ILLUMINATION DESIGN
OF ITS INDOOR BADMINTON COURT

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Abstract

Indoor badminton courts of Sepuluh Nopember Institute of Technology (ITS) is an enclosed building that provides an area for badminton sports activity. This indoor court is usually used at night so that lamp is used for the artificial lighting. In order to meet the visual comfort standards for badminton players, the illumination should meet the recommended standard (minimum 200 lux), and the light should be evenly distributed (min / ave ≥ 0.80).

In this research, artificial lighting system of the ITS indoor badminton court is evaluated and redesigned according to standards. From the measurement results and analysis, the average illumination intensity of the field 1, field 2, field 3, field 4, and the entire area of sport’s building (GOR) are: 121.65 lux; 144.48 lux; 144.24 lux; 122.36 lux, and 101.72 lux. The min/ave value of field 1, field 2, field 3, field 4, and the entire area of sport’s building (GOR) are: 0.64; 0.77; 0.76; 0.64, and 0.50.

The lighting system redesign was carried out using Calculux software. To obtain standard lighting, 140 pieces of TL-D 36 W lamps, each 3350 lumen, were used in the software. The Calculux simulation results show the average light intensity of the field 1, field 2, field 3, field 4, and the entire area of the sport’s building (GOR) are: 268 lux; 294 lux; 294 lux; 268 lux, and 263 lux. The min/ave value of field 1, field 2, field 3, field 4, and the entire area of the sport’s building (GOR) are: 0.90, 0.97, 0.97, 0.90, and 0.84. Second scheme design was also carried out by using 14 pieces of lamp HPI-T 400W, each has 35000 lumen. The
Calculux simulation results show the average light intensity of the field 1, field 2, field 3, field 4, and the entire area of the sport’s building (GOR) are: 434 lux; 405 lux; 405 lux; 434 lux; and 339 lux. The min/ave value of field 1, field 2, field 3, field 4, and the entire area of the sport’s building (GOR) are: 0,59; 0,80; 0,87; 0,87; and 0,80.

Keywords: illumination, indoor badminton court, illumination design