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# ErgoVidrio: playing “seriously” for prevention in the Glass industry



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“ ***In 2014, CONFVICEX, FITAG-UGT and CCOO-INDUSTRIA with the support of entities specialized in occupational health and ergonomics, have developed the project "Preventative Instruments for Virtual Training in the Prevention of Ergonomic Risk in the Glass industry". This project has been developed thanks to the financing of the Occupational Risk Prevention Foundation (FPRL in Spain). Actions IS 0317/20013, IS 0266/20013, IS 0320/20013. The main result of the project is the ErgoVidrio application, a "serious game" which enables free access via smartphone or tablet to the information on Occupational Health and Risk Prevention in the Glass industry.*** ”

## INTRODUCTION

Subsequent versions of the National Survey on Working Conditions (ENCT in Spain) highlight the data for risk perception among the working population. 84% of workers surveyed in the 7th ENCT indicated they were "always or almost always" or "often" exposed to some aspect related to the physical demands

of their working role. The magnitude of the issue has led the Employment and Immigration Commission of the Congress of Deputies to adopt an action plan which enables the reduction of work derived musculoskeletal disorders

Both overexertions and musculoskeletal disorders are closely linked to ergonomic type risk. In fact, in the study "IS-0115/2009 Study of the causes and preventative proposals for the decrease of accidents in the Glass industry", workers highlight that suffering musculoskeletal disorders is the greatest risk of their activity, with their back being the part of the body where they frequently feel discomfort. Furthermore, in this same study it is shown that overexertion is the risk present in almost the entire production process. For this reason in 2013, CCOO, UGT and CONFEVICEX proposed the development of a prevention based project for the reduction of ergonomic risk in glass industry.

In 2014, **CONFEVICEX**, **FITAG-UGT** and **CCOO-INDUSTRIA** together developed the project "Preventative Instruments for Virtual Training on Ergonomic Risk Prevention in the Glass industry" which was carried out thanks to the financing of the Foundation for the Prevention of Occupational Risk (FPRL), Actions IS 0317/20013, IS 0266/20013, IS 0320/20013.

The result was **ErgoVidrio**, a serious game which enables free access via smartphone or tablet to the information on Occupational Health and Risk Prevention in the Glass industry. ErgoVidrio contains a wide variety of preventative games and subjects, ranging from the most general to the very specific. For said purpose, it uses real images and videos of workplaces from the industry so that workers can identify with the scenarios presented.

## DEVELOPMENT

**ErgoVidrio** uses the latest technological advances to reach the workers of the Glass industry with an application based on serious games, which enables them to increase their awareness on the issue of occupational health and safety. The serious games use the leisure based motivation us humans have, to achieve objectives which go further afield than just entertainment, such as education and healthcare and in the area of prevention, increase in risk awareness and the prevention of situations involving risk.

The implementation of this project required a prior study on the ergonomic risks involved in the main roles and tasks of the industry, which served as a basis for the later development of the game scripts which were based on real working situations in the glass industry.

The application comprises a series of games, which range from the most general on the subject of health and safety (essential aspects of the most important laws on preventative material and basic aspects of ergonomics), to the most specific and centered on productive tasks and processes of the Glass industry itself. The game uses audiovisual material (images, videos, etc.) from real workplaces so that workers can identify with the presented risk situations, and hence increasing its use.

Each game consists of audiovisual material (videos, images, etc.), a question, and multiple choice answers for the situation displayed (multiple choice options, selection of images, true or false, etc.). Furthermore, a logical learning process was followed in the development of the games. In this manner, each of the games in the application provides additional information or feedback to the worker to reinforce learning and reach each worker with its message.



Figure 1. ErgoVidrio. Game example

**ErgoVidrio is a pioneering and unique game** in the industry, as it has a direct approach to the identification and treatment of **ergonomic risks**, which has become increasingly important in recent years and the main cause of accidents involving sick leave.

The aim of this game is to be a **support tool which is always close by and available** both to workers in the industry and technicians in charge of the training it can find within, along with examples and supports for illustrating their training task.

Among the **essential characteristics** of **ErgoVidrio** we can highlight:

- ◆ Sending of weekly messages to application users to promote their active participation.
- ◆ Great variety of games (multiple choice, true or false, selection of images, etc.) which make the application more entertaining.
- ◆ Varied contents, including all important aspects of ergonomic risks in the glass industry (handling loads, identification of unsuitable or forced posture in specific tasks, repetitive movements, injuries, disorders, etc.), as well as the basic legal aspects on the subject of occupational health and safety.
- ◆ It provides information and feedback to the worker to strengthen learning and ensure that the preventative message reaches each and every one.

## CONCLUSIONS

The end result of the project is the **creation of an app (ErgoVidrio)**, an ideal vehicle for spreading information and training on the subject of ergonomic risk prevention in the industry, providing access to specific material to companies, prevention technicians, teachers and workers.

It can be downloaded for free to ANDROID devices via the Play Store just by entering the application name **Ergovidrio**.



Figure 2. ErgoVidrio: Mobile application.

The materials are also accessible on the website [ergovidrio.ibv.org](http://ergovidrio.ibv.org), which enables access to training games generated under the framework of this project.

## Prevención de riesgos ergonómicos en el sector del vidrio

Bienvenid@ al juego interactivo sobre riesgos ergonómicos en el sector del vidrio. Esta aplicación te permitirá, de una forma sencilla ampliar tus conocimientos sobre seguridad y salud. Aprende mientras te diviertes.




Figure 3. Website [ergovidrio.ibv.org](http://ergovidrio.ibv.org)

**ErgoVidrio is a new, fun and attractive game**, adapted to the working conditions of glass industry, for which it provides learning on the subject of ergonomic risk prevention, contributes to the improvement of preventative culture in companies and promotes the participation of workers in the identification and solution of ergonomic issues.

## THANKS

We would like to thank the companies of glass industry who have collaborated in the project, providing

us with information and enabling us to carry out field studies at their facilities.



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