



SafePool

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SAFEPOOL

Digital Safety



What SafePool does ?



PHA Steps



Process
Hazard
Analysis

1. Step

Define
Critical
Equipments

DOW FE&I

Risk
Assessment

HAZOP – FTA/ETA
Studies

3. Step

2. Step

Consequence
Analysis

Modelling, ERPs



New Step

Industry-leading software,
created with Tüpraş resources,
that monitors the protection
barriers of equipment critical
to Process Safety in an online
and measurable manner, keeping
risk analysis studies up-to-
date.

1. Step : Define Critical Equipments

 114 -Catastrophic

 155

 215

 153

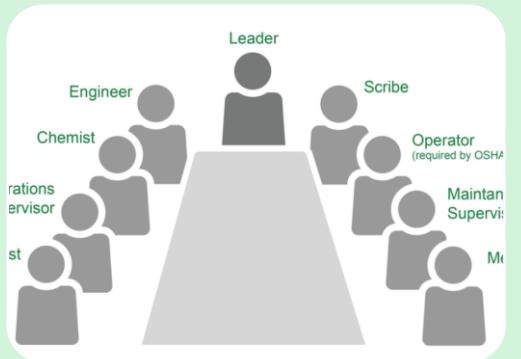
 127

764

Static Equipments



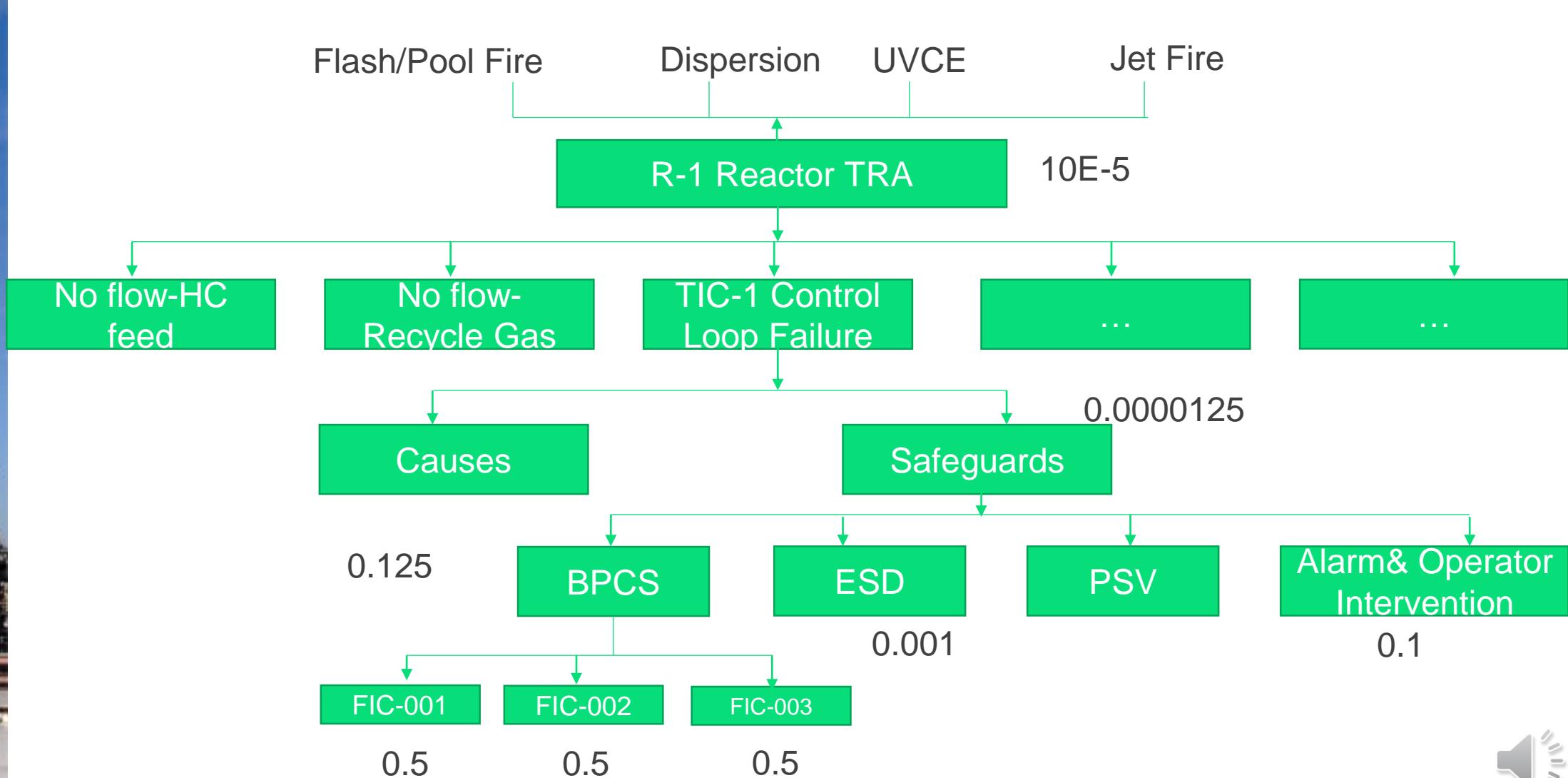
2. Step : Risk Assessment

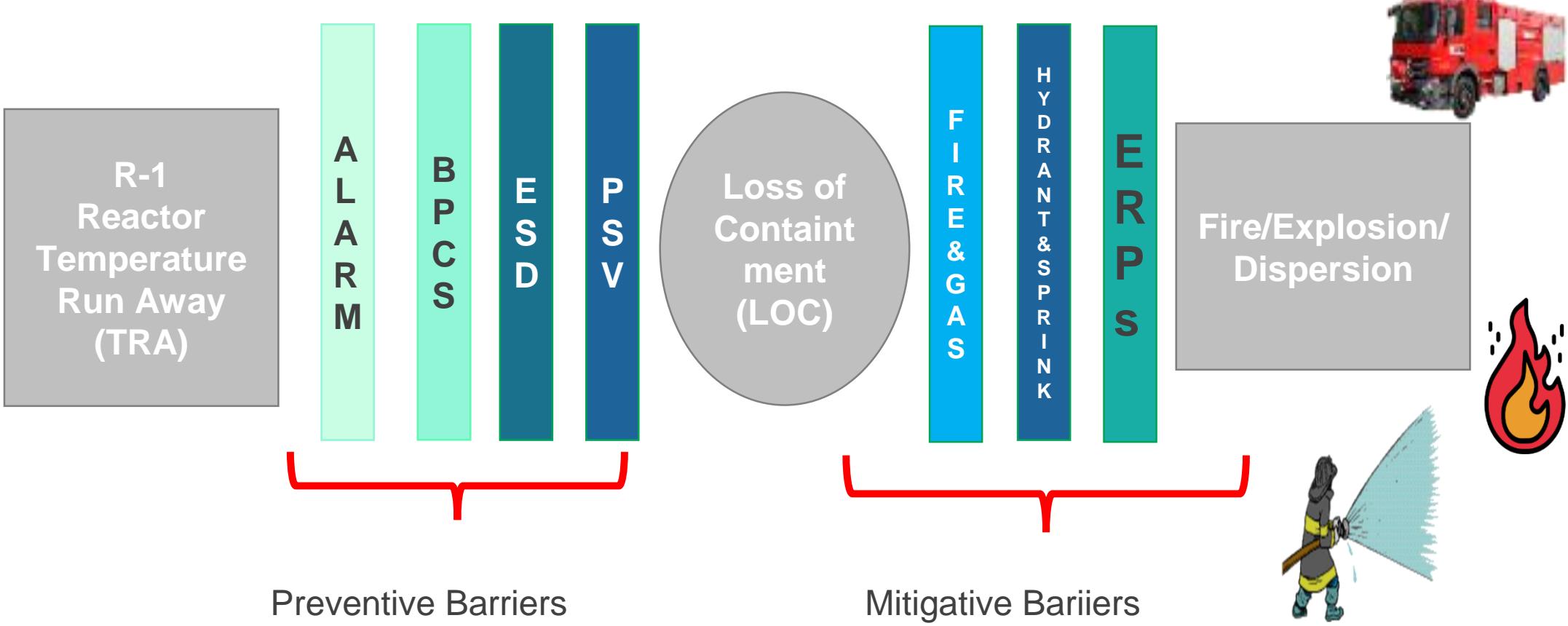


HAZOP



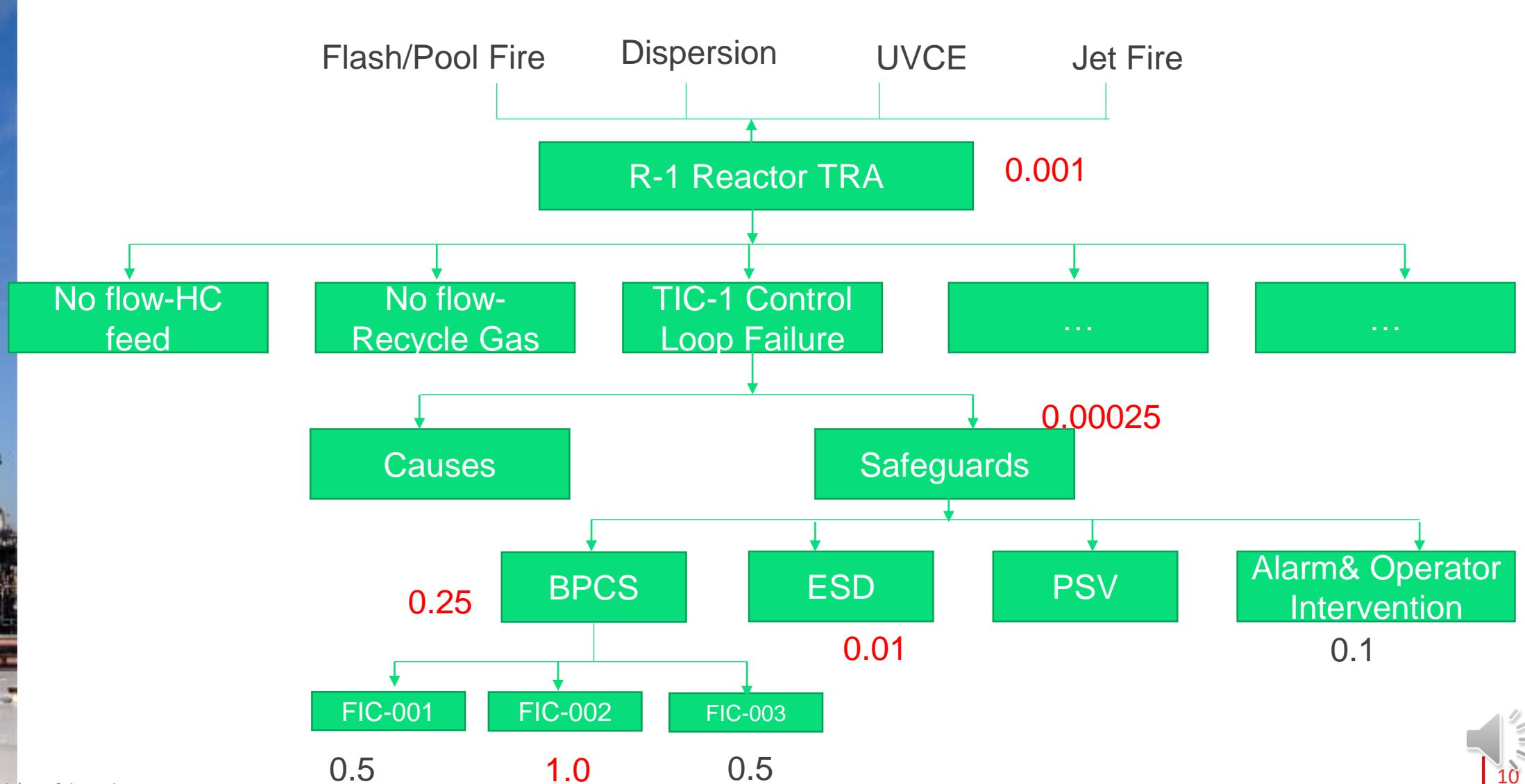
Fault Tree Analysis-Event Tree Analysis





So where will SafePool be in this process?

Fault Tree Analysis-Event Tree Analysis



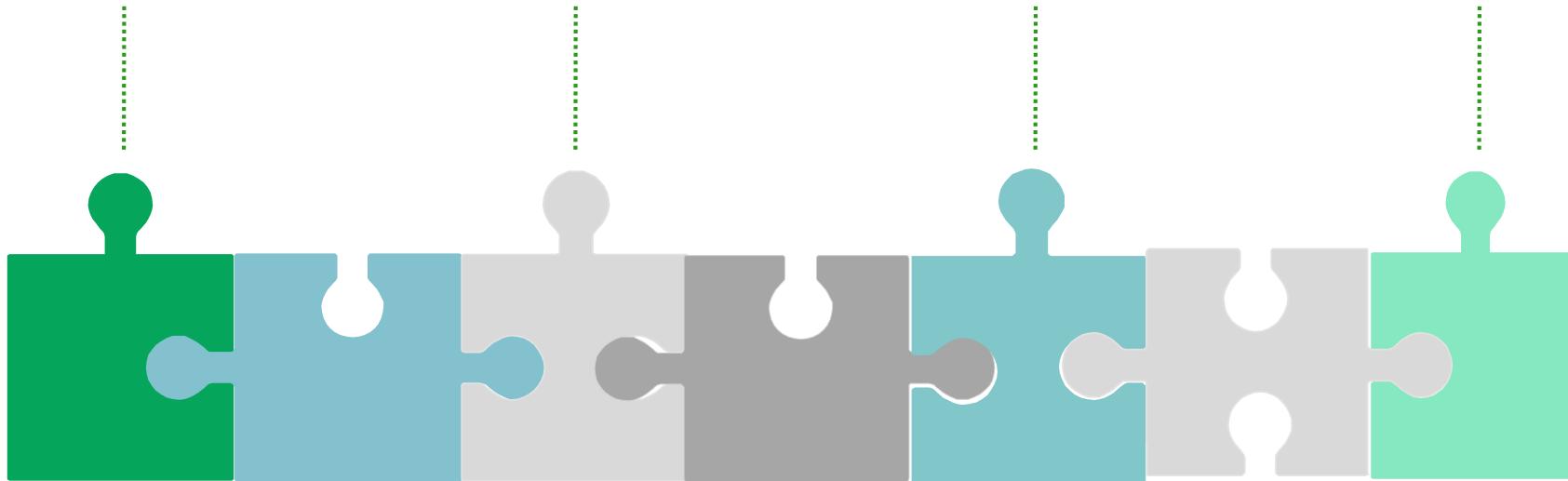
SafePool Control Check

Process Value
Freeze

Process Value
Anomaly

Control Mode
Manuel

Alarm Off
Problem



Channel and
IOP Problem

Valve
Out of Control

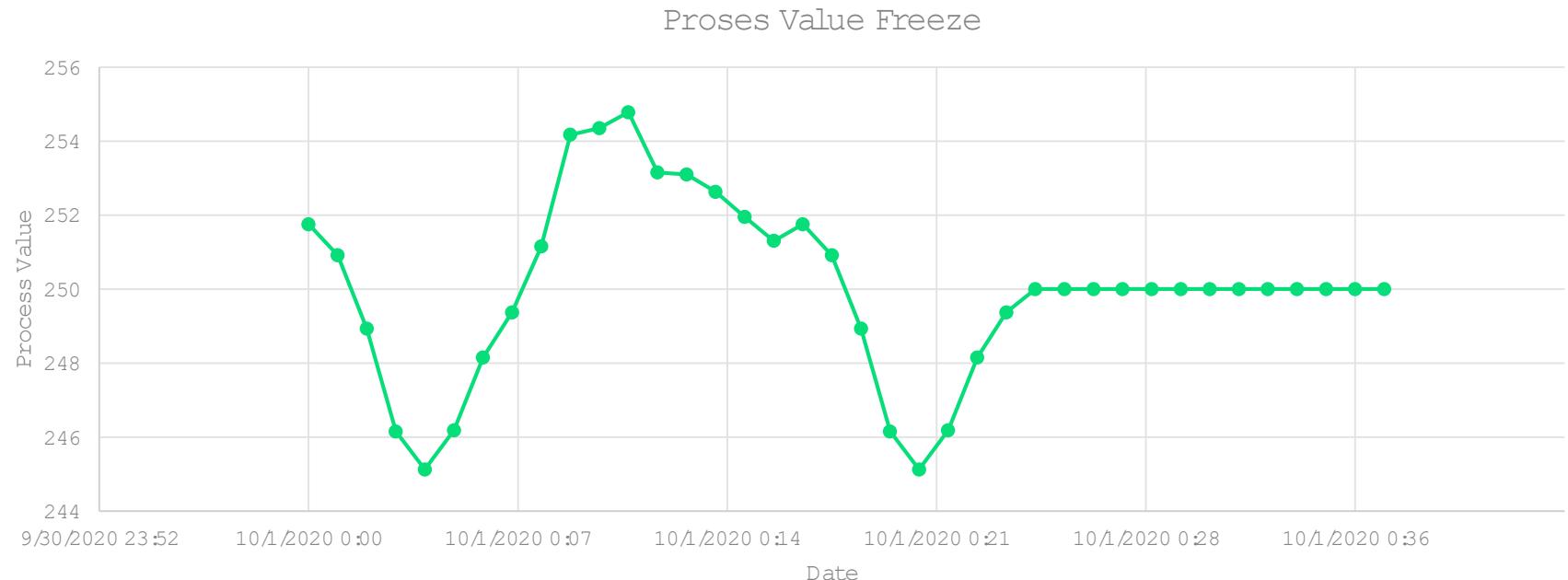
ESD ByPass



Process Value Freeze

Aim: To detect when there is no change in the process value for a specific tag

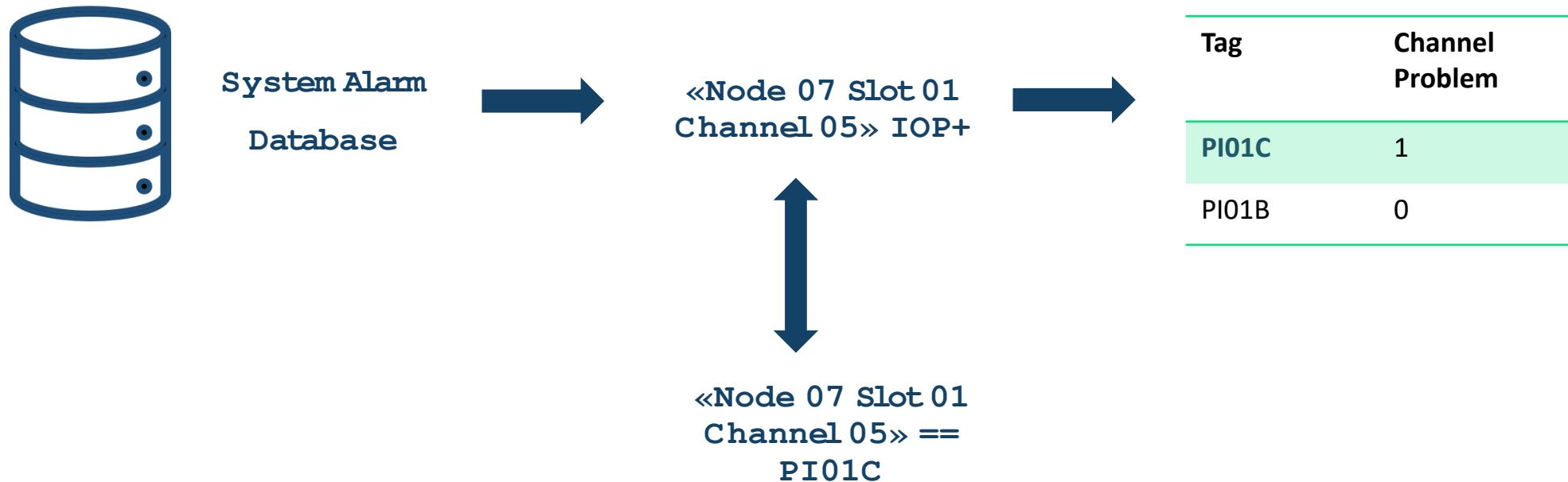
Function: Take the last ten minute of process value as the input and compare whether there is any change or not in that time window. If the values are all same, assign process value freeze for that tag to 1.



Channel and IOP Problem

Aim: To detect when there is any important system alarm for a specific tag.

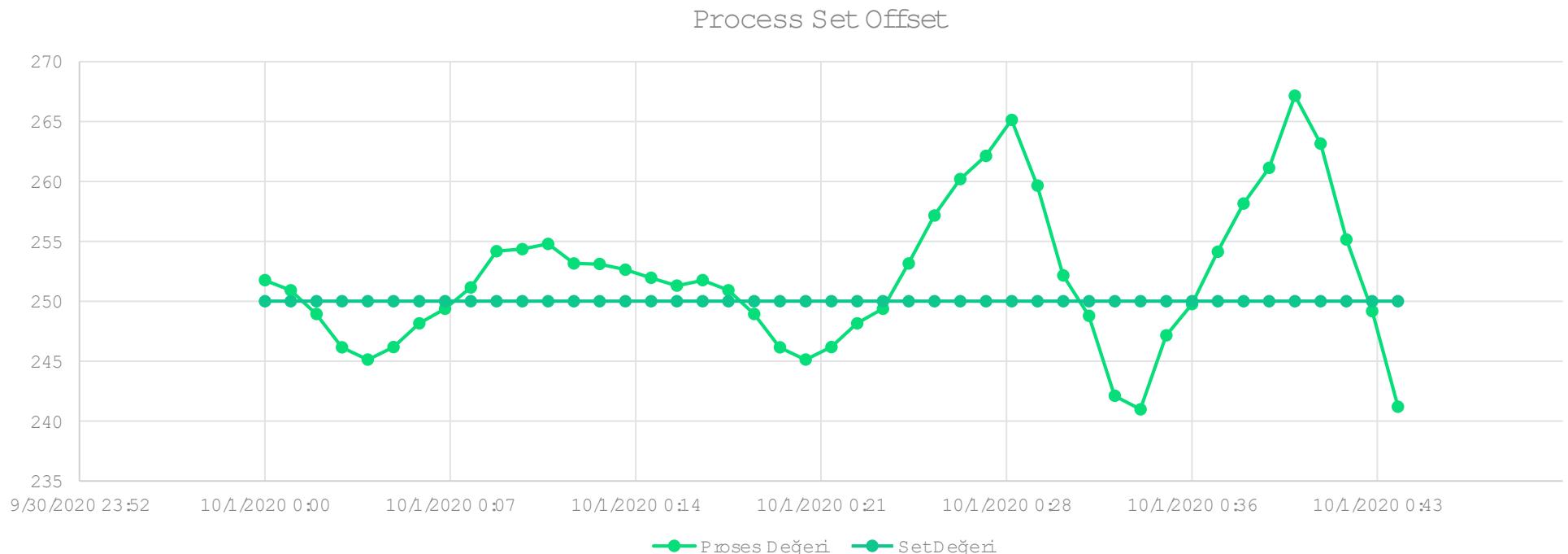
Function: Monitor the system alarm database hourly, and if there is any record related with the specific tag assign channel problem for that tag to 1



Process Value Anomaly

Aim: To detect abnormal change in process value for a given tag.

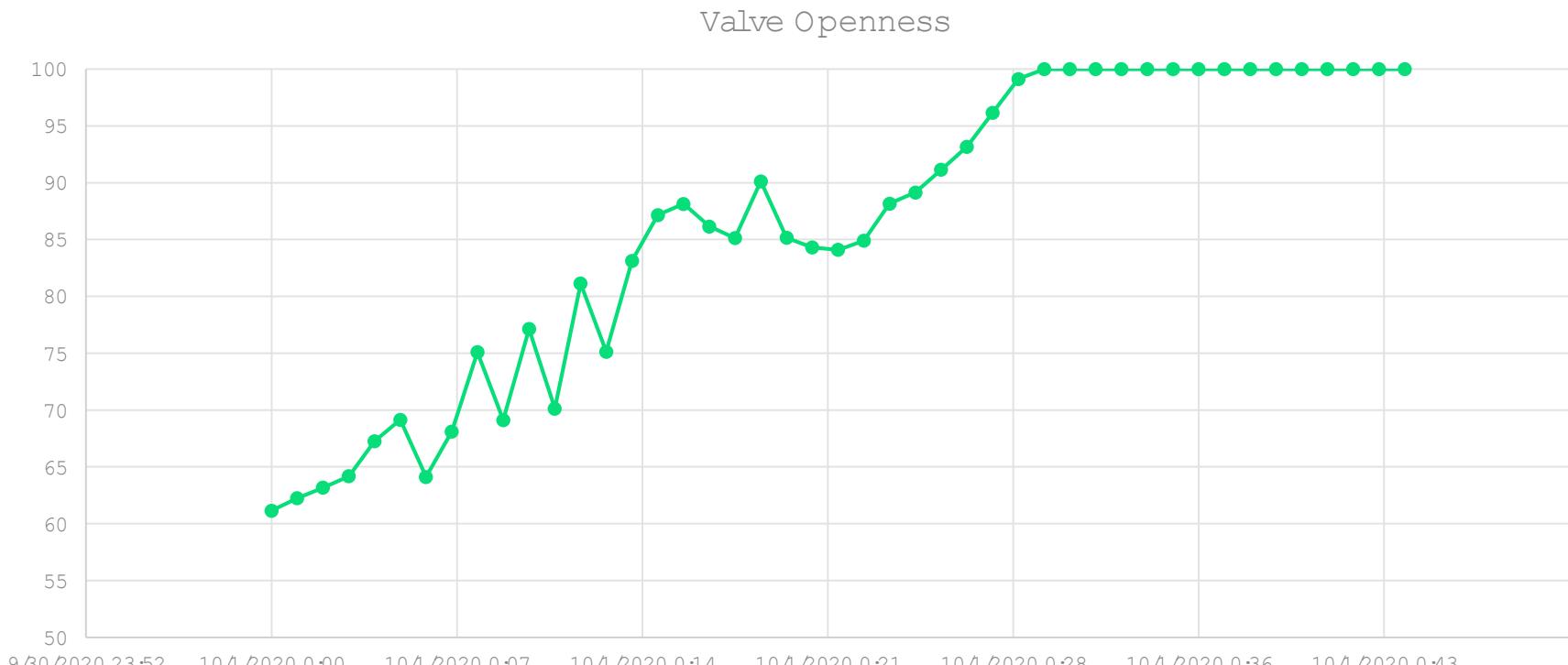
Function: Calculate the difference between set and process value for that tag. The difference and standard deviation of this difference are compared to the thresholds defined by operation team of the related unit.



Valve Out of Control

Aim: To detect when the valve openness is too close to fully open or fully close so that the controller might not make an effective prevention.

Function: Take the last twenty minutes of valve openness value as the input, and if all the values are above 90% or below 10%, then assign valve out of control value for that tag to 1.



Control Mode

Aim: To detect whether a control mode is manual or not for a specific tag

Function: Monitor operator action database hourly, and if there is a record for changing control mode to manual, then assign control mode value for that tag to 1.



Operator Action
Database



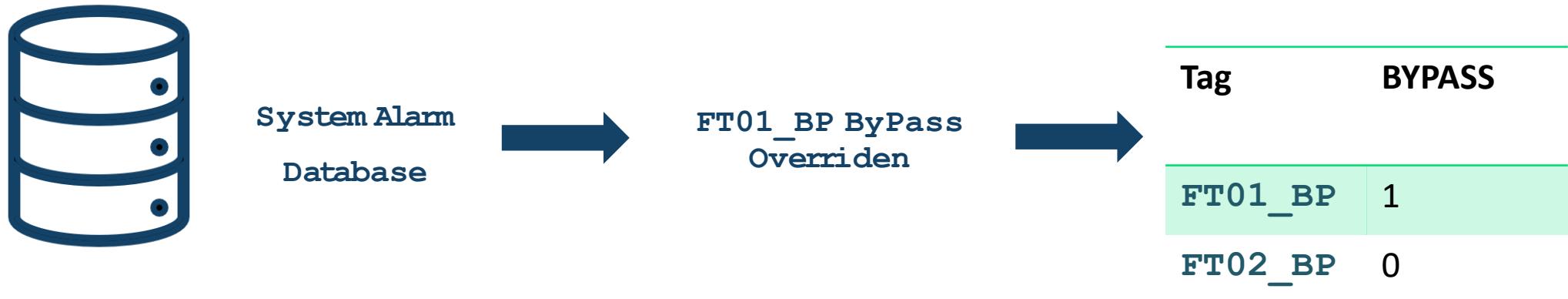
FIC01 Mode MAN
old AUT



Tag	MODE
FIC01	1
FIC02	0

Aim: To detect whether ESD tag's state is by-pass or not

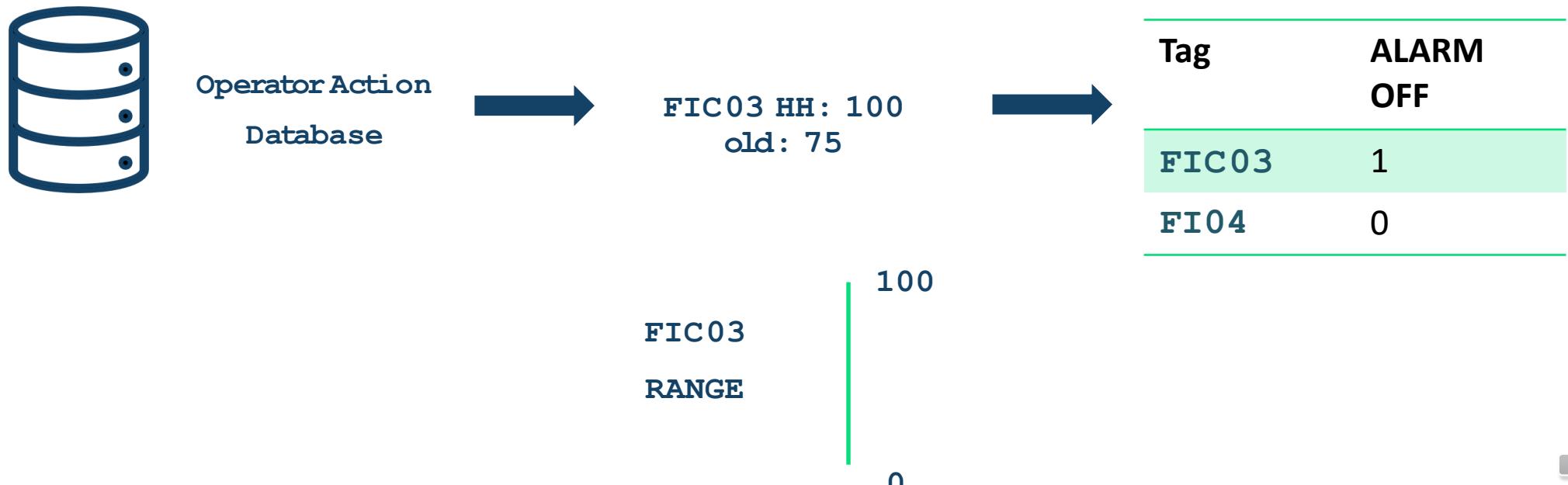
Function: Monitor operator action database hourly, if there is a record for bypass action, assign by-pass value for that tag to 1



Alarm Off Problem

Aim: To detect whether an alarm for a tag is set to off.

Function: Monitor operator action database hourly, if there is a record for alarm off, assign alarm value for that tag to 1



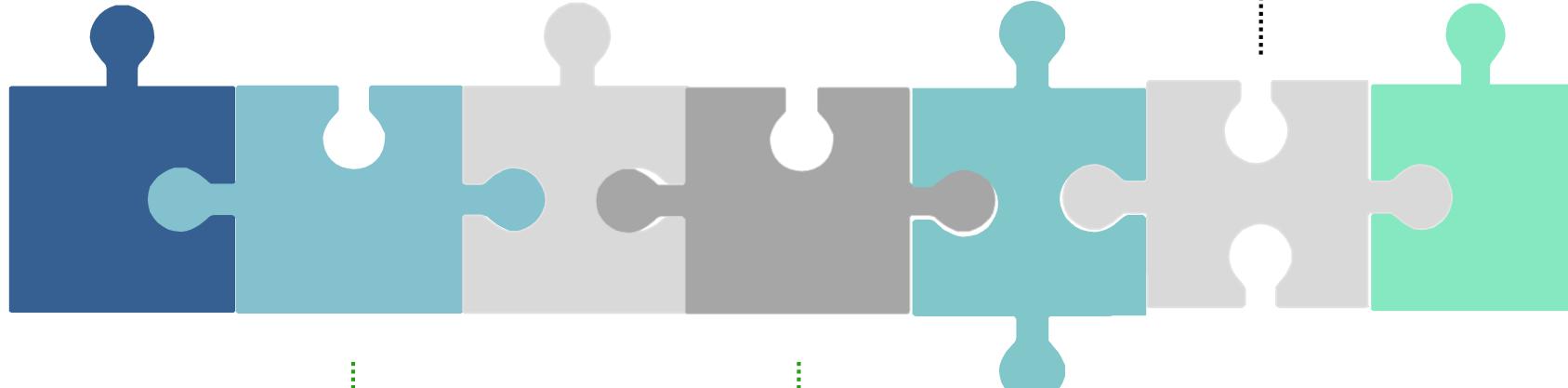
Process Value
Freeze

Process Value
Anomaly

Control Mode
Manuel

Alarm Off
Problem

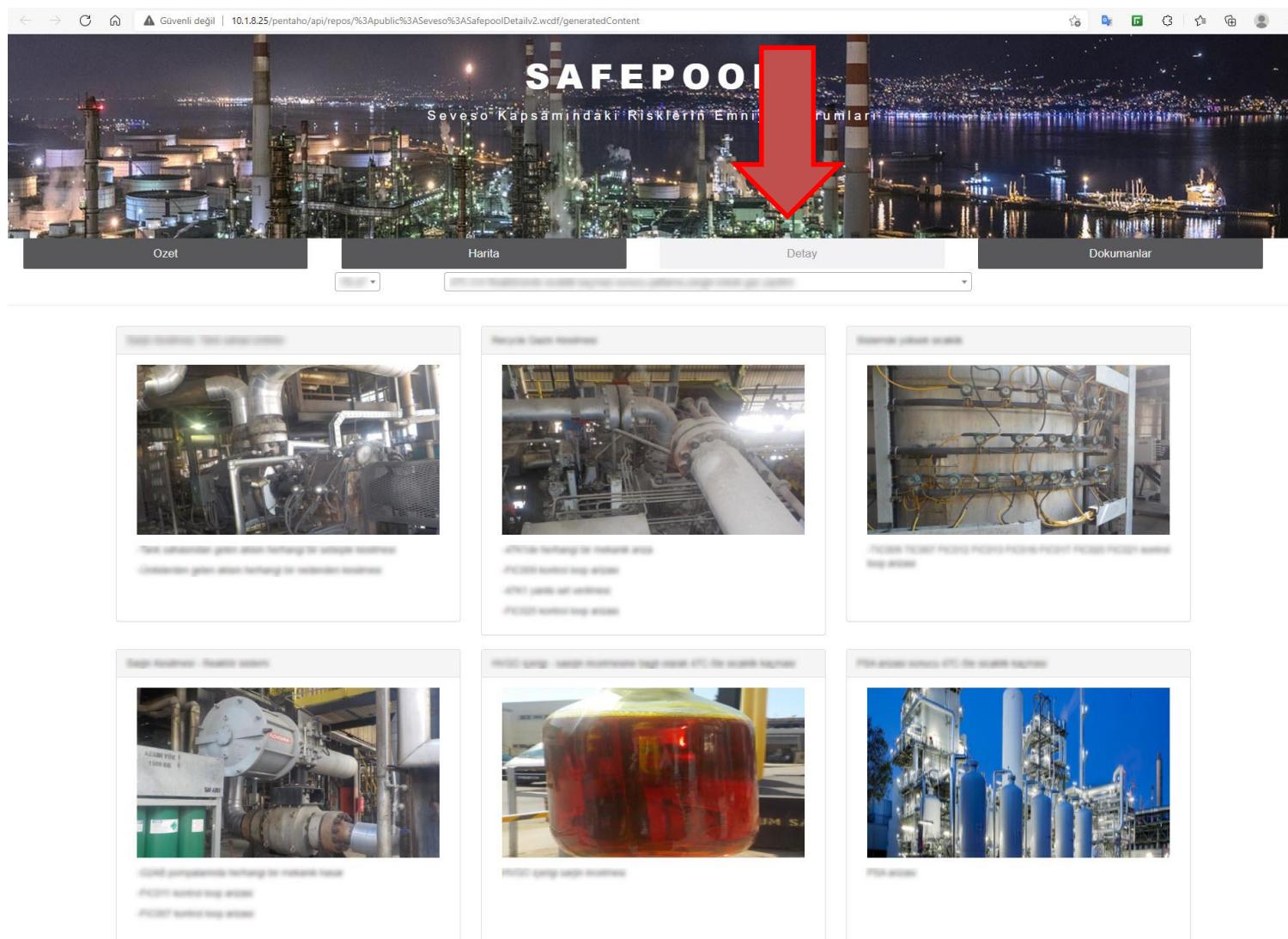
ESD ByPass



Channel and
IOP Problem

Valve
Out of Control





The screenshot displays a web-based application for industrial facility management. At the top, there is a header bar with browser controls, a URL (Güvenli değil | 10.1.8.25/pentaho/api/repos/%3Apublic%3ASevevo%3ASafepoolDetailv2.wcdf/generatedContent), and a red arrow pointing down to the main content area. The main content area features a large banner image of an industrial facility at night, with the word "SAFEPOOL" prominently displayed in white. Below the banner are four tabs: "Özet" (Summary), "Harita" (Map), "Detay" (Details), and "Dokumanlar" (Documents). The "Detay" tab is currently selected. The page is divided into several sections, each containing an image and some descriptive text. The visible sections include:

- Özet (Summary):** Shows an image of complex industrial piping and structures. Text below the image includes:

İşletme genel teknoloji ve teknik bilgileri
Company general technology and technical information
- Harita (Map):** Shows an image of industrial equipment. Text below the image includes:

İşletme teknoloji ve teknik bilgileri
Company technology and technical information
İşletme teknoloji ve teknik bilgileri
Company technology and technical information
- Detay (Details):** Shows an image of large industrial tanks. Text below the image includes:

İşletme teknoloji ve teknik bilgileri
Company technology and technical information
İşletme teknoloji ve teknik bilgileri
Company technology and technical information
- Dokumanlar (Documents):** Shows an image of industrial piping. Text below the image includes:

İşletme teknoloji ve teknik bilgileri
Company technology and technical information
- İşletme teknoloji ve teknik bilgileri (Industrial technology and technical information):** Shows an image of industrial equipment. Text below the image includes:

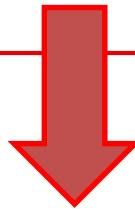
AZURE YORK 1
SAFETY SYSTEM
SAFETY SYSTEM
SAFETY SYSTEM
SAFETY SYSTEM
- İşletme teknoloji ve teknik bilgileri (Industrial technology and technical information):** Shows an image of a large industrial tank. Text below the image includes:

SAFETY SYSTEM
SAFETY SYSTEM
- İşletme teknoloji ve teknik bilgileri (Industrial technology and technical information):** Shows an image of industrial storage tanks. Text below the image includes:

SAFETY SYSTEM
SAFETY SYSTEM



SafePool



(Basic Process Control System)

Temel Proses Kontrol

ESD

Alarm





Problemlı Temel Proses Kontrol Elemanları

Tag	Unite	Açıklama	Freeze	Kart	IOP	StdDev	SetTracking	VanaAçılığı	ControlMode
...	✓	✓	✓	✓	✓	✓	✗
...	✓	✓	✓	✓	✓	✓	✗
...	✓	✓	✓	✓	✓	✓	✗
...	✓	✓	✓	✓	✓	✓	✗
...	✓	✓	✓	✓	✓	✓	✗
...	✓	✓	✓	✓	✓	✓	✗
...	✓	✓	✓	✓	✓	✓	✗
...	✗	✓	✓	✓	✓	✓	✗
...	✓	✓	✓	✓	✓	✓	✗





The screenshot displays the SafePool application's user interface. At the top, there is a banner featuring a night-time photograph of an industrial complex with illuminated structures and a body of water. Overlaid on this image is the word "SAFEPOOL" in large white capital letters, followed by smaller text: "Seviye", "Siparişler", and "Raporlar". Below the banner is a navigation bar with four tabs: "Özet" (Summary), "Harita" (Map), "Detay" (Detail), and "Dokumanlar" (Documents). A large, central map area shows the facility layout with various green and red rectangular icons representing different locations or zones. To the right of the main map, there is a vertical sidebar titled "Plant-Name" which also contains several green and red icons.





SafePool

		Plt-37	Plt-2	Plt-5	Plt-6	Plt-6	Plt-25
		Risk Değerleri					
		Olayın Olma Frekansı	Plt-3	Olayın Yaşandıktan Sonra Meydانا Gelebilecek Durumların Olasılıkları (olay/yıl)			
63 CR	Plt-63 Senaryo MOD	Tepe Olayı	Plt-7 Jet Yangını	Buhar Bulutu Patlaması	Plt-21 Flash/ Havuz Jet Yangını	Yayılım	Plt-21
C004 Hızlılık Sınırı Birinci Uyku Kapısı	0.0001 (0.0001%)	2.0000 (2%)	0.0001 (0.0001%)	0.0001 (0.0001%)	0.0001 (0.0001%)	0.0001 (0.0001%)	Plt-21
C005 Hızlılık Sınırı İkinci Uyku Kapısı	0.0001 (0.0001%)	2.0000 (2%)	0.0001 (0.0001%)	0.0001 (0.0001%)	0.0001 (0.0001%)	0.0001 (0.0001%)	Plt-21



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Tüpras



Thank You !

