Give your operator a new brain courtesy of Area 51

Alarm system trust
Crying wolf versus missing the wolf

Evidence on the benefit of light backgrounds

Recently Released:
Human Factors in Process Plant Operation by David Strobhar, available now.

Large Monitor Survey:
Participants needed!

Invitation to 2015 COP Summer Meeting

Our Services

- Alarm Management
- Workload/Staffing
- Modernization

What is the Center for Operator Performance?
The COP is an alliance of academic and process companies to research generic issues in human factors and process

Recent Research
Give your operator a new brain courtesy of Area 51

Downloading skills and knowledge directly into an individual’s brain is the stuff of science fiction. As we have learned, science fiction has a way of becoming science fact. Research is currently being performed by the US Air Force that, while not quite a download, is a method of manipulating the brain for enhanced learning (Parasuraman, R. and McKinley, R.A., Using Noninvasive Brain Stimulation to Accelerate Learning and Enhance Human Performance, HUMAN FACTORS, Vol. 56, No. 5, August 2014, pp. 816–824).

Called transcranial direct current stimulation, or tDCS, the Air Force has found a way to speed learning by 60%. The techniques involve applying electrical stimulation to the portion of the brain associated with the learning of specific skills and knowledge. It is theorized that the stimulation increases the plasticity of the brain, enabling it to more easily undergo the structural changes that occur with learning.

An example of the impact of tDCS is shown in the figure below. While the subjects in the “Sham” group (no stimulation) got better with practice, the tDCS group did so faster and with greater improvement.
operator performance.

Visit the COP online at: OperatorPerformance.org

Invitation to 2015 Summer Meeting

The next meeting of the Center for Operator Performance will be June 8-10, 2015, in Dayton, OH.

In addition to the board business meeting, the meeting provides an opportunity to hear updates on the current research projects, meet with researchers, and network with other organizations working to improve operator performance.

Guests are welcome!

Registration details are available at OperatorPerformance.org

Some other things of note include --

The members-only section of the website is active at OperatorPerformance.net

If you work for any of the following, get your login & password to keep abreast of the latest research

- ABB
- Chevron
- Emerson
- Flint Hills Resources
- Georgia Pacific
- Invista
- Koch

Evidence on the benefit of light backgrounds

The use of light (grey) backgrounds has met with mixed reaction from plant operators. Despite what many operators are told, research shows that light colored backgrounds are not always advantageous. However, some recent research shows one of the advantages of light colored backgrounds (Positive Display Polarity Is Particularly Advantageous for Small Character Sizes: Implications for Display Design, Piepenbrock, C., Mayr, S., and Buchner, A., HUMAN FACTORS, Vol. 56, No. 5, August 2014, pp. 942–951).

In human factors research, display background is described as follows –

- Positive Polarity = Dark characters on light background
- Negative Polarity = Light characters on dark background

The research on a proof-reading task shows that positive polarity improves performance with decreasing character size. Positive polarity improves the perception of detail. So all else being equal, positive polarity would enable smaller fonts than negative polarity.

Does this prove conclusively that light backgrounds are better? No, it proves they are better if you are doing proofreading tasks or those requiring fine detail. Whether it is better for a process plant operator and under what conditions is still open for debate. This is the impetus for a study to be undertaken by the Center for Operator Performance. The goal of the study is to determine the variables that influence color scheme choice, such as ambient lighting (a variable of interest mentioned by the authors of this study), monitor size and placement, and type of task. This study should begin in early 2015. Stay tuned for the results.

For more information about display design, along with links to relevant newsletter articles and papers, visit Beville's page on Display Design.

Human Factors in Process Plant Operation

When it comes to human factors in process plant operation, we wrote the book. Published by Momentum Press and available at Amazon, this is an introduction to human factors for plant operations and engineering personnel. Numerous examples and anecdotes from over 30 years of industry experience are used to highlight the key variables that affect operator performance, the human factors. The print version is in black-and-white, with the E-book in color.
This book, authored by our very own David Strobhar, is available from Momentum Press.

Excerpt from the back cover:
"Call it the Human element in how a refining and chemical process operation is run….the other side of the machine and control system operation equation. Its value is in lives protected and money saved.

This plain English guide to the principles of human factors will enable operations and control personnel—both the experienced and uninitiated—to understand how to successfully incorporate the concepts within their own plants. Through real-world examples, the author explains how human factors engineering concepts do, and must, dovetail with process plant design and operation. Offering practical insights, the book lays out the principles of human-system interactions and how they must be incorporated into any plant and control system from the get go—in order to ensure safe and efficient operations."

Do you wonder how large screen monitors are effectively used in process control? So do we!

Survey Participants Needed!
Are you installing large monitors in your control room? Do you have questions on the value of that decision or perhaps what to put on them? The Center for Operator Performance is conducting a survey of large monitor use in the industry as a prelude to developing guidelines for their use. We are opening this survey to any operating company that would like to participate, with results available to all that do.

To participate, follow this link: https://www.surveymonkey.com/s/SFX8DFH

(Note: The survey takes approximately 20 minutes and is appropriate for operators, supervisors, engineers, and others involved in decision to use large screen monitors.)