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for Highly Engineered Systems

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Pisa

AGIP EXPERIENCE ON A NEW INTEGRATED APPROACH TO EQUIPMENT CRITICALITY EVALUATION

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AGIP EXPERIENCE ON A NEW INTEGRATED APPROACH TO EQUIPMENT CRITICALITY EVALUATION

- OBJECTIVES
- METHODOLOGY
- CONCLUSIONS

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OBJECTIVES

- For each plant item define a "Criticality Class" for maintenance purpose linking Engineering activities to plant Management ones.
- On the basis of the "Criticality Class" found, then the appropriate form of maintenance will be applied
- To establish a maintenance priority based on the "Criticality Classes" ranking

This to contribute in pursuing the concept of "dependability" (EN 28402: collective term used to describe the availability performance and its influencing factors)

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METHODOLOGY

- THE APPLICABILITY CONTEXT
- CRITICALITY ANALYSIS PROCESS
- TOOL CRITICALITY MATRIX TYPICAL FORM (GAS PLT)
- CRITICALITY VALUE & CRITICALITY CLASS CALCULATION

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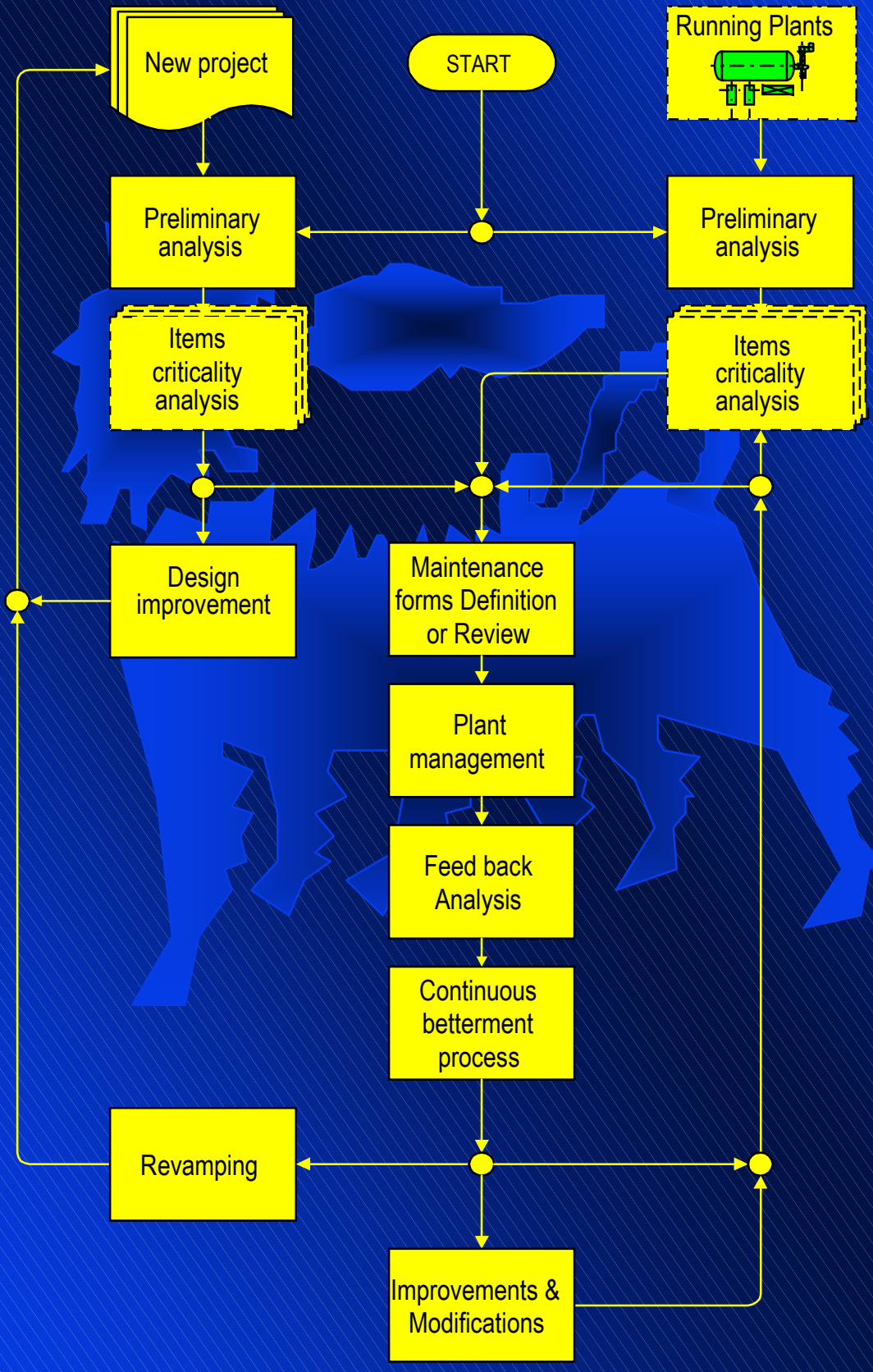
THE APPLICABILITY CONTEST



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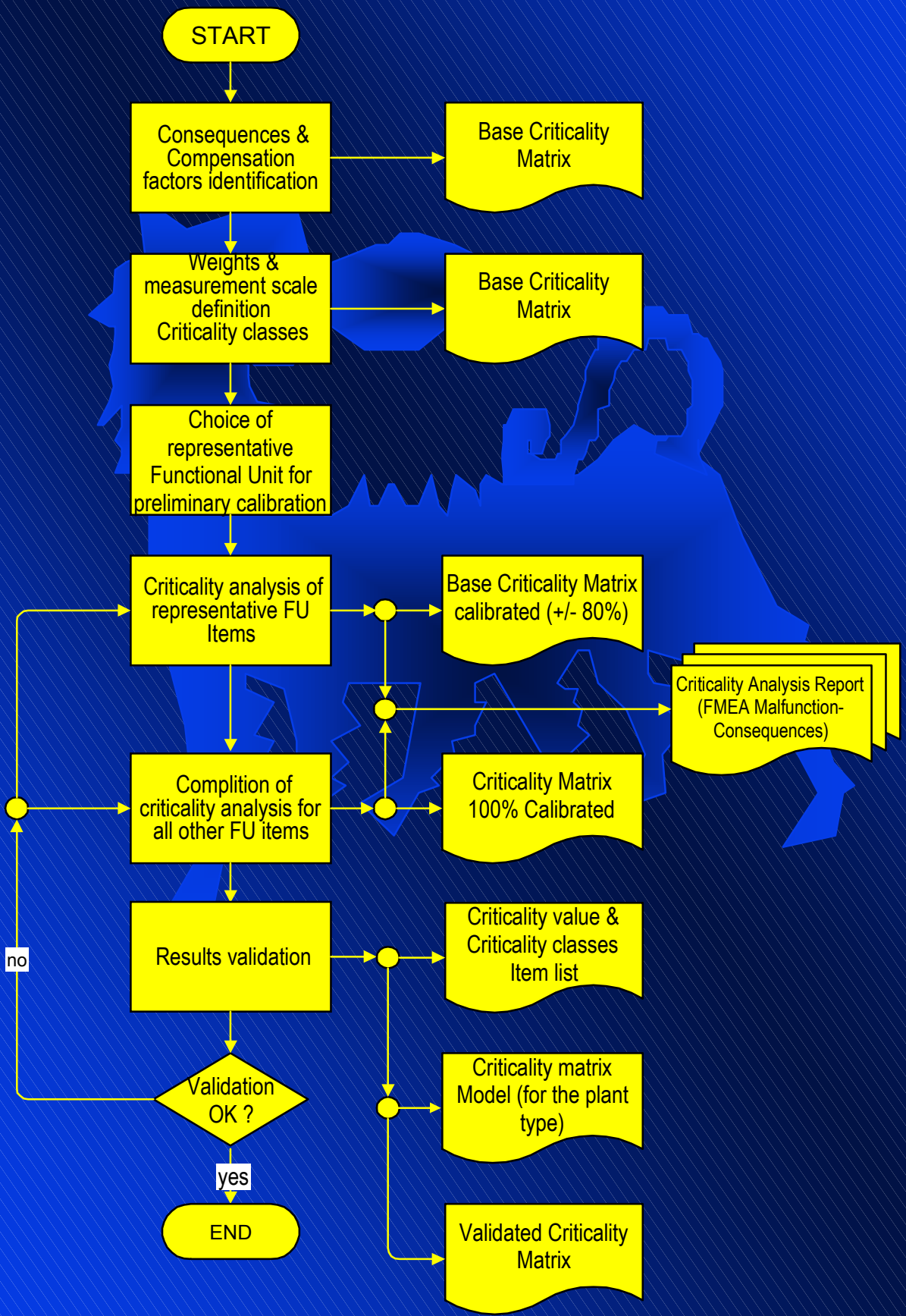
CRITICALITY ANALYSIS PROCESS



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TOOL
CRITICALITY MATRIX TYPICAL FORM (GAS PLT)

ITEM:	Safety/Environment Consequences	Safety Std. reduction (2/2 or 1/1 logic)			Safety Std. reduction (2/3 or 1/3 logic)			Explosive mixture		Chemical leakage		Liquid Hydrocarbons leakage		Gaseous hydrocarbons leakage					Effluent high oil content		Snuffing system unavailability		No effect	PRODUCTION VALUE
Production Consequences	Comp. Factors	SE-A5	SE-B5	SE-C5	SE-A5	SE-B5	SE-C5	SE-A3	SE-B3	SE-A2	SE-B2	SE-A2	SE-B2	SE-A1	SE-B1	SE-C1	SE-D1	SE-E1	SE-A2	SE-B2	SE-A4	SE-B4		
Out spec. Gas	P1																							
	P2																							
	P3																							
Flowline shut down	P1																							
	P2																							
Separation shut down	P1																							
	P2																							
Functional Unit Malfunctioning	P1																							
	P2																							
	P3																							
Consequences on other Functional Units	P1																							
	P2																							
	P3																							
Functional Unit Availab. Reduction	P4																							
	P5																							
No effect																								
SAFETY VALUE																								

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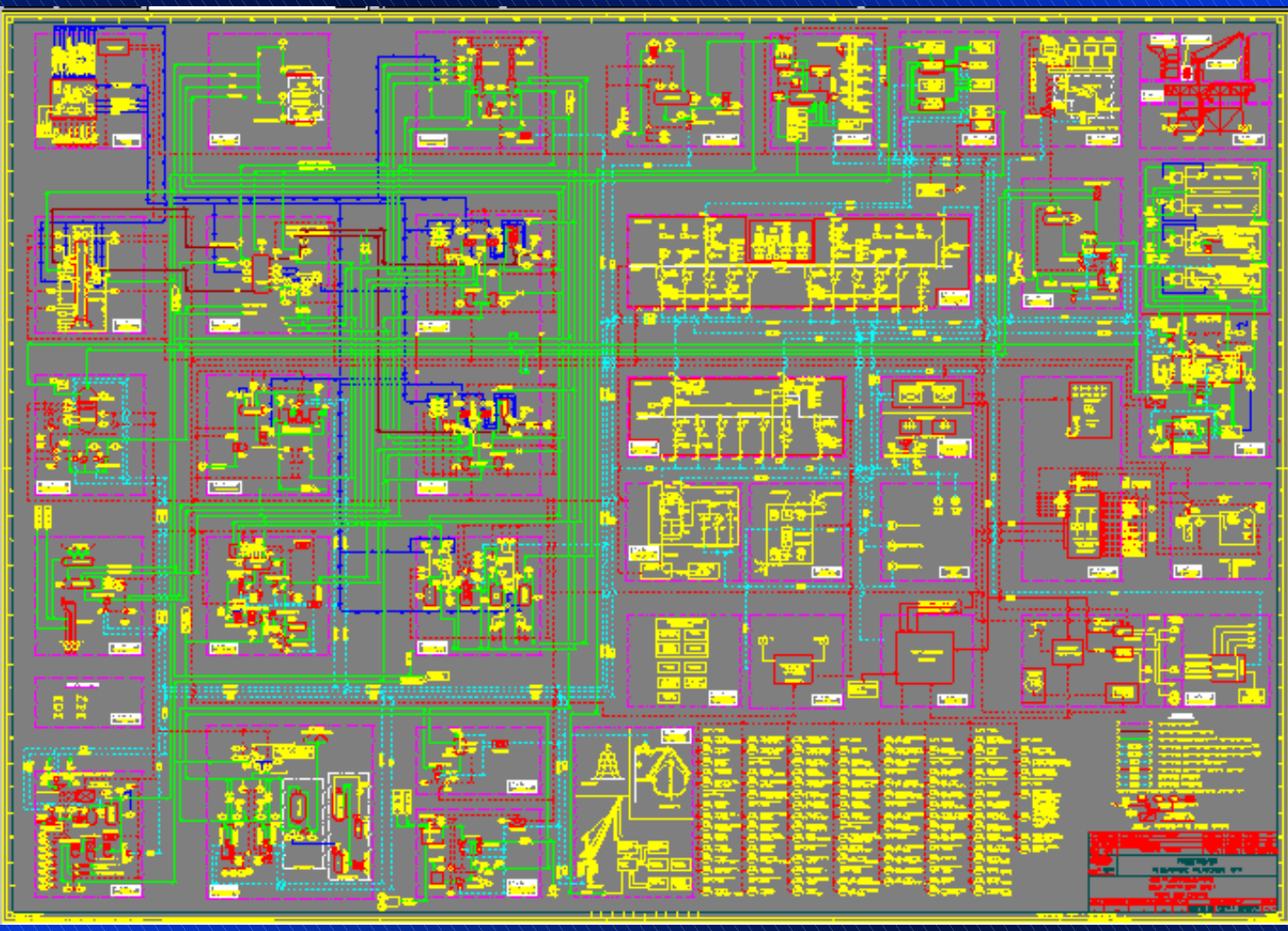
TYPICAL GAS PLATFORM DIAGRAM



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CRITICALITY VALUE & CRITICALITY CLASS CALCULATION

Functionality consequence weight
x
CFweight

+

Safety/ environment consequence weight
x
ΣCFweight

=

CRITICALITY VALUE

|++++|++++|++++|++++|++++|++++

++++|++++|	+|++++|++++|++++|	++++|++++|+++
CRITICALITY CLASS 3	CRITICALITY CLASS 2	CRITICALITY CLASS 1

Criticality v e numerical rang

Corrective maintenance

Preventive maintenance

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CONCLUSIONS

- This methodology represents a first concrete step towards a reduction of subjectivity of the items criticality value for maintenance purpose
- The methodology , even if it does not yet express the item criticality through a quantitative method, makes use of an engineering approach and of logical methods pertinent to the reliability analysis
- The systematic application of this methodology allows the traceability of the decisional process which have led to the choice of the adopted maintenance form for each item

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