

DESCRIPTION

Training Room of a Simulator

- 5 The invention relates to a training room of a simulator, wherein the training room comprises at least one wall in a key color for using the blue box technique.
- 10 A simulator for training a person that comprises a training room, whose inner boundary surface is suitable for color-based chroma keying, is disclosed in patent application PCT/EP2012/052551 A1.
- 15 In practice it has been shown that in the case of cell-like training rooms with small dimensions, uniform lighting is made difficult because of the small dimensions. If simulator cells, so-called cubicles, with edge lengths of 1 m to 2 m are used as training
- 20 rooms, then the relatively closely adjacent walls result in shadow formation and thus in uneven brightness profiles from white through the key color (chroma key), e.g. blue or green, to a grey tone. Neon tubes reduce the effect of a light cone, but result in
- 25 shadows being formed by the trainee. Light sources on the floor cannot be used because they can lead to dazzling of the trainee and can even lead to degradation of his eyesight.
- 30 The object of the invention is therefore to provide a training room for a simulator that can be uniformly illuminated even in the case of small dimensions, so that the key color (chroma-key) necessary for the blue box method has an almost homogeneous color intensity in
- 35 the entire training room.

This object is achieved according to the invention by constructing a wall of panel-like light emitting wall elements.

Preferably each wall element, from which the walls and/or the ceiling of the training room are made, contains illumination means that emit light in a key
5 color, especially blue or green.

If the illumination means are variable in terms of their light color, then both the color and also the intensity of each individual wall element can be
10 adjusted. Furthermore, illumination means of variable color enable the use of different key colors (chroma keys). Preferably, regulated RGB-LEDs are used as illumination means.

15 In the case of a preferred embodiment of a wall element, the same is assembled in a sandwich construction. The lowest layer on the rear contains a reflective surface facing the central layer. The central layer comprises a structure that causes uniform
20 light distribution and the top layer on the front is pigmented white for uniform light refraction. The illumination means supplies the light to at least one lateral edge of the wall element.

25 The layers of a wall element are preferably made in panel form of Plexiglas and regulated RGB-LEDs are disposed on the lateral edges.

For fully uniform illumination of the training room,
30 preferably at least three of its walls and its ceiling are constructed of self-luminous elements.

In order to further improve the illumination, the corners of the training room are advantageously
35 laminated with backlit translucent elements, especially of Plexiglas. The corner elements can be matched in respect of their color and intensity to the other wall

elements. This results in a luminous room that is homogeneously illuminated and colored in the key color.

The invention is described in detail below using an
5 exemplary embodiment that is illustrated in simplified form. In the figures

Figure 1 shows the schematic construction of a training room,

10 Figure 2 shows a training room with a mock-up of a machine gun on a gun carriage, and

Figure 3 shows a section through a wall element.

The training room 1 illustrated in Figures 1 and 2 is
15 part of a simulator, in which e.g. the aerial gunner of a helicopter is being trained as the trainee. In the training room 1 a mock-up 2 of a machine gun is disposed that is operated by the trainee during the simulation. During the simulation the trainee wears VR
20 glass in which images of real objects from the training room 1 are displayed to him in addition to a scenario, the images being inserted into the scenario by the blue box technique. The walls 3, 4, 5 and also the ceiling 6 of the training room 1 are therefore illuminated in a
25 key color (chroma-key). If this is advantageous, the floor 7 can likewise be illuminated.

According to the invention, at least one wall, preferably all walls 3, 4, 5 and the ceiling 6, are
30 constructed of self-luminous wall elements 8, of which one is illustrated in a sectional view in Figure 3.

Each wall element 8 is made in panel form with a planar surface that emits light with uniformly distributed
35 intensity and with uniform refraction. Illumination means 9, especially regulated RGB-LEDs, are attached to at least one lateral edge of the panel and emit their

light parallel to the surface in the interior of the panel. In the preferred exemplary embodiment, regulated RGB-LEDs are attached to only one lateral edge.

5 A control unit 10 is used to regulate the color of the RGB-LEDs and to adjust the brightness of each individual panel. Because the RGB-LEDs are variable in their color as illumination means, different key colors can be set, e.g. blue or green.

10

As can be seen from Figure 3, each wall element 8 is assembled in a sandwich construction. The layer 11 on the rear side contains a reflectively coated surface, from which the laterally incident light is reflected
15 forwards to the central layer 12. Preferably, the rear layer 11 is of aluminum, which is used for heat dissipation at the same time.

In order to effect uniform light distribution, the
20 central layer 12 is also of Plexiglas and contains an inner structure of nanospheres. The frontal layer 13, from which the light emanates, is of white pigmented Plexiglas. The white pigments have the effect that irrespective of the thickness of the layer 13 the light
25 is uniformly refracted and emanates with uniform intensity. This enables strengthened ceiling elements with greater thickness of e.g. 2 cm to be used, whereas the elements on the walls 3-5 only have a thickness of approx. 1 cm.

30

In order to further improve the illumination, the corners of the training room 1 are laminated with backlit translucent elements of Plexiglas that is constructed according to the Plexiglas of the frontal
35 layer 13. The corner elements are matched in their color and intensity to the other wall elements. The

result is thus a homogeneously illuminated luminous room that is colored in the key color.

CLAIMS

1. A training room of a simulator, which comprises at least one wall (3,4,5) in a key color for using the blue box technique,
characterized in that the wall (3,4,5) is constructed of panel-like light emitting wall elements (8) , each wall element (8) being made in a panel-like form with a planar surface that emits light with uniformly distributed intensity and with uniform refraction and being assembled in a sandwich construction, wherein
- the layer (11) at the rear contains a reflective surface, from which light is reflected forwards to the central layer (12),
 - the central layer (12) comprises a structure that causes a uniform light distribution,
 - the layer (13) on the emitting front side is pigmented for uniform light refraction, especially being pigmented white, and
 - the illumination means (9) supplies the light to at least one lateral edge of the wall element (8) wherein the rear layer (11) of a wall element (8) consists of aluminum with a reflective surface, the central layer (12) of a Plexiglas with an inner structure of nanospheres and the frontal layer (13) of Plexiglas that is pigmented white, wherein regulated RGB-LEDs are attached to the lateral edges as the illumination means (9).
2. The training room as claimed in claim 1, **characterized in that** each wall element (8) contains illumination means (9) that emit light in the key color.
3. The training room as claimed in claim 2, **characterized in that** the illumination means (9) are variable in their light color.

4. A method as claimed in claim 3, **characterized in that** each wall element (8) contains regulated RGB-LEDs as illumination means (9).
- 5 5. The training room as claimed in claim 1, **characterized in that** its corners are laminated with backlit translucent elements, of acrylic glass or PMMA.
- 10 6. The training room as claimed in claim 5, **characterized in that** acrylic glass or PMMA is Plexiglas ®.