacity L35/L35	Power supply	Dimensions (mm)			Catalogue No.
W	V - ph - Hz	H	W	D	
360	230-1-50/60	442.5	324	206	**CVE0300220**
550	230-1-50/60	642	313	223	**CVE05002208000**
850	230-1-50/60	642	313	223	**CVE08002208000**
1500	230-1-50/60	912.5	410	248	**CVE15002208000**
2100	230-1-50/60	1005.5	409	263	**CVE20002208000**
3000	230-1-50/60	1217.5	511	347.5	**CVE30002208000**
3950	400-3-50 / 460-3-60	1217.5	511	347.5	**CVE40002618000**
5600	400-3-50 / 460-3-60	1405.5	554	404	**CVE60002618000**

ETE Series mild steel

Indoor Top Mount

Cosmotec ETE Series (Available in 304 or 316 Stainless Steel on Request)

Cooling capacity L35/L35	Power supply	Dimensions (mm)			Catalogue No.
W	V - ph - Hz	H	W	D	
330	230-1-50/60	180	476	324	**ETE0300220**
600	230-1-50/60	335	600	325	**ETE06012207000**
900	230-1-50/60	335	600	325	**ETE09012207000**
1400	230-1-50/60	450	600	400	**ETE14002207000**
2000	230-1-50/60	450	600	400	**ETE20002207000**
2700	230-1-50/60	480	800	450	**ETE28002207000**
3800	400-3-50 / 460-3-60	480	800	450	**ETE41002617000**
5200	400-3-50/ 460-3-60	550	800	600	**ETE60002617000**

Outdoor Air Conditioners – Selection

Outdoor Side Mount – Cosmotec CVO Series

CVO Series
Zinc plated steel

Self-cleaning condenser coil and concealed XCB electronic thermostat ensure the CVO units operate 24/365 for a reliable solution in outdoor environments. The internal and external circuits are separated ensuring all vital componentry and enclosure interior are free from dust, aggressive air and sprayed water. Consider the CVO range not only in outdoor environments, but also in indoor washdown and harsh areas. Display needed for set point changes.

RAL 7035 Powder Coated Zinc Plated Mild Steel

Cooling capacity L35/L35	Power supply	Dimensions (mm)			
W	V - ph - Hz	H	W	D	Catalogue No.
850	230-1-50/60	634.5	313	235.5	**CVO08002208000**
1500	230-1-50/60	906	410	272	**CVO15002208000**
2100	230-1-50/60	996	409	286	**CVO20002208000**
4000	400-3-50 / 460-3-60	1211	511	356	**CVO40002618000**

CVO Series
Stainless steel

316 Stainless Steel

Cooling capacity L35/L35	Power supply	Dimensions (mm)			
W	V - ph - Hz	H	W	D	Catalogue No.
850	230-1-50/60	634.5	313	235.5	**CVO08002208S316**
1500	230-1-50/60	906	410	272	**CVO15002208S316**
2100	230-1-50/60	996	409	286	**CVO20002208S316**
4000	400-3-50 / 460-3-60	1211	511	356	**CVO40002618S316**

Accessories

Modbus communications

Sequencing

Display for CVO

IP 55 gasket

Indoor Heat Exchangers – Selection

Indoor Air to Air Heat Exchangers – Cosmotec XVA Series

XVA Series
Mild steel

- Maintenance free operation with full condensation protection
- Patented heat exchange core made of aluminium to ensure high efficiency with compact dimensions
- Optional thermostat available on request
- Available in mild steel, 304 or 316 stainless steel

RAL 7035 Powder Coated Mild Steel

Heat transmission	Power supply	Dimensions (mm)			
W/K	V - ph - Hz	H	W	D	Catalogue No.
16	230-1-50/60	410	204	110	**XVA1600320**
35	230-1-50/60	780	252	86	**XVA3500320**
50	230-1-50/60	780	311	86	**XVA5000320**
80	230-1-50/60	1250	311	106	**XVA8000320**
85	230-1-50/60	1250	311	106	**XVA90T0220**

Indoor Air to Water Heat Exchangers – Cosmotec EXW Series

EXW Series
Stainless steel

- Ideal if chilled water is available
- Mechanical thermostat and solenoid valve integrated for superior control
- Maintenance free operation with full condensation protection
- Available in mild steel, 304 or 316 stainless steel

RAL 7035 Powder Coated Mild Steel (Available in 304 or 316 Stainless Steel on Request)

Cooling capacity L35/W10	Power supply	Dimensions (mm)			
W	V - ph - Hz	H	W	D	Catalogue No.
870	230-1-50/60	404	308	114	**EXW0600220V**
2200	230-1-50/60	925	400	205	**EXW1500220V**
3100	230-1-50/60	925	400	205	**EXW2500220V**
6700	230-1-50/60	1101	501	300	**EXW5000220V**
12500	230-1-50/60	2000	800	400	**EXWA000220V**
17500	230-1-50/60	2000	800	600	**EXWA500220V**
25000	230-1-50/60	2000	800	600	**EXWB000220V**

Heaters – Selection

Convection Heaters – Stego HGK, HG140, CS060/CSK060 Series

HGK047 Series

- Efficient design and operation
- Fast heat up time with heat distributed evenly above and below the unit
- Easy DIN rail mounting
- Multi-voltage operation, 120-240V AC/DC

Heating capacity @ 20°C	Power supply	Dimensions (mm)			Catalogue No.	Thermostat to suit
W	V - ph - Hz	H	W	D		
10	120-240V AC/DC	50	25	50	**HGK04700**	**KTO01140**
20	120-240V AC/DC	60	25	50	**HGK04701**	**KTO01140**
30	120-240V AC/DC	70	25	50	**HGK04702**	**KTO01140**
45	120-240V AC/DC	109	70	60	**HG14003**	**KTO01140**
60	120-240V AC/DC	184	70	60	**HG14005**	**KTO01140**
75	120-240V AC/DC	184	70	60	**HG14006**	**KTO01140**
100	120-240V AC/DC	110	60	90	**CS06010000**	**KTO01140**
150	120-240V AC/DC	150	60	90	**CS06020000**	**KTO01140**

CSK060 Series

Accessories

Heating thermostat
(temperature control)

Mechanical hygrostat
(humidity control)

Electronic hygrotherm
(temperature and humidity control)

HG140 Series

Heaters – Selection

Fan Heaters – Stego CS028, CSL028, HVL031, HGL046, HVI030 and CS130 Series

CSL028 Series

Heating capacity @ 20°C	Power supply	Dimensions (mm)			Catalogue No.	Thermostat to suit
W	V - ph - Hz	H	W	D		
100	230V AC 50/60 Hz	80	112	47	**HVL03102**	**KTO01140**
150	230V AC 50/60 Hz	75	65	90	**CS02800000**	**KTO01140**
200	230V AC 50/60 Hz	119	151	47	**HVL03113**	**KTO01140**
250	230V AC 50/60 Hz	90	85	111	**CSL028110001**	**KTO01140**
300	230V AC 50/60 Hz	119	151	47	**HVL03114**	**KTO01140**
400	230V AC 50/60 Hz	90	85	111	**CSL028100001**	**KTO01140**
500	230V AC 50/60 Hz	169	65	90	**HVI03084000**	**KTO01140**
550	220-240V AC 50/60 Hz	165	100	128	**CR02701000**	**N/A**
600	230V AC 50/60 Hz	169	85	111	**HVI03083000**	**KTO01140**
700	230V AC 50/60 Hz	169	85	111	**HVI03082000**	**KTO01140**
950	230V AC 50/60 Hz	99	160	182	**CR130510**	**N/A**
1200	230V AC 50/60 Hz	182	160	120	**CS13060000**	**N/A**

HVL031 Series

HVI Series

Accessories

Heating thermostat
(temperature control)

Mechanical hygrostat
(humidity control)

Electronic hygrotherm
(temperature and humidity control)

CR0270 Series

Pressure Compensation and Drainage Devices

DA084

DA284

DA28455

DD084

Environmental temperature and humidity changes can cause pressure differentials and condensation to form inside an otherwise hermetically sealed enclosure. This can be due to the change between daytime and night time temperature, changes in weather and/or the equipment inside operating under varying load conditions and heating up or cooling down.

This is also known as "sweating" and any electrical enclosure is susceptible to this effect, regardless of ingress protection rating. Even enclosures with an IP66/67/68 rating are not gas tight. Condensation inside an enclosure can cause short circuits and corrosion that can interfere with the proper functioning of the equipment installed inside the enclosure. In the longer term, it may cause permanent damage.

Pressure compensation and drainage devices prevent condensation damage to the installed equipment by expelling any accumulated condensation and water droplets while still maintaining a maximum IP66 rating. Simple to install, these devices should be fitted to any enclosure subject to rapid environmental changes and to every enclosure mounted outside.

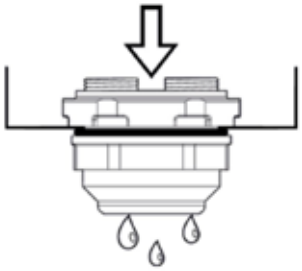
- Perfect for small enclosures, pressure compensation devices equalise pressure in the enclosure and prevent moisture build up
- Also available is a drainage device capable of expelling 200 ml/hr of water in situations where moisture/liquid build up is unavoidable
- Satisfy requirements of AS3000.2018 clause 1.7.2

Pressure Compensation Devices

Material	Mounting	Protection rating	Packing unit	Catalogue No.
Plastic	PG 29 thread	IP55	2 pieces	**DA08400**
Plastic	M40 x 1.5 thread	IP66/X9K	2 pieces	**DA28400**
Plastic	M12 x 1.5 thread	IP66/X9K	2 pieces	**DA28406**
303 stainless steel	M40 x 1.5 thread	IP66/X9K	1 piece	**DA28455**
303 stainless steel	M12 x 1.5 thread	IP66/X9K	1 piece	**28402001**

Drainage Device

Material	Mounting	Protection rating	Packing unit	Catalogue No.
Plastic	M50 x 1.5 thread	IP66/67/69K	1 piece	**DD084**



Mounting position and operating principle of drainage device

Regulating Devices – Selection

Thermostats – Stego Regulating Devices

When you have selected the correct heating and cooling products for your enclosure the appropriate temperature and humidity controls are recommended. KTO, KTS, FZK, ZR, MFR and ETF thermostats and control products are recommended for use with all heating and ventilation products to maintain your desired temperature inside your enclosure. Thermostats will also extend the life span of ventilation products and reduce the need to clean/change filters.

KTS011 KT0011

KT0011/KTS011 - Compact Thermostats

Contact rating	Temp. range	Application	Dimensions (mm)			Catalogue No.
			H	W	D	
1 N/C 10A 250V AC	0 to + 60° C	Heating	60	33	43	**KT001140** [1]
1 N/O 10A 250V AC	0 to + 60° C	Cooling	60	33	43	**KTS01141** [1]

ZR011

ZR011 - Dual Thermostats (Two Thermostats in One Casing)

Contact rating	Temp. range	Application	Dimensions (mm)			Catalogue No.
			H	W	D	
1 N/C, 1 N/O 10A 250V AC	0 to + 60° C	Heating & cooling	67	50	46	**ZR01172** [2]

FZK011

FZK011 - Mechanical Thermostats

Contact rating	Temp. range	Application	Dimensions (mm)			Catalogue No.
			H	W	D	
1 C/O N/C 10A 250V AC 1 C/O N/O 5A 250V AC	+ 5 to + 60° C	Heating & cooling	67	50	38	**FZK01100** [3]

MFR012

MFR012 - Mechanical Hygrostat

Contact rating	Temp. range	Application	Dimensions (mm)			Catalogue No.
			H	W	D	
1 C/O 5A 250V AC	35 to + 95% RH	Anti-condensation	67	50	38	**MFR012** [4]

ETF 012 - Electronic Hygrotherm

Features:

- Temperature and humidity adjustable
- Wide voltage range
- LED status indicator
- Operating temperature down to – 40 °C

ETF001

The option of an external sensor enables precise point measurements

Contact Rating	Setting Range (Temp.)	Setting Range (Humidity)	Dimensions			External Sensor	Catalogue No.
			H	W	D		
1 N/O + 1 N/C 100-240V AC	0 to +60 °C	50 to 90% RH	77	60	43	Yes	**ETF01231000**
1 N/O + 1 N/C 100-240V AC	0 to +60 °C	50 to 90% RH	77	60	43	No	**ETF01230000**

Notes:
[1]) Contacts change state when the set temperature is reached
[2]) Independant contacts change state when the set temperature is reached
[3]) C/O contact change state when the set temperature is reached
[4]) Contacts change state when the set humidity range is reached

Example

A customer requires cooling for an indoor non-washdown floor standing mild steel enclosure in a clean environment. In a brief discussion with the customer you were able to ascertain that the customer wanted to cool from 50°C ambient down to an internal enclosure temperature of 35°C,
the enclosure dimensions were 2000x1200x500 mm (HxWxD) and it contained some VSDs and other electrical equipment.

From this we can tell that we can safely use an indoor unit and it will need to be an air conditioner as we are cooling below ambient.

	Indoor
Cooling to ambient temperature	GSV, TB, XVA
Cooling below ambient temperature	CVE, ETE, EXW

CVE, ETE, EXW

Further questions that need to be asked are:

- What is the location of the enclosure in the room ie. Is it next to another cabinet? (Answer: Base + Back Covered)
- What is the watts loss of the components inside the enclosure? (Answer: 1200 W)
- Is there any additional information or application drawings that could be helpful? (Answer: No)
- Do you want a side mount or top mount unit?

By filling out the Cooling Information Form the customer can provide all of the relevant details in a concise format and greatly speed up the process of finding the correct climate control solution. By using the Cosmotec cooling software and noting the answers to the questions above we can now recommend a CVE20002208000 side mount air conditioner or a ETE20002207000 top mount air conditioner.

Why NHP

While our customers' challenges may be complex, their ultimate goal is simple: run a profitable, safe and sustainable operation.

At NHP we're committed to servicing the needs of our customers. With close to 50 years of experience in the electrical and engineering industry, our specialist teams work collaboratively to design and deliver solutions to maximise the success of your project.

We bring together internationally recognised automation and motor control products with local knowledge and expertise to deliver best practice services from concept design through to installation and after-sales service, including project management.

A partnership with NHP will provide you with:

- 24/7/365 Emergency service
- NHP project management
- Extensively trained and qualified service technicians
- National service network
- Extensive local stockholding
- Customised manufactured solutions

Glossary

Heat conduction - Heat is transported by matter, without the matter itself being moved. The energy is passed from particle to particle. An example of this is a high temperature drive placed touching a sensitive component.

Heat convection - Energy flows with the matter. The transport medium, e.g. a liquid or gas, takes up energy in the form of heat and dissipates energy as heat. An example of this is ventilation.

Heat radiation - Heat is passed from one body to another in the form of radiation energy, without a medium material. An example of this is heat from the sun.

Maximum ambient temperature – The maximum temperature that the air directly outside the enclosure can reach. In outside locations this can be found by using the Bureau of Meteorology website.

Enclosure temperature request – The temperature at which you wish to maintain inside your enclosure. It should be sufficiently low such that sensitive devices do not suffer from high temperatures, but still above the dew point for your region. For example if there are sensitive devices inside that de-rate after 50 degrees, the enclosure temperature request should be set to under 50 degrees.

Dew point - The dew point is the temperature where water vapor inside an enclosure begins to turn into liquid water faster than it evaporates. Consequently, as the temperature reduces below the dew point liquid water builds up on the inner surface of the enclosure. A rapid change in pressure (temperature) will result in dew forming – even in IP66 enclosures!

Relative humidity – A high relative humidity indicates the dew point is close to the current air temperature. In high relative humidity conditions there is a larger chance of water vapor developing inside and enclosure. Anti-condensation heaters reduce the relative humidity level.

Heat transfer coefficient – A measure of how many watts of energy a material can release energy in W/m^2. For example, mild steel emits 5.5 W/m^2 which means that a 1 m^2 mild steel sheet of metal can release 5.5 Watts of heat without need for any climate control. Other common enclosure material types have emissivity as follows: Plastic – 3 W/m^2, Stainless Steel – 4 W/m^2, Aluminium – 7 W/m^2.

Enclosure placement - A major part in determining heat rise in enclosures is surface area. In order to minimise the temperature inside the enclosure the surface area must be large. Placing enclosures directly side by side will cause the enclosure to rise in temperature – free standing enclosures are always the safest option.

Absorption coefficient – Outdoor enclosures will always have some level of extra heat from the Sun. This changes according to the colour of the enclosure and can be measured by the absorption coefficient in m^2K/W. Common absorption coefficients include: White, light blue - 0.0015 m^2K/W, Grey, Yellow – 0.0026 m^2K/W, Red, Blue, Brown – 0.03 m^2K/W and Black – 0.036 m^2K/W. This means that if a black and white object of the same size and material are subject to the same sunlight, the black object will be hotter.

Total heat created due to components/continuous stray power – Depending on the efficiency of the components inside and industrial enclosure, there will always be some level of 'watts loss'. The more high powered the components are, the more heat they will produce. For example if a 40kW VSD is only 95% efficient, then 2kW of the energy it produces will be released as heat rather than power to the motor. The total heat created by a particular component should be found on its data sheet.

316 Grade stainless steel - Type 316 stainless steel has superior corrosion resistance as compared to 304 stainless steel when exposed to many types of chemical corrodents such as sea water, brine solutions, and the like.

Impeded/unimpeded air flow – When using a filter fan the quoted air flow will be 'unimpeded'. Put simply this is the air flow through free air – no components or filters lowering the air flow. If another GSV grill and filter is added the air flow throughout the enclosure will be lowered and this is referred to as the 'impeded' air flow.

L35/L35 cooling capacity – The performance of an air conditioner changes depending on the temperature differential between ambient and internal air temperatures. Cosmotec air conditioners are rated at L35/L35, or in other words, L35 located before the backslash is the internal temperature of the enclosure (35ºC) and the second L35 is the ambient. This is a more realistic rating than some competitors may give, such as L35L50.

COOLING | INFORMATION FORM

CUSTOMER DETAILS			
Account Number		Company Name	
Company Contact		Contact Number	
Email Address		NHP Sales Representative	
Date			

Please complete this form and send to your sales representative or local NHP branch for a customised climate control solution.

DETAILS

APPLICATION		TEMPERATURE		ENCLOSURE DIMENSIONS	
Indoor	☐	Enclosure temperature request (°C):		Width (mm)	☐☐☐☐☐
Outdoor	☐	Max ambient temperature (°C)		Height (mm)	☐☐☐☐☐
Area application will be located: (eg. Ballarat, Vic)				Depth (mm)	☐☐☐☐☐

LOCATION		ENCLOSURE MATERIAL		ENCLOSURE COLOUR	
Base covered	☐	Mild steel	☐	White, light blue	☐
Back covered	☐	Aluminium	☐	Grey, yellow	☐
Base + back covered	☐	Stainless steel	☐	Red, blue, brown	☐
Base + side covered	☐	Plastic	☐	Black	☐
Base back + side covered	☐			Other	☐
Base back side + side covered	☐				

TOTAL HEAT CREATED DUE TO COMPONENTS: ☐☐☐☐☐ **W (Watts loss)**

Additional Information Applicable / Application Drawing:

To fill the order form in online scan the QR code.

HEATING | INFORMATION FORM

CUSTOMER DETAILS			
Account Number		Company Name	
Company Contact		Contact Number	
Email Address		NHP Sales Representative	
Date			

Please complete this form and send to your sales representative or local NHP branch for a customised climate control solution.

DETAILS

APPLICATION		TEMPERATURE		ENCLOSURE DIMENSIONS	
Indoor	☐	Lowest ambient temperature (°C):		Width (mm)	☐☐☐☐☐
Outdoor	☐	Desired internal temperature (°C)		Height (mm)	☐☐☐☐☐
Area application will be located: (eg. Ballarat, Vic)				Depth (mm)	☐☐☐☐☐

LOCATION		ENCLOSURE MATERIAL	
Base covered	☐	Mild steel	☐
Back covered	☐	Aluminium	☐
Base + back covered	☐	Stainless steel	☐
Base + side covered	☐	Polyester	☐
Base back + side covered	☐		
Base back side + side covered	☐		

Additional Information Applicable / Application Drawing:

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