

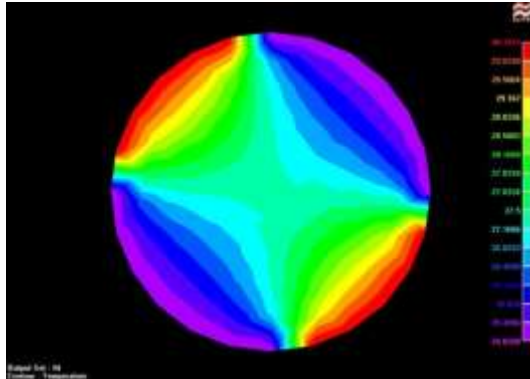




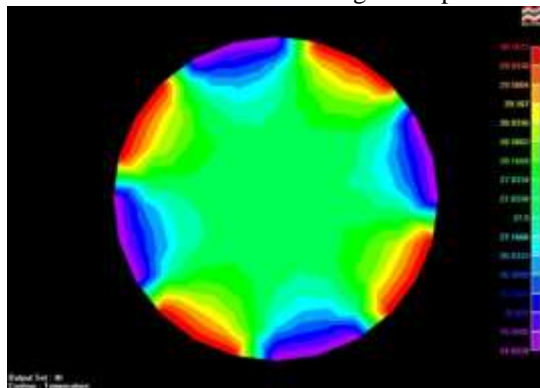




Pattern 1 Divide the building into 4 parts



Pattern 2 Divide the building into 8 parts



Pattern 3 Divide the building into 16 parts

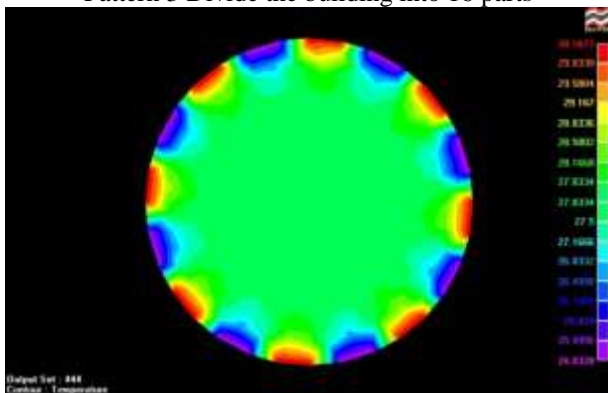


Fig. 6 Color contours of temperature distributions

The temperature (T) decreased steadily from the edge to the center. The heat transfer patterns of the three different glass arrangement followed the similar trend but were not identical. We found that heat was transferred more easily through the building that divided 4 parts than 8 parts and 16 parts, respectively.

A comparison between the temperatures from left edge to center which received from finite element method of each patterns is shown in Fig 7.

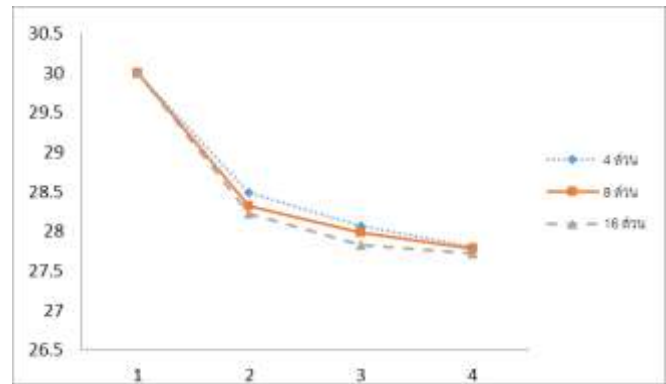


Fig.7 Temperature from left edge to center of each pattern by Finite Element Method

Both methods, the finite difference method and finite element method, provided solutions in the similar trend. Pattern that divide the building into more parts helps the heat to pass through slightly less. Finite difference method gives a slightly less realistic result due to the less curved domain and less internal resolution.

## VI. CONCLUSION

The results from both Finite Difference Method and Finite Element Method shown that glass arrangement patterns effect to temperature distribution passed into the building. Heat was transferred more easily through the building that divided 4 parts than 8 parts and 16 parts, respectively. Glass has a higher temperature than concrete walls. If the area of the glass is equal. The more the glass divided into smaller pieces, the temperature inside the building reduce more. Hence, choosing the right glass arrangement can reduce the impact of heat entering into a building.

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