



Human Factors Applications

3D Model Reviews



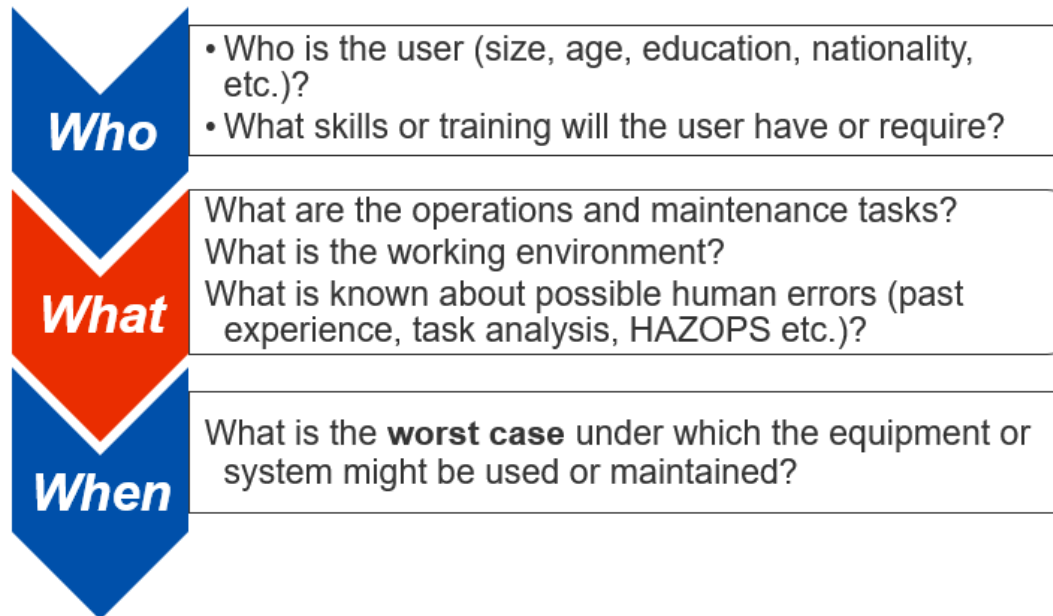
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Human Factors Applications

- *HFE approach is to ask ...*



- *...to answer: does the **design** support the **tasks**?*

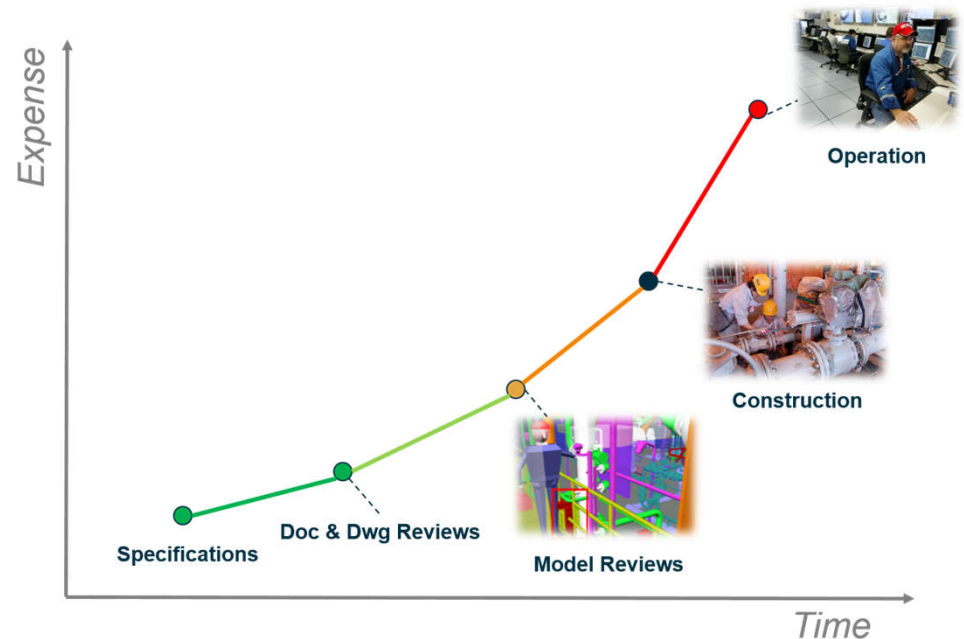


Human Factors Applications

- Good to include HF in early review of drawings and 3D models
- Follow up during construction

This approach avoids expensive costs and latent design flaws in the facility.

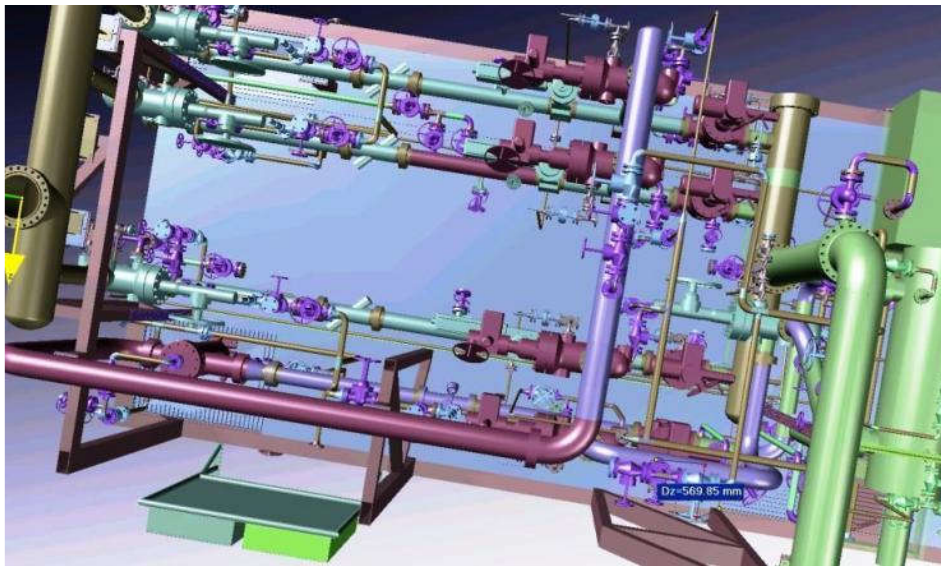
Chart is based on a NASA study of major projects.





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Examples of issues that can be picked up early during 3D model and drawing reviews ...



3D Model: looks like there's plenty room!

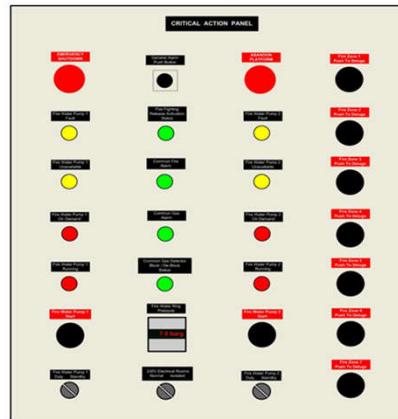
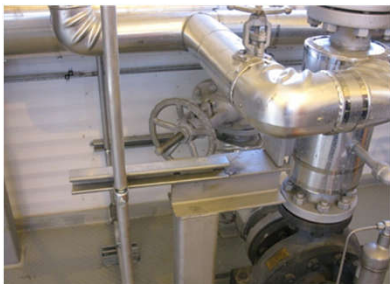
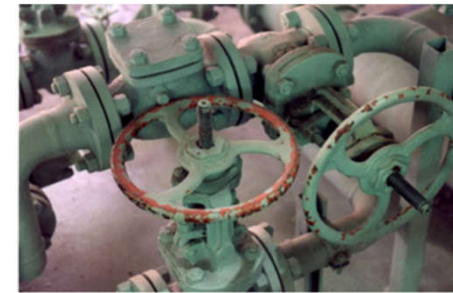
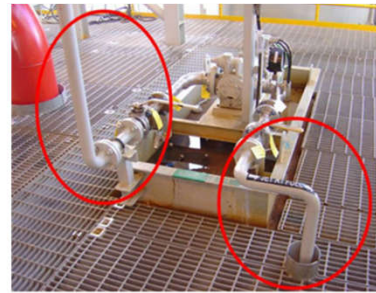


As-built: many more valves and pipe supports in the way

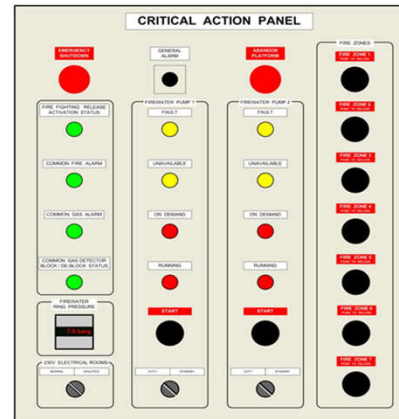


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Examples of issues that can be picked up early during 3D model and drawing reviews ...



Before



After





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Examples of issues that can be picked up early during 3D model and drawing reviews ...





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HF 3D MODEL REVIEW QUESTIONS

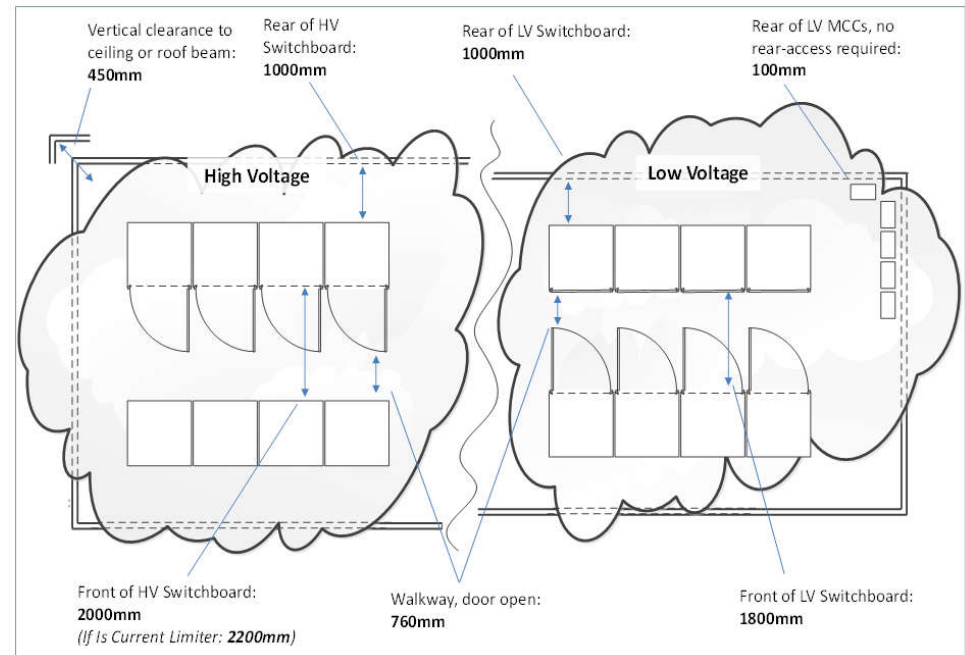
- What are the daily / weekly / infrequent operations and maintenance activities
- What is the material handling strategy for the item
- Can the required equipment be taken to the item, and used around the item?
- Are there surfaces > 60 deg C that could be touched by the operator during normal operations
- Can the operator see everything he needs to under all lighting conditions?



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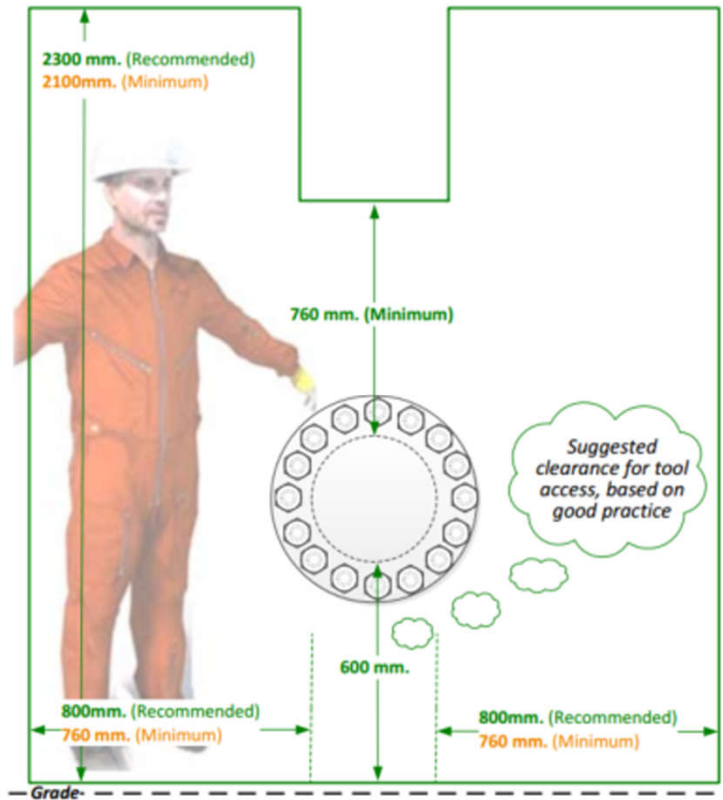
Delivering design solutions in a form that can be quickly understood by users

Equipment	Distance
In front of HV switchboard > 7.2 kV	2,000mm
In front of HV Is Current Limiter	2,200mm
In front of HV switchboard < 7.2 kV	2,000mm
In front of LV switchboard	1,800mm
Rear of HV switchboard	1,000mm
Rear of LV switchgear	1,000mm
Rear of LV MCC's with no rear access required	100mm
Vertical, from tallest equipment to ceiling or bottom of roof beam	450mm





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Delivering design solutions in a form that can be quickly applied by users



"Hydratight" air-driven HPUs come in two models. Shown below, approximately to scale.





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