

Virtual reality for scientific dissemination of nuclear energy benefits

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Introduction

This research and development (R&D) comprises the development of video applications, including 3D effects, for scientific dissemination of nuclear energy benefits. Target public ranges from students to the general public. The aim is to demystify public impression related to nuclear energy, showing them the benefits of its use in diverse fields, as electric power generation and applications in medicine, for example.

Applications are presented to the public, along with evaluation questionnaires.

Methodologies

First, movies were planned and designed, to cover important topics in the nuclear energy applications for society. This material was designed with visualization appeal in mind, what means using effects such as 3D, sound, besides a good narrative. The 3D effects are more explored in some parts of the movies.

3D effects are achieved by first making a movie, and then splitting its scenes into two separate ones, considering the average distance between persons' eyes. By using special glasses (as passive polarized or active shutter glasses), the public may experience the 3D effects.

Results and Discussion

Basically, one movie was developed and improved along time, showing sequentially: (i) the benefits of nuclear energy for electric power generation; (ii) a nuclear power plant (NPP) schematics; (iii) nuclear energy applications in medicine; and (iv) the distribution of NPPs all over the world.

In the first part, the movie illustrates Angra complex as example. In the second part, the movie shows a typical NPP's schematics with its parts, as: primary, secondary and tertiary circuits; it is emphasized the isolation between the primary and the secondary, for safety purpose. In the third part, an example of a tomograph is shown. In the last part, it is shown that developed countries make

broad use of nuclear energy for electric power generation. See the Fig. 1 and the Fig. 2 for some example movie screenshots.



Fig. 1- Nuclear power plant.

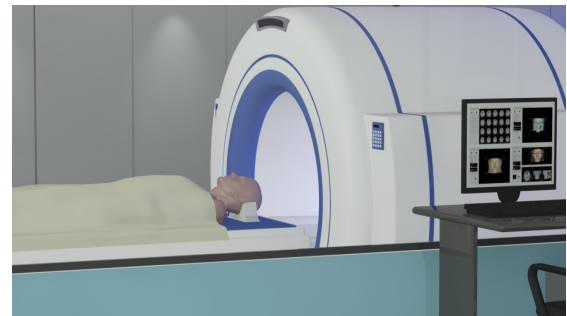


Fig. 2- Tomograph.

Experiments were carried out with students, including questionnaires for evaluation of the efficiency of this approach for learning.

First results comprised the movie development itself [1]. Lately, the evaluation based on the questionnaires have shown that students found that current approach, based on the media used (movie with 3D effects), better for learning all the information presented, comparatively to other more conventional approaches.

Thinking on R&D is a very important, since nuclear energy is unfortunately misunderstood by most people from the general public.

References

- [1] Freitas, V.G.G.; Mól, A.C.A.; Legey, A.P.; *et al.*; "Mono or 3D Video Production for Scientific Dissemination of Nuclear Energy Applications", *2011 International Nuclear Atlantic Conference (INAC 2011)*, Belo Horizonte.