

## **THE DEVELOPMENT AND APPLICATION OF HEALTH AND SAFETY GROUNDED LADDERS (ANCHORED RATING SCALES) FOR BENCHMARKING**

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The use of Grounded Ladders (also known as Anchored Rating Scales) is a common process for the measurement of performance, attitude surveys and behavioural assessments. However, this methodology is seldomly applied to the field of health and safety, but can lend itself very well as a tool for benchmarking. When Grounded Ladders are applied, it is a fast, effective and reliable process. The outcome of this process can also help to map how performance can be improved, and the steps required to achieve this. To develop health and safety Grounded Ladders requires a full appreciation of safety management systems, specific legal and best practice standards and how this relates to the appropriate management systems, risk control processes and workplace precautions for the health and safety topic being assessed.

By assigning a level of criticality and plotting this against the results from each Grounded Ladder, a company's health and safety strengths and weaknesses can be viewed and developed into a strategy for improvement.

**KEYWORDS:** benchmarking, grounded ladders, anchored rating scales

### **WHY MEASURE PERFORMANCE AND BENCHMARK**

The word 'benchmarking' has come to mean comparing with a standard, originating from the term benchmark, which conveys a reference point, used in surveying<sup>1</sup>. By measuring health and safety performance through benchmarking, the benefits to an organisation are both numerous and varied, and include:

- Provide information on the status of hazard identification and risk control measures
- Assess that these control measures are proportionate to the organisation's hazards and risks
- Identifies where the organisation stands in comparison to other companies, best practice standards and within legal requirements
- Interprets why an organisation's health and safety performance is at its current status
- Identifies the organisation's strengths and weaknesses
- By regular review, identifies if performance is getting better or worse over time
- Assesses if health and safety management is applied consistently across the whole organisation
- Pick up new ideas by learning how others apply health and safety to their organisation
- Lead to overall improvements in health and safety

The output of such benchmarking can concentrate efforts in key areas where there is a significant impact to health and safety. Management can be assisted in deciding what performance level they wish to achieve relative to where they currently are, and hence determine what progress is necessary and achievable. Personnel, money and time requirements to accomplish health and safety objectives can then be more realistically set, as information from benchmarking can focus and prioritise resources assigned by management.

As a business improvement tool, benchmarking can be used by companies to compare their relative standard of health and safety performance to other similar industries and organisations. Where there is a vision of becoming a ‘World Class Leader’ a route to success can be mapped out through benchmarking standards. Such a route can be easily identified when Grounded Ladders are applied as a benchmarking process.

### KEY FACTORS ASSOCIATED WITH THE DEVELOPMENT OF GROUNDED LADDERS

A health and safety Grounded Ladder (also known as Anchored Rating Scales) is a practical evaluation of performance, simply broken down into 6 grades. Referring to Figure 1, the top of the scale (A) demonstrates best practice available, full compliance to legal

Safe Systems of Work		Plant _____					
Grade	Z	Y	X	C	B	A	
Description	<p>Site HSE procedures and standards do not exist.</p> <p>No formal risk assessment process exists.</p> <p>Permit to Work (PTW) system does not exist.</p>	<p>Site HSE procedures and standards do exist but are not known by site workforce.</p> <p>Formal risk assessment exists but does not identify hazard, probability, risk of consequences and precautions. Risk assessments are not planned in advance.</p> <p>Conditions and precautions on permit to Work system do not relate to the task. Other information on PTW form not correctly completed.</p>	<p>Site HSE procedures and standards are inconsistently applied and enforced.</p> <p>Formal risk assessment process exists but tends to be applied for only high risk situations.</p> <p>Permit authorisers are not trained, tested and registered. Precautions stated in permit are not complied with in field.</p>	<p>Site HSE procedures and standards are consistently applied.</p> <p>Formal risk assessment process is applied for most medium and high risk activities.</p> <p>Permit to Work covers hot work, cold work, electrical and process isolation, and confined space. Prior to issue, interaction and co-ordination with other activities are considered.</p>	<p>Site HSE procedures are consistently applied and enforced.</p> <p>Formal risk assessment applied to all activities. Precautions are in proportion to risk. Risk assessments planned well in advance.</p> <p>PTW includes all appropriate supporting documentation including risk assessments e.g. COSHH, and method statements.</p>	<p>Site HSE procedures are regularly reviewed and modified in light of changes (legislation, technology, experience and incidents).</p> <p>Specific or generic risk assessments are produced for all operations and maintenance activities.</p> <p>PTW system monitored daily for non conformances, System considers handover and suspension situations.</p>	
Assessment							

Figure 1. Example of a Grounded Ladder for the performance of safe systems of work

standards and represents qualities of a role model company. The bottom of the scale (Z) relates to observations caused as a result of poor practice and management failures (such as lack of coordination and communication).

Grounded Ladders can be based on an occupational health and safety management system such as HSG65<sup>2</sup> or alternatively based on the environmental system standard BSEN 14001.

When developing Grounded Ladders, consideration is required on the level of hazard and risk associated with the activities to be benchmarked. For example, during an emergency response assessment, the quantities of flammable and combustible materials stored and processed, their distribution around site and probable sources of ignition, both originating from equipment and personnel, should be identified to determine the significance of fire and explosion risks and control measures for a Grounded Ladder benchmark assessment. Grounded Ladders enable the estimation of the adequacy of implementation and monitoring of the health and safety management system. Hence, for each activity to be benchmarked, the Grounded Ladder shall provide descriptors within the varying grades of performance relating to:

- Health and safety policies (i.e. the general intention, approach and objectives)
- Management structure and arrangements
- A planned and systematic approach to risk control systems, including risk assessment
- How performance is measured
- Auditing and reviewing performance, including lessons learnt
- Relevant legal and best practice standards

Effort is required to ensure that descriptors used within the rating scales are balanced to prevent any unintentional bias<sup>3</sup> of the outcome when grounded ladders are applied. For example, equal sized graduations should be applied to each grade and a full range of realistic descriptors should be made available to prevent a forced choice. To allow the opinion of the auditor to be freely expressed, when applying the Grounded Ladders, it is essential that those developing the ladders have an in-depth insight through theoretical knowledge and practical experience of the topic being benchmarked.

### **ADVANTAGES OF APPLYING GROUNDED LADDERS**

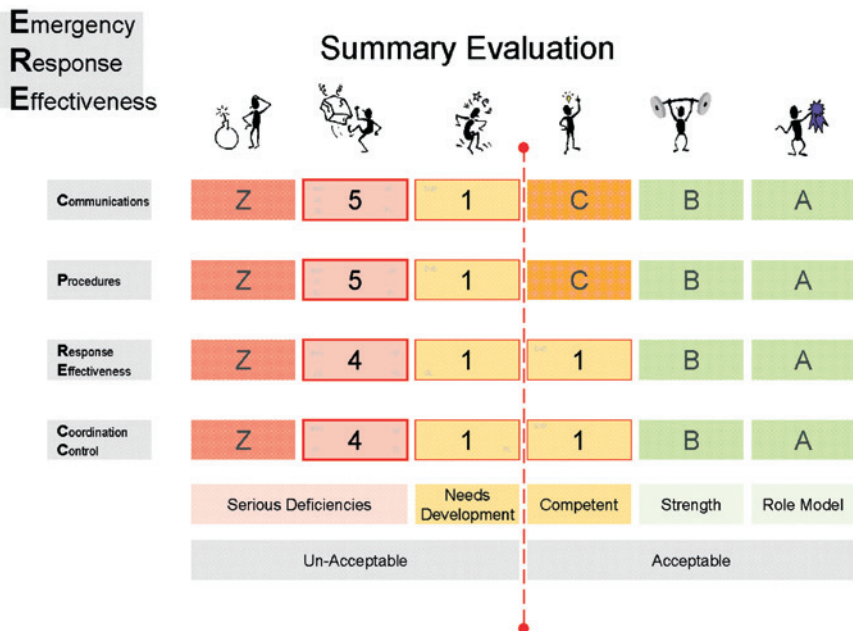
Results produced by Grounded Ladders tend to be easily repeatable because the rating grades provide a distinct definition of performance and so different auditors are likely to end up with the same assessment outcome. Results are also reliable (i.e. are consistently good in quality and performance), as the descriptors used for each grade provide a clear and concise representation of the actual level of health and safety performance of the activity being assessed.

When applied, this method of benchmarking is fast and efficient. Effort is merely required to obtain information in key health and safety areas and then acquire a rating (out of 6) for the level of performance by using the descriptors given in the grounded ladder. This auditing process can be repeated as often as desired, to assess the change

in performance over time, without the need for changing the grounded ladder descriptors. However, the performance standards in the ladders can be easily updated to incorporate additions to risk control systems documented, as a result of changes in best practice standards and legal requirements.

The ease of use of Grounded Ladders allows auditors with non-specialist technical skills to carry out the assessment (assuming a minimum level of competency and training). For a consistent approach, Grounded Ladders can be applied to all benchmarking disciplines including operations and maintenance when benchmarking a complete spectrum of site activities.

One of the greatest benefits of the application of Grounded Ladders is the impact and simplicity of the visual presentation of results, as shown in Figure 2, Summary Evaluation. Serious deficiencies are in the red region of the Grounded Ladder, health and safety strengths are in the green region and in the middle there lies average performance. Such a format provides a clear representation to the user/client of the level of effectiveness of the organisation’s health and safety management system.



**Figure 2.** Example of a Summary Evaluation

### EXPERIENCE IN THE APPLICATION OF GROUNDED LADDERS

Health and safety Grounded Ladders were tailored and applied as a tool during a recent technical due diligence study for the Visakapatam Refinery in India. Foster Wheeler successfully completed the due diligence study for the Hindustan Petroleum Corporation Limited (HPCL), the second largest refining and marketing oil company in India. Grounded Ladders were developed for health and safety aspects for the following areas: Safe Systems of Work, Permit to Work System. Management of Change, Emergency Response, Working with Contractors, Incident reporting, investigation and recording and Safety Performance and Measurement.

During the due diligence study, the Grounded Ladder assessment provided a tool in communicating to the site Health and Safety Department not only the judgement of the assessment, but also demonstrated how this judgement was reached, and informed them of what steps needed to be taken in order to move up the ladder and hence further improve site safety performance.

### OPPORTUNITY TO INTEGRATE GROUNDED LADDER OUTCOMES INTO BUSINESS STRATEGIES

The results from individual Grounded Ladders can be collated to form a summary evaluation against a level of criticality. The level of criticality defines the importance of, for

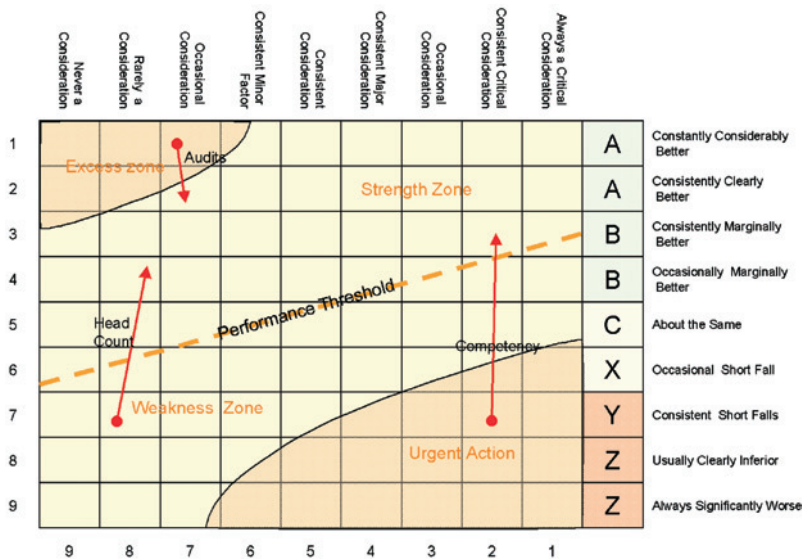


Figure 3. Development of Grounded Ladder outcomes into business strategies

example, communications have relative to, for example, planning, against the organisations specific requirements for emergency response effectiveness.

These results can then be plotted depicting an organisation's performance within the strength and weakness zones as shown in Figure 3. This process can also be integrated into the organisation's business strategy in order to provide definition and demonstration of how its health and safety performance wishes to develop.

## CONCLUSION

The development of Grounded Ladders is the most difficult aspect to its use and does require specialist competency and knowledge. Grounded Ladders should be tailored not only to the organisation's specific requirements, but also reflect best practice, legal standards in health and safety and be proportionate to the hazards and risks.

Foster Wheeler's specialist experience in management consultancy covering all aspects of plant operations has been utilised in the development of a suite of specific Grounded Ladders covering a wide variety of disciplines including maintenance, operations as well as health and safety, for the application of due diligence, benchmarking and audit activities. These generic ladders can be further enhanced for project and organisational specific requirements, which could, once developed be fully handed over to a client, with no additional specialist support required to apply the Grounded Ladder. The benefit is the significant reduction of long term running cost to the Client of the adoption of such an audit tool.

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## REFERENCES

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