



# FAN COIL UNIT SELECTION PROGRAM

## User Manual

Version 4.1; February 2017

3.1; Updated information relating to temperature limits.

3.2; Addition of useful tips and troubleshooting

**4.1; Multiple updates of the program including: -**

Cooling Water flow adjustment added

Pagination and Filtering options added

Filter Pressure Loss value now shown (when fitted)

Additional Wet Coil Air Resistance allowance now shown

Project Name and Client Name length extended

Duty Tolerance increased slightly allowing extra options

Minimum Water Velocity reduced allowing more options

Printing of a single zone selection as a PDF now possible

Copying of a project now possible to save under another name

Copying of a zone now possible to save under another zone

Web-links to the website for documentation of a product

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# FAN COIL UNIT SELECTION PROGRAM - User Manual

While all care has been taken to ensure correct operation of the Fan Coil Selection program, Temperzone Ltd. offers no warranty as to the performance, whether implied or stated, or accuracy of the program, associated data files or documentation.

Neither Temperzone Ltd nor Temperzone Australia Pty Ltd shall in any event be liable for any damages, direct or indirect, arising or resulting from the correct or incorrect use or application of this program, documentation or data files.

## Introduction

The Fan Coil Selection program has been written in conjunction with Temperzone engineers to simplify the task of choosing a chilled or hot water fan coil or air handling unit. The program has been designed to be simple and intuitive to use. It is a selection tool, not an engineering tool. Anyone who deals frequently with the selection of fan coil units will find the program will save hours of repetitive calculations.

The user should have some experience with specifying fan coil units since the program's selections are only recommendations. The user then calls upon his/her specialised knowledge to select the most appropriate fan coil unit for the job.

The program is freely available to anyone who may have a use for it.

The program is web based and simply requires connection to the internet and a Microsoft account to log in to. Provision has been made with a link to open a Microsoft account should the user not already have one.

## Program Features:

- Easy to follow layout.
- Internet web based program accessible from temperzone's web site [www.temperzone.biz](http://www.temperzone.biz) .
- Full and summary printouts.
- Over 250 units to select from.
- On-line prompt information at every step.
- Ability to export selection data to Excel spreadsheet or PDF format to enable saving and/or printing.
- Both ducted and under ceiling units included.
- Includes units containing PSC and EC fan motors and multizone EC fan motor units.
- Always current - no requirement to personally update.

## Program Methodology:

This program uses a chilled water and low pressure hot water rifle tube heat transfer coil selection program running in the background to establish the cooling and heating duty performances. The heat transfer coil program used has been the basis of temperzone computer coil selections for over 35 years (before that it was slide rules and calculators) and is a trusted selection program that is used with great confidence.

The program makes multiple selections using the entered data and iterates until it finds all the selections that are close to or exceed the requirements.

It is important to be aware that the entered LWT (Leaving Water Temperature) that is entered is used as a starting point in the heat transfer coil calculations but the actual LWT that achieves the performance requirements may well be different unless the LWT parameters are specifically set or limited such that it is not allowed to be any other figure. This will of course limit the available options of unit selections. Refer '**Selection Conditions - Entering Data Parameters**' later in the manual.

## Getting Started

### System Requirements

For the program to run one of the following browsers should be used;

**Internet Explorer 10 or later, Google Chrome, Safari or Firefox.**

The program will not run on earlier versions of Internet Explorer.

### Log In

To Log on to the program visit our web site [www.temperzone.biz](http://www.temperzone.biz), select the country in which you are located in (Australia or New Zealand - for Asian and Pacific Island regions use the New Zealand site although it makes no difference to the selections).

Find the tab "Selection Programs" and on the drop down menu select FCUSP (Fan Coil Unit Selection Program), this will take you to the Login screen.

If you have a Microsoft Account or have used the program previously than just click on the 'Microsoft' button

If you do not have a Microsoft Account then you will be invited to set one up which will take you just a few minutes on first time access. Please ensure all the information has been completed to activate this account.



Log in

### Log in.

This application requires the user to log in using their Microsoft account. Click the Microsoft button to log in.

A Microsoft account is what you use for almost everything you do with Microsoft devices and services. With one sign in, you can use Skype, use your Office 365 subscription, store and access your photos, videos, and documents on OneDrive.

Your account consists of an email and password, plus your profile info, privacy settings, and communications preferences.

Log in Service.

Microsoft

You will then be taken to the Projects screen which will list your previous projects, empty of course on your first visit apart from the column headings.



New Project

Tony King Log off

## Projects

Project Name

Client Name

Action

## Projects

The common headings will appear as: -

**Project Name**                      **Client Name**                      **Action**

Any previously saved projects will be listed here thus;

Auntie Mary's Hotel              ACME A/C                      Edit/Delete/Excel/PDF

As the number of projects grows so the list of projects will be spread across several pages and can be filtered to find those of a particular project name or client name. The page numbers will appear across the screen.

There is also a 'New Project' button to use if you are not going to go back to an existing previously selected project and are starting afresh.



New Project

Help

Tony King    Log off

## Projects

« 1 »

Filter:

Project Name	Client Name	Action			
Americas Cup Changing Rooms	Acme A/C	Edit	Delete	Excel	PDF
Aunty Mary's Hotel	ACME A/C	Edit	Delete	Excel	PDF
Another Test	ACME A/C	Edit	Delete	Excel	PDF

## Existing Project

Four options are available: -

- **Edit;** Takes you to the 'Project Detail' page showing a list of zones on that project allowing selection of any of the existing zones to be re-selected with new/changed data or a new additional zone to be added.
- **Delete;** A complete project may be deleted if desired. A warning box will appear so that deletion cannot be done accidentally - once deleted the selection information is irretrievable.
- **Excel;** Previous selections made and saved will appear on an excel sheet that can be printed, saved or transferred as desired.
- **PDF;** Previous selections made and saved will appear in PDF format that can be printed, saved or transferred as desired.

## New Project

Press the New Project button and you will be required to enter a project name and a client name.

Once this information is entered, you will be taken to the 'Project Detail' page.

## Project Detail

Once at the Project Detail screen, the common headings will appear as: -

Zone Description	Engineer	Unit Name	Fan Speed	Action
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Any previously saved projects will be listed here thus;

Downstairs Toilet	Mick Jagger	IMD135Y 4/1	1500RPM	Insert/Duplicate/Copy/Edit/Delete
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Tony King Log off

## Project Detail

Project	Aunty Mary's Hotel	Client	ACME A/C	
Zone Description	Engineer	Unit Name	Fan Speed	Action
Downstairs Toilet	Mick Jagger			Insert Duplicate Copy Edit Delete

Five options are then available: -

- **Insert;** Allows for an extra zone to be inserted above the zone line currently selected.
- **Duplicate;** Duplicates the existing selection completely which can then be worked on as an alternative selection for the same zone.
- **Copy;** Allows for a selected zone detail to be copied to one or many other zones that have already been created. This option saves the user having to re-enter repetitive data time and again.
- **Edit;** Takes you to the particular zone details page showing allowing the data of the existing zones to be viewed, re-selected with new/changed data or a new additional zone to be added.
- **Delete;** An individual zone can be deleted. A warning box will appear so that deletion cannot be done accidentally - once deleted the selection information is irretrievable.

There are four other buttons at the top of the screen page.

- This button takes you back to the previous screen, do not try and use the forward and return arrows at the very top of your screen as you will cause an error and need to reload the program.
- **Excel;** Creates an Excel worksheet that reports on the zones that make up the project. The Excel workbook can be printed and/or saved.
- **PDF;** Creates a summary report of the project in PDF format. The PDF can be printed and/or saved.
- **New Zone;** Creates a new zone that forms part of the project. (Refer note below about Zone Templates). A Zone name will need to be assigned.

## Zone Template

When creating a new zone, the data that makes up the new zone is extracted from a zone template. The zone template is a nominated zone that has already been created and added to the project. By default the first zone created is the zone template.

You can change the zone template by editing another zone and ticking the zone template at the top of the page. If you change the data on an existing zone template, then thereafter all newly created zones will reflect the change.

## New Project Zones

The Project Name, the Client Name and the Engineer's Name (presumably your name) fields will already be populated.

These can be changed at any time using the 'Change' prompt next to each text box.

Enter a Zone name and using the Tab key, tab through the rest of the required entries.

The screenshot shows the temperzone software interface. At the top left is the logo for temperzone QUALITY AIR CONDITIONING. To the right are buttons for Save, Cancel, and Help. Further right is a Project Template checkbox and the user name Tony King with a Log off link. The main form contains the following fields:

- Project: Aunty Mary's Hotel (with a 'change' link)
- Zone: Downstairs Toilet (with a 'change' link)
- Unit Type: Ducted Cooling + Heating (Water) (with a dropdown arrow)
- Client: ACME A/C (with a 'change' link)
- Engineer: Mick Jagger (with a 'change' link)
- Motor options:  Induction Motor,  EC Motor,  Multizone Motor
- Min Static Pressure: 50 Pa (with a 'With Filter (clean)' checkbox and an 'Allow for Wet Coil' checkbox)
- Air Flows: Return (200 l/s), Fresh (50 l/s), Total (250 l/s)

**Unit type** can be selected from a drop down menu; options include: -

Ducted Cooling + Heating (Water) (this is the default)

Ducted Cooling Only

Ducted Heating Only (Water)

Ducted Cooling + Heating (Electric)

Under Ceiling Only

Under Ceiling Cooling + Heating (Water)

**Motor type** can be selected or de-selected as required; options include: -

Induction Motor (standard units with induction motors can be selected from, IMDL, IMD, IJD, GMW)

EC Motor (IMD and IMDL 'Y' models may be selected from)

Multizone (IXDL 'Y' model units with multiple separated zones may be selected from)

**Air Flows and Minimum static pressure** (resistance) external to the unit may be entered next.

Return and Fresh Air are entered separately, fresh Air may well be zero but entering too much fresh air, beyond about 20% will probably result in no units being able to be selected. Higher fresh air requirements need the help of temperzone engineering to make selections.

**Filter** (clean) can be selected or de-selected (default is selected). If selected this makes an allowance for some static resistance therefore the fan speed requirements may be higher and options of units available may be reduced. If de-selected then filter resistances need to be added to the external static pressure entered.

When selected the value of the resistance will be shown.

**Wet Coil Surface** can be selected or de-selected (default is de-selected). All temperzone published fan performance is based on dry surface coils but if it is desired to make some allowance for the coil operating with a wet surface then ticking this check box will make an allowance for this and show how much extra resistance has been allowed for.



## Selection Conditions - Entering Data Parameters

The desired conditions, requirements and parameters should now be entered using the Tab key to move from one data box field to another. Entry data options are: -

### Summer/Cooling

The screenshot shows the temperzone software interface. At the top left is the logo for 'temperzone QUALITY AIR CONDITIONING'. Navigation buttons include 'Save', 'Cancel', and 'Help'. Project details include: Project: Aunty Mary's Hotel, Zone: Downstairs Toilet, Unit Type: Ducted Cooling + Heating (Water). Client: ACME A/C, Engineer: Mick Jagger. Motor options: Induction Motor, EC Motor, Multizone Motor. Min Static Pressure: 50 Pa. Checkboxes for 'With Filter (clean)' and 'Allow for Wet Coil' are present.

Below the project details are two panels for data entry:

- Summer Panel (Blue Header):**
  - Total Duty: 4.0 kW
  - Sensible Duty: 3.0 kW
  - EWT: 9.0 °C
  - LWT: 15.0 °C
  - Allowed LWT Range: min 13.0 °C, max 19.0 °C
  - Return Air: DB 23.0 °C, WB 17.0 °C, RH 55.1 %, Min LADB 10.0 °C
  - Fresh Air: DB 30.0 °C, WB 22.0 °C, RH 50.0 %
  - Mixed Air: DB 24.4 °C, WB 18.1 °C, RH 54.5 %
- Winter Panel (Red Header):**
  - Duty: 2.0 kW
  - EWT: 80.0 °C
  - LWT: 60.0 °C
  - Allowed LWT Range: max 75.0 °C, min 50.0 °C
  - Return Air: DB 21.0 °C
  - Fresh Air: DB 8.0 °C
  - Mixed Air: DB 18.4 °C
  - Max LADB: 35.0 °C

Total Duty; Default Is 0kW, Range allowed is 1 to 230kW.

Sensible Duty; Default Is 0kW, Range allowed is 1.6 up to the Total kW Duty entered.

EWT (Entering Water Temperature); Default is 6.0°C; Range allowed is 4 - 12°C.

LWT (Leaving Water Temperature); Default is 12.0°C; Range allowed is dependant on EWT entered.

Allowed LWT Range Minimum and Maximum; Default is 10.0°C and 16.0°C respectively. Allows some adjustment of what is to be allowed, setting both fields to the same LWT locks the LWT to only one temperature - required for some projects where EWT and LWT are both to be fixed. Raising these figures will allow selections with lower water flows and larger temperature differences. The ranges that can be selected is dependant on and limited by what EWT and LWT are selected in the first place.

While some temperature and humidity limits are set in stone others are adjusted by other entered data.

Return Air DB (Dry Bulb); Default is 23.0°Cdb, Range allowed is 15.0 to 35.0°Cdb

Return Air WB (Wet Bulb); Default is 17.0°Cdb, Range allowed is dependent on dry bulb and RH limits.

Return Air RH (Relative Humidity); Default is 55.1%, Range allowed is 30 to 100%

Fresh Air DB (Dry Bulb); Default is 30.0°Cdb, Range allowed is 0.0 to 50.0°Cdb

Fresh Air WB (Wet Bulb); Default is 22.0°Cdb, Range allowed is dependent on dry bulb and RH limits.

Fresh Air RH (Relative Humidity); Default is 55.1%, Range allowed is 20 to 100%

When the Dry and Wet bulb temperatures are entered the Relative Humidity will automatically be entered to match. Changing the Relative Humidity later will change the entered Wet bulb temperature accordingly.

Minimum LADB (Leaving Air Dry Bulb); Default is 10.0°C Range allowed is from 7 to temperature entered for Dry Bulb for fresh or return air.

Mixed Air temperatures are the result of entered data and cannot be entered in their own right.

## Winter/Heating

Summer				Winter			
Total Duty	4.0 kW	Sensible Duty	3.0 kW	Duty	2.0 kW		
EWT	9.0 °C	Allowed LWT Range		EWT	80.0 °C	Allowed LWT Range	
LWT	15.0 °C	min	max	LWT	60.0 °C	max	min
		13.0 °C	19.0 °C			75.0 °C	50.0 °C
Return Air		Fresh Air	Mixed Air	Return Air		Fresh Air	Mixed Air
DB	23.0 °C	30.0 °C	24.4 °C	DB	21.0 °C	8.0 °C	18.4 °C
WB	17.0 °C	22.0 °C	18.1 °C				
RH	55.1 %	50.0 %	54.5 %				
Min LADB	10.0 °C			Max LADB	35.0 °C		

Duty; Default Is 0kW, Range allowed is 0.5 to 250kW.

EWT (Entering Water Temperature); Default is 80.0°C, Range allowed is 40 - 90°C.

LWT (Leaving Water Temperature); Default is 60.0°C, Range allowed is dependant on EWT entered.

Allowed LWT Range Minimum and Maximum; Default is 75.0°C and 50.0°C respectively. Allows some adjustment of what is to be allowed, setting both fields to the same LWT locks the LWT to only one temperature - required for some projects where EWT and LWT are both to be fixed. Raising these figures will allow selections with lower water flows and larger temperature differences. The ranges that can be selected is dependant on and limited by what EWT and LWT are selected in the first place.

Return Air DB (Dry Bulb); Default is 21.0°Cdb, Range allowed is 15.0 to 35.0°Cdb

Fresh Air DB (Dry Bulb); Default is 8.0°Cdb, Range allowed is -10.0 to 35.0°Cdb

**NOTE; If a unit is on Full Fresh Air then do not go below zero. Entering air temperature below zero could freeze the water inside the heating coil if for any reason the heating medium and/or the water pump has been turned off. Water frozen within the pipes will burst a coil tube resulting in a water leak.**

Minimum LADB (Leaving Air Dry Bulb); Default is 35.0°C Range allowed is from 20 to 55°C.

Mixed Air temperatures are the result of entered data and cannot be entered in their own right.

## Things to Do

Should this appear below the entered data it will be indicating what entry data may be incorrect or missing pointing you to correct this before any selections can be made. The instruction should be clear enough to understand and must be corrected before any unit selections will appear.

In the example below the sensible cooling duty has been deliberately set low at 1.0kW and the heating duty at zero.

Summer				Winter			
Total Duty	4.0 kW	Sensible Duty	1.0 kW	Duty	0.0 kW		
EWT	9.0 °C	Allowed LWT Range		EWT	80.0 °C	Allowed LWT Range	
LWT	15.0 °C	min	max	LWT	60.0 °C	max	min
		13.0 °C	19.0 °C			75.0 °C	50.0 °C
Return Air		Fresh Air	Mixed Air	Return Air		Fresh Air	Mixed Air
DB	23.0 °C	30.0 °C	24.4 °C	DB	21.0 °C	8.0 °C	18.4 °C
WB	17.0 °C	22.0 °C	18.1 °C				
RH	55.1 %	50.0 %	54.5 %				
Min LADB	10.0 °C			Max LADB	35.0 °C		

### Things to do:

- Summer Sensible Duty (based on the current total duty) feasible value must not be less than 1.6. The range is 1.6 - 4.0 Rule:  $\geq (\text{totalDuty} == 0) ? 1 : \text{Math.max}(1, \text{totalDuty} * .4)$
- Winter Duty must not be less than 0.5. The range is 0.5 - 250.0

Consider these 'things to do' as warnings of incorrect or missing entries.

Many of the entry fields will have information of acceptable ranges available if you hover your mouse over the entry field. This will be helpful in correcting incorrect fields.

Summer			
Total Duty	4.0 kW	Sensible Duty	3.0 kW
EWT	9.0 °C	Allowed LWT Range	
LWT	15.0 °C	min	max
		13.0 °C	19.0 °C
		Air	
DB	23.0 °C	30.0 °C	24.4 °C
WB	17.0 °C	22.0 °C	18.1 °C
RH	55.1 %	50.0 %	54.5 %
Min LADB	10.0 °C		

Dry Bulb Return Air Temperature range is 15.0 - 35.0

## Proposed Units

If the data entered has been accepted and 'Things To Do' as described above is not present then one or more unit selections will appear in a list below this heading and on the same screen with performance details and achieved results.

Ticking the check-boxes of the unit selection and the most suitable speed selection that best satisfies your requirements will show the performance in more detail below this list for both Cooling and Heating cycles.

Only units within +/- 15% of the desired Sensible Duty will be selected. The total duty may exceed this tolerance in either direction.

In some Instances it is important to achieve a specific water flow rate and this is possible using the Water Flow Adjustment buttons to incrementally increase or decrease the flow until the desired flow is achieved.

Water Flow Adjustment:	Increase	Decrease
------------------------	----------	----------

Note that the result may or may not be exactly the figure desired but very close to it will be achieved.

Of course in the process of increasing and decreasing the water flow, unit selections may appear or disappear as they become suitable or unsuitable and possibly all selections may disappear if none is suitable for the desired flow.

Proposed Units		Water Flow Adjustment: <input type="button" value="Increase"/> <input type="button" value="Decrease"/>									
Select	Unit Name	Total Cooling (kW)	Sensible Cooling (kW)	Cooling LWT (°C)	Cooling Water Flow (l/s)	Heating Capacity (kW)	Heating LWT (°C)	Heating Water Flow (l/s)	Air Flow (l/s)	Face Velocity (m/s)	W x L x H (mm)
<input checked="" type="checkbox"/>	IMDL 60-M 3/1	4.1	3.0	13.5	0.22	5.5	50.1	0.04	250	1.7	930 x 640 x 250
<input type="checkbox"/>	IMDL 60-H 3/1	4.1	3.0	13.5	0.22	5.5	50.1	0.04	250	1.7	930 x 640 x 250
<input type="checkbox"/>	IMDL 60Y-3/1	4.1	3.0	13.5	0.22	5.5	50.1	0.04	250	1.7	930 x 640 x 250
<input type="checkbox"/>	IMDL 90-M 3/1	3.6	3.0	15.9	0.13	7.7	50.9	0.06	250	1.0	1185 x 680 x 260
<input type="checkbox"/>	IMDL 90-H 3/1	3.6	3.0	15.9	0.13	7.7	50.9	0.06	250	1.0	1185 x 680 x 260

Unit Name: **IMDL 60-H 3/1** Unit Dimension (W x L x H): **930 x 640 x 250**

Winter Leaving DB temperature is 36.2 °C which is greater than Max LADB

Select	Fan Speed	Sound Level db(A)	External Static (Pa)
<input checked="" type="checkbox"/>	High	50	56

**Cooling**

	Required	Actual
Total Cooling Duty (kW)	4.0	4.1
Sensible Cooling Duty (kW)	3.0	3.0
Entry Air Dry Bulb (°C)	24.4	24.4
Entry Air Wet Bulb (°C)	18.1	18.1
Entry Air Relative Humidity (%)	54.5	54.5
Air Flow (l/s)	250	250
Minimum Leaving Air DB (°C)	10.0	14.5
Entering Water Temperature (°C)	9.0	9.0
Leaving Water Temperature (°C)	15.0	13.5
Water Flow (l/s)	--	0.22
Water Pressure Drop (kPa)	--	28.2

**Heating**

	Required	Actual
Total Heating Duty (kW)	2.0	5.5
Entry Air Dry Bulb (°C)	18.4	18.4
Air Flow (l/s)	250	250
Maximum Leaving Air DB (°C)	35.0	36.2
Entering Water Temperature (°C)	80.0	80.0
Leaving Water Temperature (°C)	60.0	50.1
Water Flow (l/s)	--	0.04
Water Pressure Drop (kPa)	--	9.6

**Sound Power Levels (SWL) db**

Octave Bank Frequency (HZ)	125	250	500	1000	2000	4000
dB(A)	125	250	500	1000	2000	4000
Supply	50	51	53	50	43	38

JIS 8616 with 1m of Insulated Ducting

Indoor Fan Speed:	High
External Static Pressure (Pa):	56
Face Velocity (m/s):	1.7
Filter:	Installed
Filter Resistance (Pa):	17
Extra resistance for wet surface coil (Pa):	7

## Units that Missed the 'Cut'

As with any selection program there are occasions when the information you have entered looks as though it should produce a selection but it doesn't. The Fan Coil Unit Selection Program is no exception but there is usually a logical explanation and the program itself offers a few things that you can check.

Firstly if you get the message that "no units meet your criteria" there are a few things you should consider;

1. The program has been designed for standard air conditioning applications and range of conditions and anything that you would normally be able to select from the published pamphlets. So while full fresh air selections may be possible the parameters of full fresh air will stretch the program to, and possibly beyond, its limits.
2. The information provided may be suspect. External to the program check that the duties specified match the reality.
3. No units can achieve the desired external static you have specified.
4. The water velocity in the unit's cooling or heating coil is below the minimum limits set in the program.

## Show Failed Candidates

The drop down menu that appears when the button **Show Failed Candidates** is clicked on lists the units that have not been selected in the order of failure to select.

So if the first reason is **'Failed the face velocity test'** it means the unit is not selected because the air velocity across the coil is regarded as too high and the high velocity is shown.

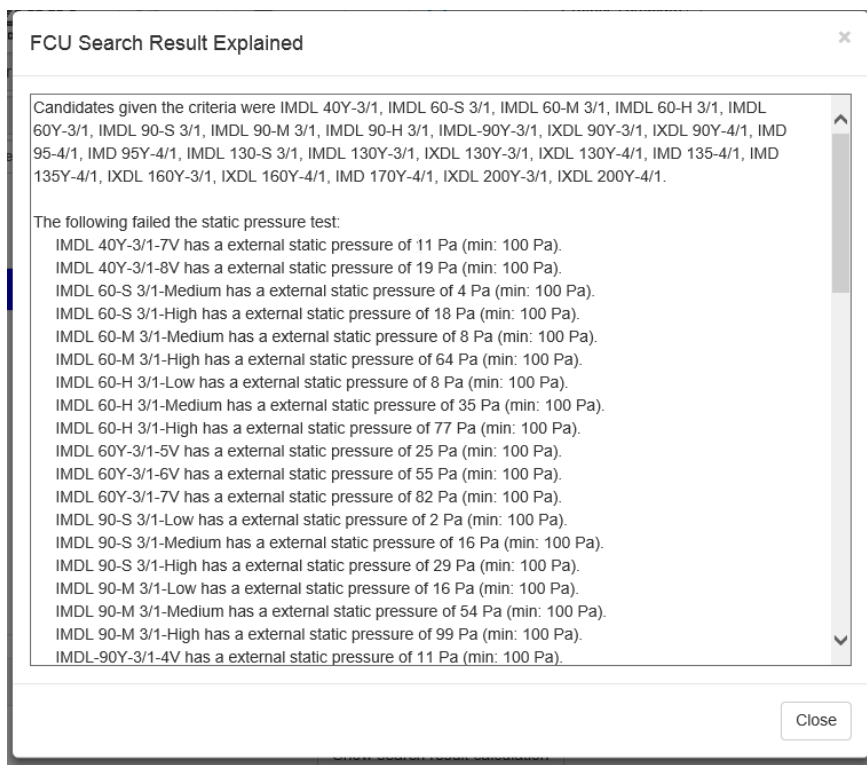
If the second reason is given as **'Failed the Static Pressure Test'** it means that the units listed have passed the face velocity test but they are not achieving the desired external static. See notes 4 and 5.

If the third reason is given as **'The Following Coil Calculations Failed'** it means that the units have passed the first two tests, face velocity and available static but something in the coil selection is not meeting the requirements. Maybe too much duty, maybe too little duty, maybe too low water velocity or maybe too high water pressure drop. The answer will be given as to why the selection has failed. Use this information to re-think the data entered.

### Possible Solutions: -

1. Try selecting first with normal return air space temperatures and then gradually increase or decrease the temperatures towards the fresh air temperatures to see where selections stop.
2. Maybe do one cycle at a time, if the selection is for cooling + heating, change the desired unit to cooling only and see if unit selections become available. If they do then the problem is in the heating side requirements and limits.
3. Recently we had a full fresh air application where the duty specified was 22kW. No selection was forthcoming so we put the entering and leaving conditions and air flow specified into the EzyAir program and it calculated a Total load of 77 kW and Sensible load of 32 kW, little wonder with an entered duty of 22kW it would not select.

A quick check on the actual duties or a look at the psychrometric chart will often reveal whether the information is correct and a selection achievable.



**FCU Search Result Explained**

Candidates given the criteria were IMDL 40Y-3/1, IMDL 60-S 3/1, IMDL 60-M 3/1, IMDL 60-H 3/1, IMDL 60Y-3/1, IMDL 90-S 3/1, IMDL 90-M 3/1, IMDL 90-H 3/1, IMDL-90Y-3/1, IXDL 90Y-3/1, IXDL 90Y-4/1, IMD 95-4/1, IMD 95Y-4/1, IMDL 130-S 3/1, IMDL 130Y-3/1, IXDL 130Y-3/1, IXDL 130Y-4/1, IMD 135-4/1, IMD 135Y-4/1, IXDL 160Y-3/1, IXDL 160Y-4/1, IMD 170Y-4/1, IXDL 200Y-3/1, IXDL 200Y-4/1.

The following failed the static pressure test:

- IMDL 40Y-3/1-7V has a external static pressure of 11 Pa (min: 100 Pa).
- IMDL 40Y-3/1-8V has a external static pressure of 19 Pa (min: 100 Pa).
- IMDL 60-S 3/1-Medium has a external static pressure of 4 Pa (min: 100 Pa).
- IMDL 60-S 3/1-High has a external static pressure of 18 Pa (min: 100 Pa).
- IMDL 60-M 3/1-Medium has a external static pressure of 8 Pa (min: 100 Pa).
- IMDL 60-M 3/1-High has a external static pressure of 64 Pa (min: 100 Pa).
- IMDL 60-H 3/1-Low has a external static pressure of 8 Pa (min: 100 Pa).
- IMDL 60-H 3/1-Medium has a external static pressure of 35 Pa (min: 100 Pa).
- IMDL 60-H 3/1-High has a external static pressure of 77 Pa (min: 100 Pa).
- IMDL 60Y-3/1-5V has a external static pressure of 25 Pa (min: 100 Pa).
- IMDL 60Y-3/1-6V has a external static pressure of 55 Pa (min: 100 Pa).
- IMDL 60Y-3/1-7V has a external static pressure of 82 Pa (min: 100 Pa).
- IMDL 90-S 3/1-Low has a external static pressure of 2 Pa (min: 100 Pa).
- IMDL 90-S 3/1-Medium has a external static pressure of 16 Pa (min: 100 Pa).
- IMDL 90-S 3/1-High has a external static pressure of 29 Pa (min: 100 Pa).
- IMDL 90-M 3/1-Low has a external static pressure of 16 Pa (min: 100 Pa).
- IMDL 90-M 3/1-Medium has a external static pressure of 54 Pa (min: 100 Pa).
- IMDL 90-M 3/1-High has a external static pressure of 99 Pa (min: 100 Pa).
- IMDL-90Y-3/1-4V has a external static pressure of 11 Pa (min: 100 Pa).

Close

- If the filter included box is ticked, try unticking this as it could release some extra static to be available.
- Try reducing the external static requested to see if a selection can be made then.

**FCU Search Result Explained**


IXDL 200Y-3/1-2V has a external static pressure of 15 Pa (min: 100 Pa).  
 IXDL 200Y-3/1-3V has a external static pressure of 43 Pa (min: 100 Pa).  
 IXDL 200Y-4/1-2V has a external static pressure of 15 Pa (min: 100 Pa).  
 IXDL 200Y-4/1-3V has a external static pressure of 43 Pa (min: 100 Pa).

The following coil calculations failed:

IMDL 90-H 3/1 best Sensible Duty was 3.5 kW (variance: 25%).  
 IMDL 90-H 3/1 could produce a Sensible Duty of 3 (Cooling), but Water Velocity is 0.236 m/s (min: 0.5 m/s).  
 IMDL-90Y-3/1 best Sensible Duty was 3.5 kW (variance: 25%).  
 IMDL-90Y-3/1 could produce a Sensible Duty of 3 (Cooling), but Water Velocity is 0.236 m/s (min: 0.5 m/s).  
 IMD 95-4/1 could produce a Sensible Duty of 3.1 (Cooling), but Water Velocity is 0.175 m/s (min: 0.5 m/s).  
 IMD 95Y-4/1 could produce a Sensible Duty of 3.1 (Cooling), but Water Velocity is 0.175 m/s (min: 0.5 m/s).  
 IMD 135-4/1 could produce a Sensible Duty of 3.4 (Cooling), but Water Velocity is 0.209 m/s (min: 0.5 m/s).  
 IMD 135Y-4/1 could produce a Sensible Duty of 3.4 (Cooling), but Water Velocity is 0.209 m/s (min: 0.5 m/s).  
 IMD 170Y-4/1 could produce a Sensible Duty of 3.6 (Cooling), but Water Velocity is 0.232 m/s (min: 0.5 m/s).  
 IMDL 60Y-3/1 could produce a Sensible Duty of 2.4 (Heating), but Water Velocity is 0.367 m/s (min: 0.5 m/s).  
 IMDL 90-H 3/1 could produce a Sensible Duty of 3.4 (Heating), but Water Velocity is 0.291 m/s (min: 0.5 m/s).  
 IMDL-90Y-3/1 could produce a Sensible Duty of 3.4 (Heating), but Water Velocity is 0.291 m/s (min: 0.5 m/s).  
 IMD 95-4/1 could produce a Sensible Duty of 2.9 (Heating), but Water Velocity is 0.247 m/s (min: 0.5 m/s).  
 IMD 95Y-4/1 could produce a Sensible Duty of 2.9 (Heating), but Water Velocity is 0.247 m/s (min: 0.5 m/s).  
 IMD 135-4/1 could produce a Sensible Duty of 3.3 (Heating), but Water Velocity is 0.283 m/s (min: 0.5 m/s).  
 IMD 135Y-4/1 could produce a Sensible Duty of 3.3 (Heating), but Water Velocity is 0.283 m/s (min: 0.5 m/s).  
 IMD 170Y-4/1 could produce a Sensible Duty of 3.6 (Heating), but Water Velocity is 0.31 m/s (min: 0.5 m/s).

- The same goes for the water velocity. Establish which of the cycles has the problem and try decreasing the LWT (Leaving Water Temperature) to reduce the water temperature split and therefore increase the flow and in turn the water velocity.
- For the cooling coil there is the option of increasing or decreasing the water flow that can be used to raise above a minimum flow/velocity.

Once satisfied that this is the nearest selection to what is desired then it will be necessary to check the tick-box of the fan speed required. There may only be one option or there may be multiple options with different external static pressures, select the one that most satisfies your requirements.



Project Template

Tony King
Log off

Min LAUB

Max LAUB

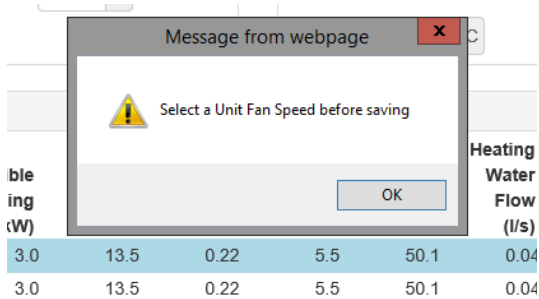
**Proposed Units:**

Select	Unit Name	Total		Cooling		Heating		Heating		Face Velocity (m/s)	W x L x H (mm)
		Cooling (kW)	Sensible Cooling (kW)	Cooling LWT (°C)	Cooling Water Flow (l/s)	Heating Capacity (kW)	Heating LWT (°C)	Heating Water Flow (l/s)	Air Flow (l/s)		
<input checked="" type="checkbox"/>	IMDL 60-M 3/1	4.1	3.0	13.5	0.22	5.5	50.1	0.04	250	1.7	930 x 640 x 250

At the top of the screen click on Save.

## Warning

Should a warning box appear then it is likely that you have not checked the fan speed tick-box as mentioned above. The screen shot above shows both tick-boxes checked.



## Return to Project Detail

Once this is done you will be taken back to the Project Detail screen and the unit selected should now appear under the Unit Name and Fan Speed columns, if not then it is likely you have tried to save without checking any of the tick-boxes.

Once saved the selection along with the entered conditions and the results can be viewed, changed and/or reselected as desired by clicking on the 'Edit' action.

Refer to the description above for the 'Project Detail' screen for what printing and saving options are available and addition of new zones or backtracking. Individual zone selections may be printed directly by selecting PDF in the 'Project Detail' screen, multiple project selections print from the 'Project' screen.



## Fan Coil Selection Program

Page:1  
4/14/2015

**Project Name: Aunty Mary's Hotel**

**Client: ACME A/C**

### Zone Downstairs Toilet

Group: Ducted Cooling + Heating (Water)

Unit: IMDL60M3/1

Air Flow (l/s): 250

Unit Dimension WxLxH (mm): 930 X 640 X 250

Cooling Cycle			Heating Cycle		
	Required	Actual		Required	Actual
Total Cooling Duty	4.0	4.1	Total Heating Duty	2.0	5.5
Sensible Cooling Duty	3.0	3.0	Entry Air DB (°C)	18.4	18.4
Entry Air DB (°C)	24.4	24.4	Max LADB (°C)	35.0	36.2
Entry Air WB (°C)	18.1	18.1	EWT (°C)	80.0	18.4
Entry Air RH (%)	54.5	54.5	LWT (°C)	60.0	50.1
Min LADB (°C)	10.0	14.5	Water Flow (l/s)		0.04
EWT (°C)	9.0	9.0	Water Pressure Drop (kPa)		9.6
LWT (°C)	15.0	13.5			
Water Flow (l/s)		0.22			
Water Pressure Drop (kPa)		28.2			

### Sound Power Levels (SWL)

	db(A)	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz
Supply	49	50	51	49	41	36	27
JIS 8616 with 1m of Insulated Ducting							

Indoor Fan Speed: High  
Static Pressure (Pa): 50  
Face Velocity (m/s): 1.7  
Filter: Installed

Example of pdf file that is printable.

## Sharing a Project with Colleagues

Projects that the operator has created can be shared out to colleagues.

This can be useful when two or more people in a company may both need access to the same project.

It is also useful when a customer may want a temperzone representative to double check their selections.

Sharing project can be achieved in two ways.

- (a) You can share [all your projects](#) with colleagues, by setting up the share on the Projects screen. When you set up the share all your projects that you have already created will be shared. Any new projects you create thereafter will also be shared.

Project Sharing

If you wish to share [all your projects](#) with another person, then add their email address to the list below.

+

Email Address	Type of Share	Action
---------------	---------------	--------

- (b) You can share [individual projects](#) with colleagues, by setting up the share on the Project Detail Screen. When you set up the share only that project gets shared.

Project Sharing

If you wish to share [this project](#) with another person, then add their email address to the list below.

+

Email Address	Type of Share	Action
---------------	---------------	--------

### Sharing Projects

- (1) On the Project Sharing panel press the + button.
- (2) Enter the email address of the colleague.
- (3) Select how you wish to share the project. See the Read Only section below.

Project Sharing

[Add new Global Project Share](#)

Email Address

Read Only

Save Cancel

### Read Only

When setting up a share you have the option to tick the Read Only box. The default option is ticked.

- (a) Ticked means your colleagues can only view your work. They cannot make changes.
- (b) Unticked means your colleagues can make changes to your work. These changes will overwrite your existing work.

Project Sharing

[Add new Project Share](#)

Email Address

Read Only

Save Cancel



## Printing

Printing of a complete project is achieved by selecting PDF in the 'Project' screen. The resulting print will include all zones selected and saved.

Individual zone selections may be printed directly by selecting PDF in the 'Project Detail' screen. This is particularly useful when making a reselection on a single zone or just a handful of zones.

It is also possible to export the entire project to Excel as a spreadsheet. While this allows the information to be integrated in to another spreadsheet it must be remembered that any editing of that information or figures on the exported spreadsheet negates the accuracy of the information. Temperzone would take no responsibility for any selections where performance figures have been adjusted after they have been exported from the original program.

## Printing Issues

It seems that occasionally printing problems may arise.

Possible Solutions: -

1. Try closing the program and reopening the program to see if it clears the problem.
2. Check that no one else is using the same project at the same time.
3. Clear the cache.

## Website Links

The system detects the user's location by country.

All New Zealand users will be directed to the NZ web site.

All Australian users will be directed to the Australian web site.

All other users will be directed to the NZ web site.

### Project Detail Page

The unit name items are linked to the respective web sites.

Clicking on the unit description will open another separate tab on the browser taking the user to the relevant page on the temperzone.biz website.

To return click the temperzone tab on the browser and return to the "Project Detail Page".

### Zone Details Page/Proposed Units

All the unit names are linked to the web pages.

Right click the unit name and select 'open in a new tab' from the drop down menu and this will open another separate tab on the browser taking the user to the relevant page on the temperzone.biz website.

**Note;** A left mouse click only selects that line item so that you can read the detail further below. This is how it has always been.

## Appendix - Field and Terminology Descriptions

Duty (Winter)	The heating duty required from the fan coil unit, in kilowatts (kW).
EWT	The temperature of water entering the fan coil unit, in degrees Celsius (°C).
Ext. Static	The maximum External Static Pressure or resistance available for a particular fan speed at a given air flow rate, in Pascals (Pa).
Face Vel.	Velocity of air through the unit's coil, in metres per second – important for assessing potential water carry-over, especially in high humidity environments. Be wary of exceeding 2.5 m/s and do not exceed 2.8 m/s without reference to Temperzone Engineering.
Fan Speed	The fixed or variable fan speeds (e.g. High, Medium, Low), RPM of the fan (e.g. 700, 1000) if a variable pulley drive is used or the low voltage input (0 – 10V) for variable EC motors.
Fresh Air Flow	Fresh (outside) air entering the air conditioner, in litres per second (l/s).
Fresh Air (Summer) DB, WB, RH	Summer outside (fresh) air conditions. Dry Bulb and Wet Bulb temperatures are in °C; Relative Humidity is in %.
Fresh Air (Winter) DB	Winter outside (fresh) air conditions. Dry Bulb and Wet Bulb temperatures are in °C; Relative Humidity is in %.
LWT	The temperature of water leaving the fan coil unit, in degrees Celsius (°C).
Max LADB (Winter)	Maximum Leaving (exhaust) Air temperature allowable, in degrees Celsius (°C) dry bulb, when the fan coil unit is on its heating cycle.
Min LADB (Summer)	Minimum Leaving (exhaust) Air temperature allowable, in degrees Celsius (°C) dry bulb, when the fan coil unit is on its cooling cycle.
Mixed Air (Summer) DB, WB, RH	Summer mixed air conditions. These fields are calculated and cannot be edited directly. Dry Bulb and Wet Bulb temperatures are in °C; Relative Humidity is in %.
Mixed Air (Winter) DB	Calculated Winter mixed air conditions. Made up of Winter fresh and return air. Dry Bulb temperatures are in degrees Celsius (°C)
Return Air (Summer) DB, WB, RH	Room Return air conditions during Summer, when the fan coil unit is on its cooling cycle. Dry Bulb and Wet Bulb temperatures are in °C, Relative Humidity is in %.
Return Air Flow	Return (room) air entering the air conditioner, in litres per second (l/s).
Sound Power Levels (SWL)	Sound levels in dB re 1 pW, measured in accordance with JIS 8616. Direct method of measurement (reverberant room).
Sound Pressure Levels (SPL)	Sound Pressure measured at 1 metre from supply air outlet in decibels re 20 µPa. For outdoor units, SWL = SPL + 13.
Sensible Duty (Summer)	The amount of Cooling required to change the temperature of the air passing through the unit's coil, as measured in kilowatts (kW).
Total Air Flow	The sum of the return and fresh air flow quantities in litres/second (l/s). Air flow is the same for Winter and Summer. This is a calculated value.
Total Duty (Summer)	The total cooling duty required from the fan coil unit, in kilowatts (kW).
Unit Type	Describes the type of unit which can be selected for this zone.
Water Pressure Drop	Resistance to water passing through a fan coil unit, as measured in kilo-Pascals (kPa).
Zone Description	This is a description of the area (or Zone) the fan coil unit will be located in.