# NATURAL LIGHTING EVALUATION OF
## MAN CIMAHI USING SEFAIRA

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## INTRODUCTION

Global warming is increasing and impacting the environment. As an effort to help reduce gas emissions, it can be done by high-performance buildings and the use of technology. One of the educational facilities that has problems with the thermal comfort of users is MAN Kota Cimahi. Energy efficiency efforts in buildings can be done through the maximization of natural lighting, shading, ventilation, thermal mass, solar air preheating, openings, air filtration, and passive solar heating.

## RESULT
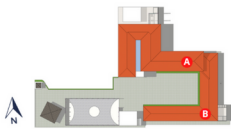


MAN Kota Cimahi building has a centralized building orientation with 2 2-story buildings and 1 1-story building. The master plan of the building can be seen in figure 2. The building material uses red brick walls, windows with an aluminum frame and 5 mm float glass, as well as a saddle-shaped tile roof.

After being analyzed using dialux and sefaira, some spaces do not meet the SNI lux standard.



(Dialux Evo 9.5)    (Sefaira)
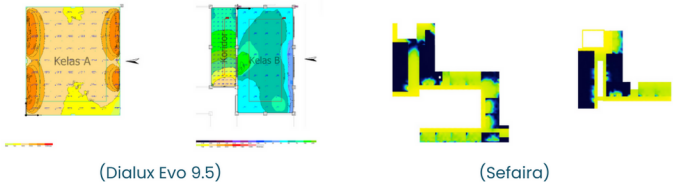
## SOLUTION

Based on the data obtained from the analysis above, there are several solutions that can be applied about changing material of the window glass, adjust the shape and dimensions of the window according to the standards and needs, and additional elements such as cantilever windows.



(Simulation results after treatment)

## CONCLUSION

From the data and analysis results regarding natural lighting and thermal comfort in MAN Kota Cimahi it can be concluded that the dimensions, materials, shapes, and elements of the openings affect the amount of exposure to sunlight into the room. Too much sun exposure makes the room temperature hot, so there are standards regarding the amount of lux that is good in the room. The MAN Kota Cimahi building has several classrooms that do not meet the thermal comfort standards based on the size of the lux in the space, there are rooms that are too bright and hot, there are also rooms that are too dark and humid.