

KOLDPRO[®]

User guide

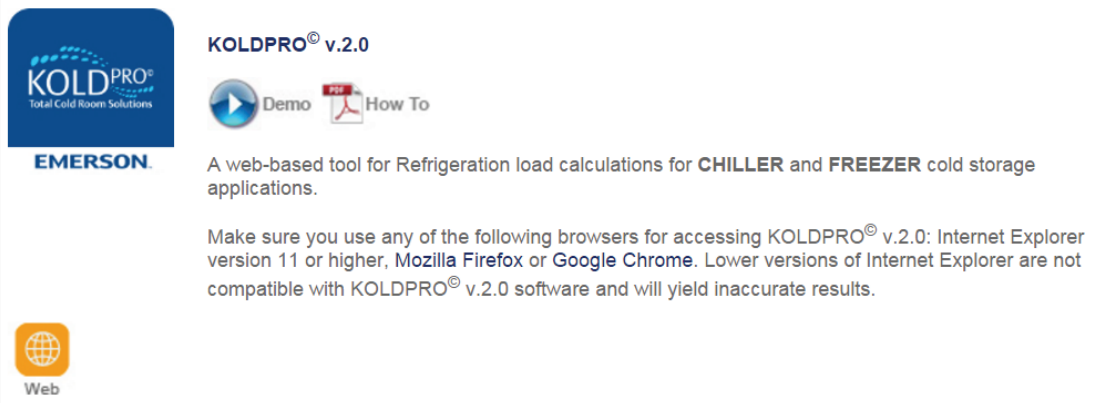
Our web-based tool allows for both quick design calculations and detailed design calculations, catering to all your cold room refrigeration load calculation requirements.

Additional tools such as Sizing Guide and Psychrometric Calculator are also included.



1

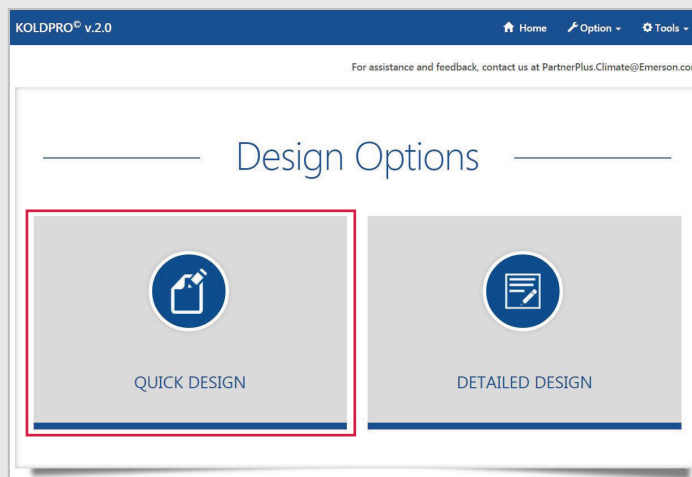
Open **KOLDPRO** application

A screenshot of the KOLDPRO v.2.0 application landing page. On the left is the Emerson KOLDPRO logo. To the right, there are links for "Demo" and "How To". Below these links is a description: "A web-based tool for Refrigeration load calculations for CHILLER and FREEZER cold storage applications." Further down, there is a note about browser compatibility: "Make sure you use any of the following browsers for accessing KOLDPRO v.2.0: Internet Explorer version 11 or higher, Mozilla Firefox or Google Chrome. Lower versions of Internet Explorer are not compatible with KOLDPRO v.2.0 software and will yield inaccurate results." At the bottom left of the screenshot is a "Web" icon.

Quick design

1

First step is to select between quick design and detailed design.



2

Upon clicking on quick design, the user will be asked to select the region, country and city where the design condition will be based.

Quick Design

Project Details Quick Design Report Generation

1 **City Selection**

| Region | Country | State | City |
|-------------------------|--------------------|-------|----------------------------|
| Africa | Kyrgyzstan | | Macatan |
| Asia | Macau | | Mactan Intl. |
| Europe | Malaysia | | Manila/Luzon Island |
| Mid-East | Mongolia | | Ninoy Aquino Intl. |
| North & Central America | Pakistan | | Puerto Princesa (AFB) |
| South America | Philippines | | Roxas/Panay Island |
| South West Pacific | Russian Federation | | Sangley Point |
| | Singapore | | Tacloban/Leyte Isl. |
| | Taiwan | | Tarlac (D. Balili) |

Country / City * Manila/Luzon Island / Philippines

Latitude (deg) 14.58N Ground Temp. (°C) 25.8

Longitude (deg) 120.98E

3

Next step is to select the application, key in details for room conditions and surrounding temperature. Click "SAVE AND CONTINUE" once done.

2 **Design**

Application

Walk-In Chiller

Walk-In Freezer

Outdoor Air Condition

Dry Bulb (°C) 33.8

Wet Bulb (°C) 26.2

Pressure (bar) 1.014

Room Conditions

Dry Bulb (°C) * 0

Rel. Humidity (%) * 100

Surrounding Temperature

Dry Bulb (°C) * 34.1


Rel. Humidity (%) * 54

Wet Bulb (°C) * 26.3

SAVE AND CONTINUE →

Under quick design section, the user will be asked to enter unit run time and safety factor, room type and dimension, and product loading.


Quick Design



Project Details Quick Design Report Generation

| | | |
|---------------------------|-----------------|---|
| Application | Chiller | |
| Unit Run Time (hr) * | 16 | ? |
| Safety Factor (%) * | 10 | ? |
| Room Dimensions * | [Please Select] | ? |
| Room Temperature (°C) | 0.0 | |
| Surrounding Dry Bulb (°C) | 34.1 | |
| Product Loading * | Average | ? |


4.1 Upon selecting the room type, the user is then required to provide the room dimension, together with the number of glass door needed. Click “Save” once done.



Project Details Quick Design Report Generation

✕

Room Design: Rectangular with Glass Door




Height: (m) * Width: (m) * Length: (m) *

No of Glass Door: *


[Save](#)

Construction material selection and details for walls, roof and floor will be shown. Kindly note that load calculation algorithm assumes that walls and roof have identical insulation type and thickness. Click “SAVE AND CONTINUE” once done.


Quick Design



Project Details



Quick Design



Report Generation

Application

Unit Run Time (hr) *

Safety Factor (%) *

Room Dimensions *

Room Temperature (°C)

Surrounding Dry Bulb (°C)

Product Loading *

Chiller

16

10

Rectangular with Glass Door

0.0

34.1

Average

?

?

?

?

?

?

| Label | Construction Material | Thickness (mm) | Surface Area (m ²) | U (Watt/m ² -K) | R (K-m ² /Watt) |
|-------|-----------------------|----------------|--------------------------------|----------------------------|----------------------------|
| Walls | Polyurethane | 100 | 816 | 0.221 | 4.508 |
| Roof | Polyurethane | 100 | 66 | 0.221 | 4.508 |
| Floor | Concrete | 150 | 66 | 1.124 | 0.898 |

Load (Watt) **38,176.32**

Note: Load calculation algorithm assumes that Walls and Roof have identical insulation (type and thickness).

← PREVIOUS

SAVE AND CONTINUE →

6

Last step would be the report generation. This is where the user will provide the project, customer, designer information, company logo and recommendation.

Quick Design

Project Details Quick Design Report Generation

Project Info

Name Of Project: Emerson Walk-In Chiller
Description: Chiller to Broccoli
Date: February 13, 2017

Customer Info

Name: Emerson
Address: Quezon City, Philippines
Phone: +63926897255
Email: partnerplus.climate@emerson.com

Designer Info

Name: Emerson
Address: Quezon City, Philippines
Phone: +63926897255
Email: partnerplus.climate@emerson.com
Company logo: KoldPro_wFooter_08172015.jpg (Choose file)
Recommendation: [Empty field]

PREVIOUS SAVE AND CONTINUE

Click on “Save and Continue” to proceed.

6.1 The user can send the generated report thru email, or save it in pdf or excel file format for future reference.

Successfully Saved

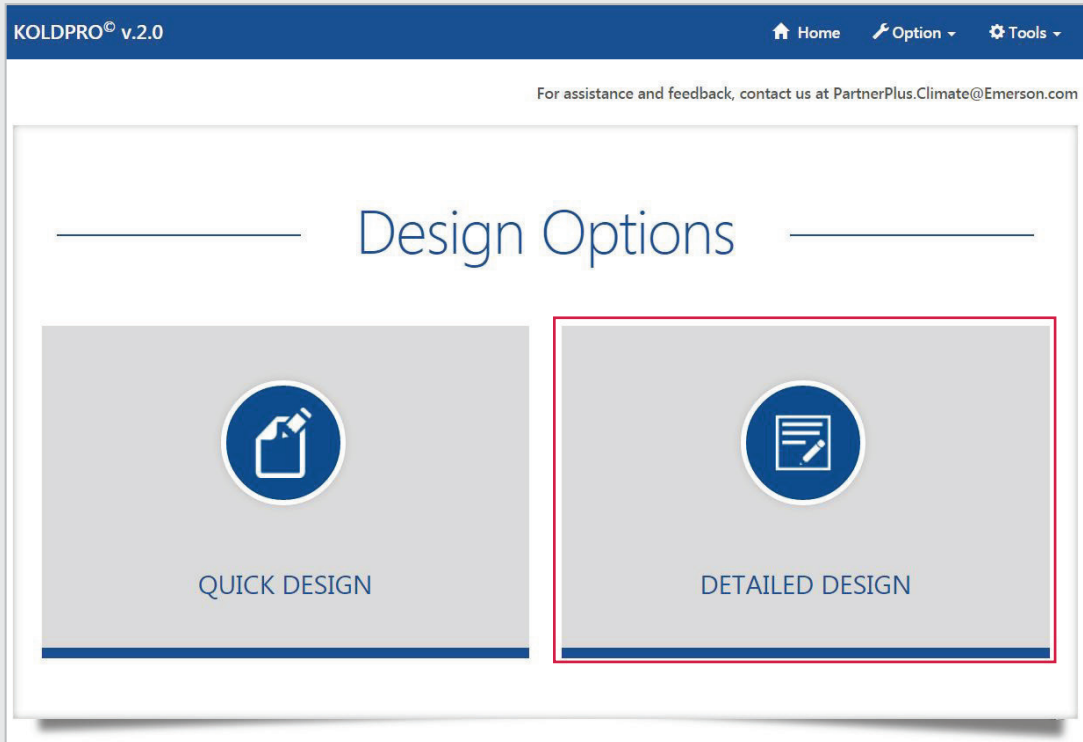
E-MAIL PDF EXCEL

HOME BACK

Detailed design

1

First step is to select between quick design and detailed design.



KOLDPRO® v.2.0 Home Option Tools

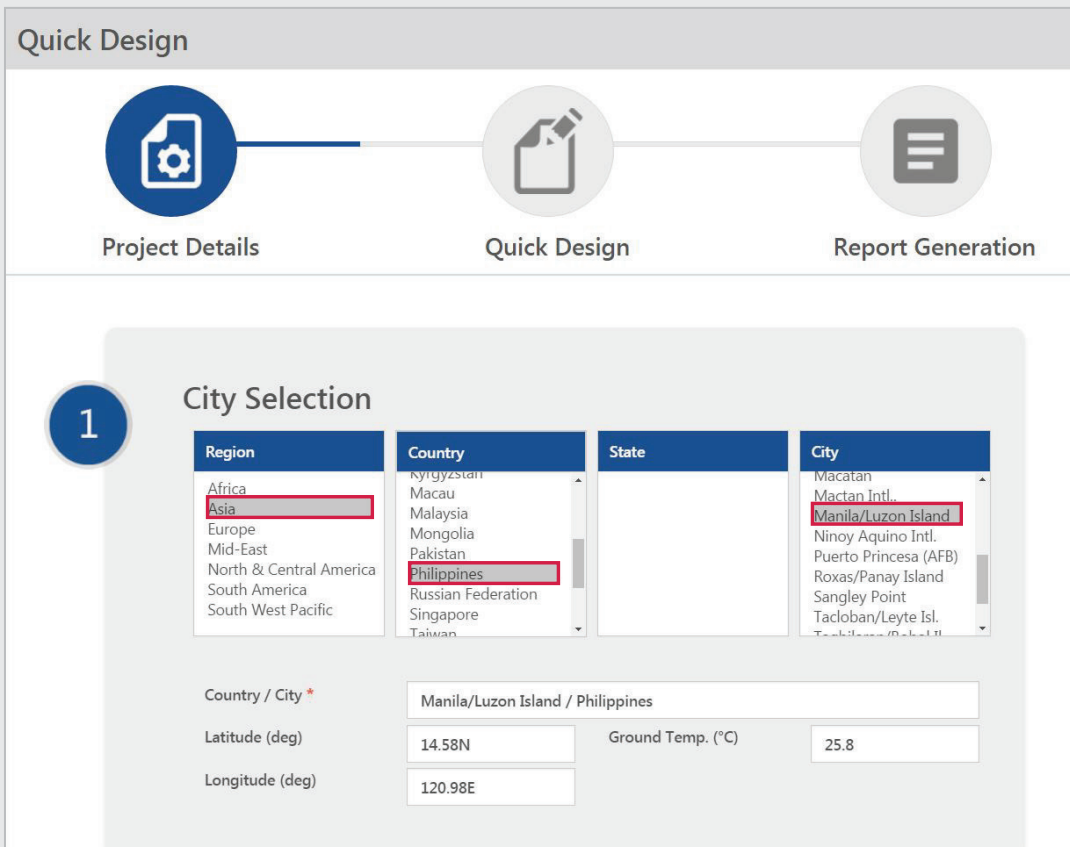
For assistance and feedback, contact us at PartnerPlus.Climate@Emerson.com

Design Options

QUICK DESIGN

DETAILED DESIGN

Upon clicking on detailed design, the user will be asked to select the region, country and city where the design condition will be based.



Quick Design

Project Details — Quick Design — Report Generation

City Selection

| Region | Country | State | City |
|-------------------------|--------------------|-------|-----------------------|
| Africa | Kyrgyzstan | | Macatan |
| Asia | Macau | | Mactan Intl. |
| Europe | Malaysia | | Manila/Luzon Island |
| Mid-East | Mongolia | | Ninoy Aquino Intl. |
| North & Central America | Pakistan | | Puerto Princesa (AFB) |
| South America | Russian Federation | | Roxas/Panay Island |
| South West Pacific | Singapore | | Sangley Point |
| | Taiwan | | Tacloban/Leyte Isl. |

Country / City *

Latitude (deg) Ground Temp. (°C)

Longitude (deg)

2

Last step would be the report generation. This is where the user will provide the project, customer, designer information, company logo and recommendation.

2

Design

| Application | Outdoor Air Condition |
|---|--|
| <input checked="" type="radio"/> Walk-In Chiller <input type="radio"/> Walk-In Freezer | Dry Bulb (°C) 33.8 Wet Bulb (°C) 26.2 Pressure (bar) 1.014 |
| Room Conditions | Surrounding Temperature |
| Dry Bulb (°C) * 0 Rel. Humidity (%) * 100 | Dry Bulb (°C) * 34.1 Rel. Humidity (%) * 54 Wet Bulb (°C) * 26.3 |

SAVE AND CONTINUE →

3

Under detailed design section, the user will be asked to enter details required for load calculation summary.

3.1 Transmission load

3.1.1 Click on the drop down menu and select room type.

Detailed Design

Project Details — Detailed Design — Report Generation

1 Transmission 2 Internal 3 Infiltration 4 Product 5 Load Summary

Walls/Floor/Roof

Room Dimensions * [Please Select] [Please Select] [Please Select] [Please Select]

| Insulation Type | U (Watt/m ² K) | Load (Watt) |
|-----------------|---------------------------|-------------|
| Rectangular | | |
| L-Shaped | | |

Load (Watt)

3.1.2. Select wall orientation (internal, north, south, east and west) and enter room dimension. Click on “Save” once done.

The screenshot shows a 'Room Design: Rectangular' interface. At the top, there are navigation tabs: 1 Transmission, 2 Internal, 3 Infiltration, 4 Product, and 5 Load Summary. The main area features a diagram of a rectangular room with four walls labeled Wall 1, Wall 2, Wall 3, and Wall 4. Each wall has an 'Orientation' dropdown menu. Wall 1's dropdown is open, showing options: Internal, North, South, East, and West. Below the diagram, there are radio buttons for 'Inside' (selected) and 'Outside'. At the bottom, there are input fields for 'Height: (m) *' (2.4), 'Width: (m) *' (6), and 'Length: (m) *' (11). A 'Save' button is located at the bottom right.

3.1.3 Select the type, thickness, and color of insulation to be used for walls, roof and floor. The user can also select the type of door, door location, quantity, and measurement. Click on “Save” to proceed.

The screenshot shows the 'Walls/Floor/Roof' configuration interface. At the top, there are navigation tabs: 1 Transmission, 2 Internal, 3 Infiltration, 4 Product, and 5 Load Summary. The main area is titled 'Walls/Floor/Roof' and has a 'Room Dimensions *' dropdown set to 'Rectangular'. Below this is a table for configuring insulation for walls, roof, and floor.

| | Insulation Type | Thickness (mm) | Color | Orientation | TD (K) | U (Watt/m ² ·K) |
|-------|-----------------|----------------|-------|-------------|--------|----------------------------|
| Wall1 | Molded Polystyr | 100 mm | Light | Internal | 34.1 | 0.363 |
| Wall2 | Molded Polystyr | 100 mm | Light | Internal | 34.1 | 0.363 |
| Wall3 | Molded Polystyr | 100 mm | Light | Internal | 34.1 | 0.363 |
| Wall4 | Molded Polystyr | 100 mm | Light | Internal | 34.1 | 0.363 |
| Roof | Molded Polystyr | 100 mm | Light | | 38.8 | 0.363 |
| Floor | Molded Polystyr | 100 mm | | | 25.8 | 0.318 |

Below the table, there is a 'Load (Watt)' field showing 2,645.54. A checkbox is checked with the text 'Set all walls and roof to have same insulation and thickness.' Below this is the 'Doors' section, which has a table for configuring doors.

| | Wall | Door Type | Quantity | Height (m) | Width (m) | U (Watt/m ² ·K) |
|--------|-------|------------------|----------|------------|-----------|----------------------------|
| Door 1 | Wall1 | Single Pane Glas | 1 | 2 | 1 | 6.416 |

Below the door table, there is an '+Add Door' button and a 'Load (Watt)' field showing 437.59. A note box contains the text: 'Note: Non-Glass Door assumes that it uses the same insulation and thickness type as the chosen wall. Hence, load is already included in the wall load calculation.' At the bottom, there are 'PREVIOUS' and 'SAVE AND CONTINUE' buttons.

3.2 Internal load

3.2.1 Fill in the necessary information for internal load calculation.

Lighting: user may select the type of lamp from the drop down list and calculate load based on number of lights or total load in watts.

People: average number of people that will be entering the refrigerated space.

Motor: select the motor size and location from the drop down list.

Equipment: user may enter the load as either watt/ft2 or the total load.

Click on “SAVE AND CONTINUE.”

3.3 Infiltration load

Select the infiltration method from the dropdown list and enter required details for that method.

3.3.1 Air change

Infiltration Methods

with Ante Room without Ante Room

Infiltration Method: Air Change

Air Change

Usage * [Please Select]

[Please Select]

[Please Select]

Heavy

Average

Load (Watt)

3.3.2 Door openings

Infiltration Methods

with Ante Room without Ante Room

Infiltration Method: Door Openings

Door Openings

No. of Doorway Passage *

Open-Close Time(sec/passage) *

Time door simply stands open (min) *

Daily (or order) time period of door usage (hr) *

3.3.3 Directly specified

Infiltration Methods

with Ante Room without Ante Room

Infiltration Method: Directly Specified

Directly Specified

Air Flow Rate *

3.4 Product load

Select the product type and enter the product's specifications.

1 Transmission
2 Internal
3 Infiltration
4 Product
5 Load Summary

Product * [Please Select]

Product Name * [Please Select]

Entry Temperature of Product (°C) *

Daily Product Weight (kg) *

Total Product Weight (kg) *

Pull Down Time (hr) *

+ Add to List

The product will be added on the table below upon clicking on "Add to list". Click on "SAVE AND CONTINUE" once done.

| Product Name | Entry Temp (°C) | Weight (kg) | Total Weight (kg) | Pull Down Time (hr) | Load (Watt) | |
|--------------|-----------------|-------------|-------------------|---------------------|-------------|----|
| Broccoli | 28 | 3000 | 30000 | 24 | 4,641.07 | 🗑️ |

Load (Watt) 4,641.07

← PREVIOUS
SAVE AND CONTINUE →

3

3.5 Load summary will be shown for checking and reference. User can enter or change the unit run time and safety factor before proceeding to the next step.

| Watt | |
|---------------------------|-----------|
| Transmission | |
| Wall/Floor/Roof | 2,645.21 |
| Door | 437.59 |
| Internal | |
| Lighting | 9.96 |
| People | 181.12 |
| Equipment | 0.59 |
| Motor | 3,145.53 |
| Infiltration | |
| Air Change | 412.64 |
| Product | 4,641.07 |
| Total | 11,473.71 |
| Unit Run Time (hr) | 16 |
| Safety Factor (%) | 10 |
| Refrigeration Load | 18,931.62 |

4

Last step would be the report generation. This is where the user will provide the project, customer, and designer information, company logo and recommendation.

Quick Design

Project Details Quick Design Report Generation

Project Info

Name Of Project: Emerson Walk-in Chiller
 Description: Chiller to Broccoli
 Date: February 13, 2017

Customer Info

Name: Emerson
 Address: Quezon City, Philippines
 Phone: +6326897255
 Email: partnerplus.climate@emerson.com

Designer Info

Name: Emerson
 Address: Quezon City, Philippines
 Phone: +6326897255
 Email: partnerplus.climate@emerson.com
 Company logo: KoldPro_wFooter_08172015.jpg [Choose file]

Recommendation: [Empty field]

Click on "SAVE AND CONTINUE" to proceed.

4

continuation

4.1 The user can send the generated report thru email, or save it in pdf or excel file format for future reference.

