HAZOP

Guide Words

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Rev.2

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1. HAZOP

- **HAZOP** is the abbreviation of **HAZ**ard and **OP**erability Study. It was developed in the late 60´s by ICI (Imperial Chemical Industries), a major British chemical company at that time, and became the third stage of their 6 steps hazard analysis procedure.
- **HAZOP** is a qualitative technique.
- **HAZOP** stimulates the participants to identify potential deviation of the original intentions of the project.
- **HAZOP** is carried out using some basic documents, typically P&I, Operating Instructions and the previous Hazard Study I and II.
- **HAZOP** is focused on the IDENTIFICATION of potential deviations. Discussions on how to solve identified complex problems ARE NOT carried out during the **HAZOP** meeting.
- The **HAZOP** participants are composed by a multifunctional team, which should not exceed 6 participants, in order to promote a productive meeting.
- Participants MUST have expertise in their acting field.
- The **HAZOP** Leader MUST have a proper qualification to conduct the **HAZOP** process.
- **HAZOP** meeting should not exceed 3 hours. The number of necessary meetings will depend on the complexity of the project.
- **HAZOP** meetings should be conducted in a comfortable and quiet room. During the meetings, no external interruptions should be allowed.

Very important: **HAZOP** is only a part of a company´s Risk Management Plan. Although being a very powerful tool, **HAZOP is not the holy grail for process safety analysis**. Other methodologies should also be considered according to the complexity of the process.

The following pages bring a suggestion of templates and guide words that might be used during a HAZOP study.

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HAZOP front page:

HAZOP - Hazard & Operability Study

Equipament:	Tank X	Customer:	Z
Project:	Plant Y	City/Country:	
Nº Document:	HS.015.001	Date:	
		Revision:	0

Documents analised:

P&I - 002.005

Lista de Itens/Nós avaliados	Participants
1 - Tank X	
2 -	
3 -	
4 -	
5 -	
6 -	
7 -	
8 -	
9 -	
10 -	

IMPORTANT: The hazard analysis recorded in this document take into account the reasonably predictable events. Catastrophic and unpredictable events such as aircraft crashes, sabotage, dam failures, etc. are not considered.

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HAZOP – register of deviations:

HAZOP - Hazard & Operability Study

Item/Node	Tank X

Item	Guide Word	Causes for Deviation	Available Protections	Consequences		Corrective Actions	Who	When
				WITH Protection	WITHOUT Protection			
1.1	High FLOW							
1.2	Low FLOW							
1.3	No FLOW							
1.4	Reverse FLOW							
1.5	High LEVEL							
1.6	Low LEVEL							
1.7	High REACTION							
1.8	Low REACTION							
1.9	High PRESSURE							
1.10	Low PRESSURE							
1.11	High TEMPERATURE							
1.12	Low TEMPERATURE							
1.13	Static Electricity							
1.14	Wrong Place							
1.15	High CONCENTRATION							
1.16	Low CONCENTRATION							
1.17	Contaminants							
1.18	High VELOCITY							
1.19	Low VELOCITY							
1.20	Before/Too Soon							
1.21	Later/Too Late							
1.22	Tests							
1.23	Maintenance							
1.24	Normal Effluents							
1.25	Abnormal Effluents							
1.26	Noise							
1.27	Failure in Utilities							
1.28	Emergencies							

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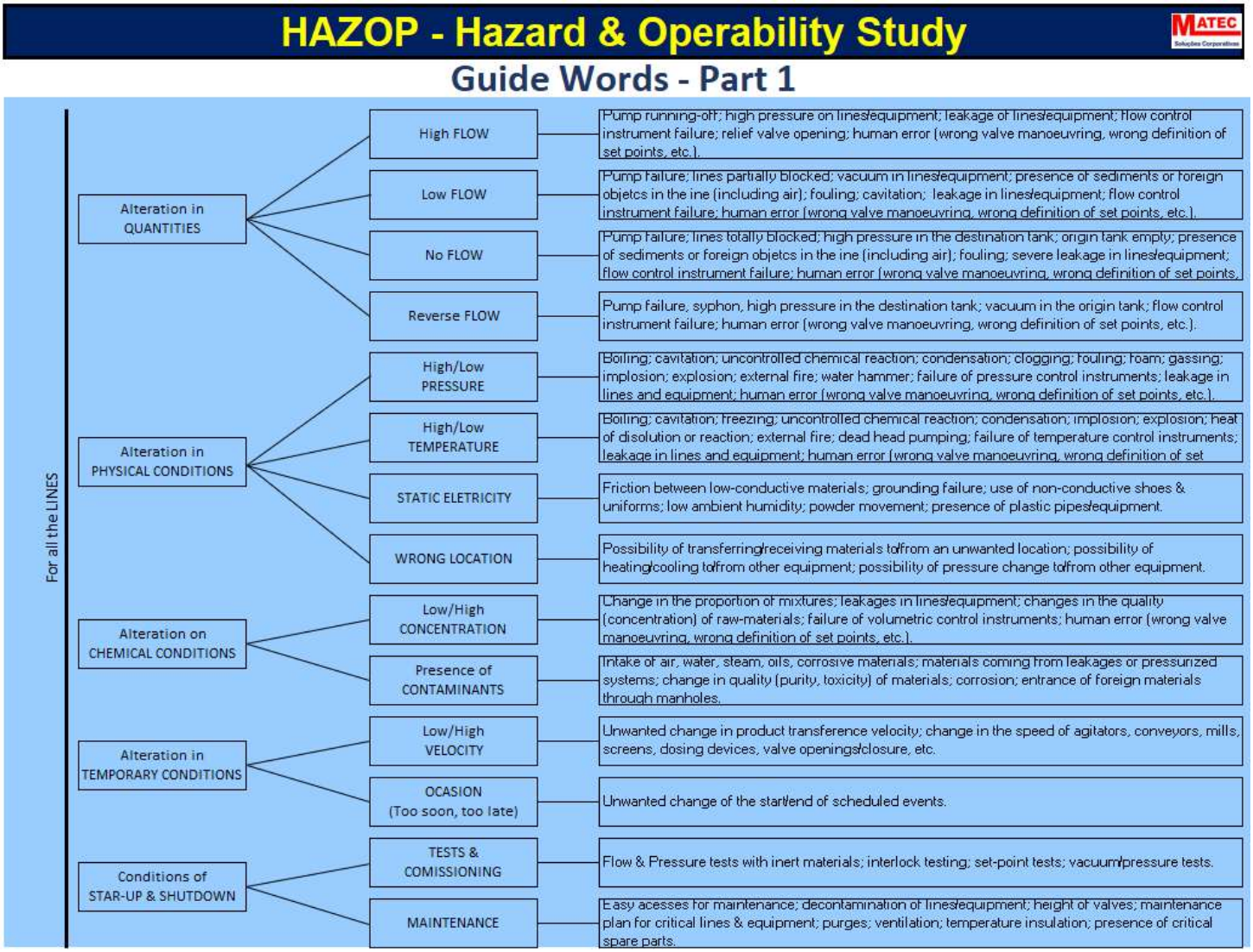

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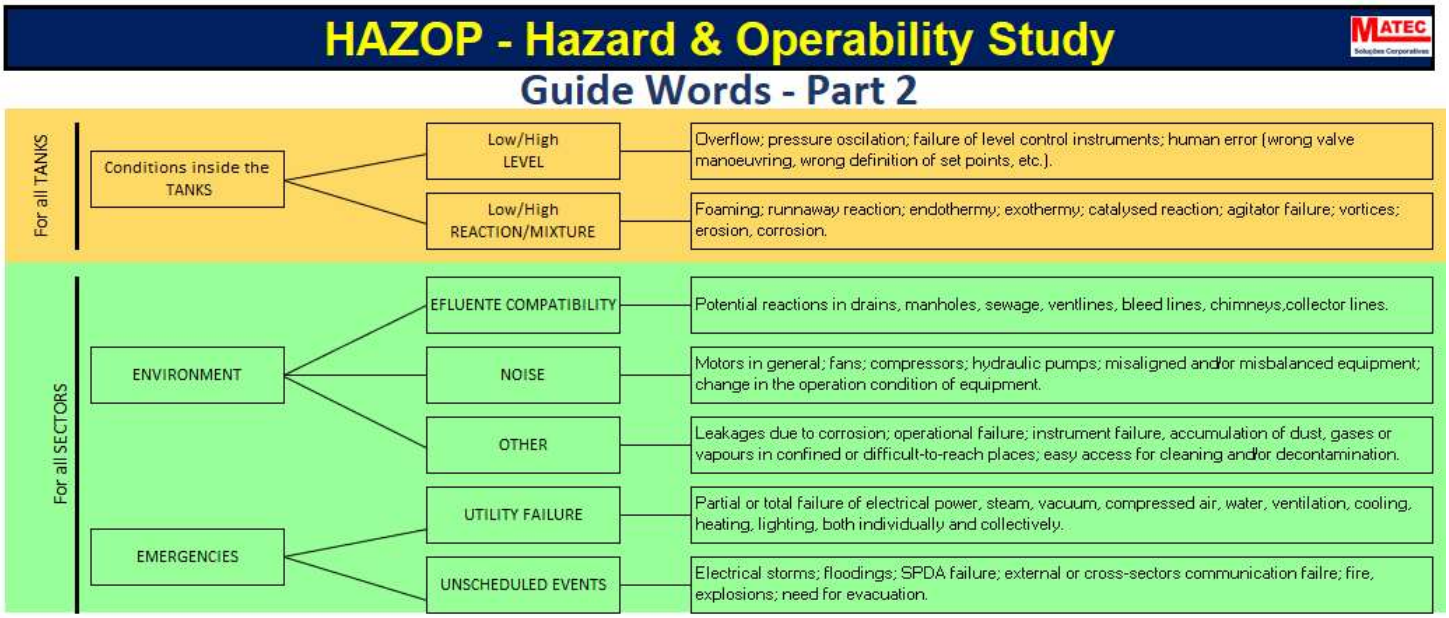

The Autor

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