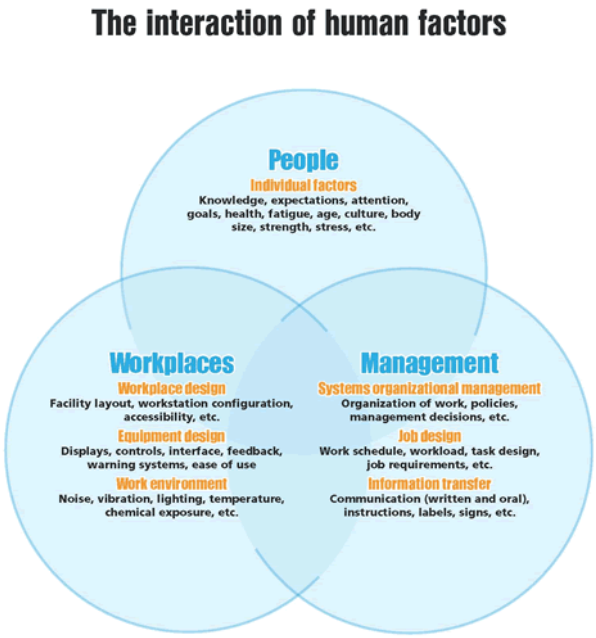
Wits Transnet Centre of Systems Engineering, University of the Witwatersrand, Private Bag 3, Wits 2050
• Tel: +2711 717 7491 • Jessica.Hutchings@wits.ac.za

## Human Factors and its effect on Operational Efficiency

Human Factors (HF) is an applied science which draws on many interrelated disciplines such as Engineering, Psychology, Ergonomics and Physiology. It is the study of humans as components of complex systems focussing on the interaction between people and technology. HF focuses on understanding people in their work environment (both the physical and organisation) and aims to ensure compatibility between the operator's capabilities and limitations with the demands of the task, job and / or work environment.




Human factors can be applied to a diverse range of industry operations such as:

- the development, design and testing of equipment, controls and displays according to Ergonomic standards;
- optimising human behaviour and performance, including fatigue, stress, workload, vigilance, decision-making and communication;
- the development of standard operating procedures and check-lists;
- accident / incident investigations and system audits;
- the development of safety management systems.

As part of Transnet's Market Demand Strategy (MDS), one of the criteria required to achieve the MDS is "significant productivity and operational efficiency improvements". By applying HF principles within Transnet Operating Divisions, Transnet should be able to achieve improvements in productivity and operational efficiency given the benefits of HF. If workplaces, tools, equipment, technology and environments are designed according to the needs and abilities of the people who

use and / or interact with the above, then it will allow for people to work more efficiently, safer and with less risk to themselves and the company.

Accidents and injuries are attributed to a number of reasons, one of which is a lack of consideration for HF within an organisation. Failure to consider HF could have negative implications for an organisation's productivity and efficiency due to factors such as delays, wastage, damage to infrastructure, damage to the environment, increased costs e.g. legal, moral or social, damage to the reputation of the organisation and most importantly injury and death to the most valuable resource, people.

By ensuring compatibility between people and the technology they interact with, the primary intention of HF is to improve safety and operational efficiency as the tools, job, technology and work environment will be matched to the person rather than the other way around. Safety and operational efficiency are two primary benefits of including HF within an organisation as employees are able to work more comfortably, efficiently and safely, thereby minimising the risk of injuries and accidents in the workplace, and therefore improving productivity and operational efficiency.

Applying HF knowledge within Transnet ODs can contribute to the identification and rectification of systemic safety deficiencies before they lead to incidents and accidents. Given the escalating costs of such accidents as mentioned above, it is imperative that these incidents are prevented before they result in catastrophic events. This is an example of just one of the ways that HF can contribute to improving Transnet's strategy to improve operational efficiency and productivity.

Future articles will address matters such as HF in the domain of operators of equipment, new equipment introduction and training, reducing stresses on the body and others.

For further information please contact Jessica Hutchings at the Wits TCSE via email Jessica.Hutchings@wits.ac.za or telephone 011 717 7491.