

“BLENDING ALL THE DISCIPLINES”

IS THE RECIPE FOR PREVENTING (CATASTROPHIC) INCIDENTS

REFLECTIONS ON A CAREER IN PRODUCTION ,PROCESS DESIGN
AND PROCESS SAFETY



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Career learnings examples:

- High Speed rotating Machines
- Systems ?
- Learnings

Message

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Jack de Rooij

Retired in 2024:

Global Manufacturing Technology Leader

In the area of Corn Wheat processing

Born in 1957 Dutch

Personal introduction

Food industry 46 years work experience

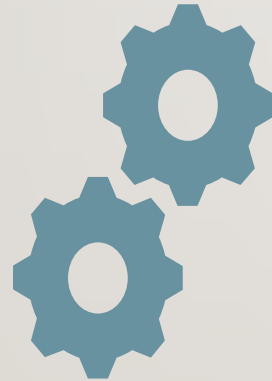
- Started my career in operations in 1978 Worked as operation technician , production supervisor site manager tasks , project managers role and training and coaching.
- Was part of acquisitions teams and from 2002 became European and Global responsible for manufacturing technology in aera of expertise

Last 20 year of my career spend on

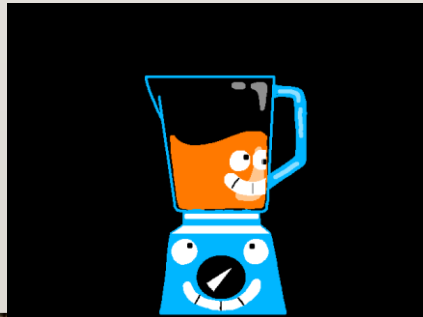
- Process Safety ,standard design , technology education, talent development ,technology innovation roadmap
- Engineering disciplines: environment sustainability, food safety, TCO,

MY MESSAGE FOR PROCESS SAFETY:

Always create a BLEND of engineering ,
management, and operational skills
focussed on preventing (catastrophic)
incidents.



Do not be afraid to listen, learn and recognize
the people from the every day working force
,as they must live and work with what you have
designed and applied top down !



FIRST 8 YEARS IN OPERATIONS 1978 - 1986

I believed that if we train and educate the
operational teams, we can prevent
catastrophic incidents

I WAS WRONG !



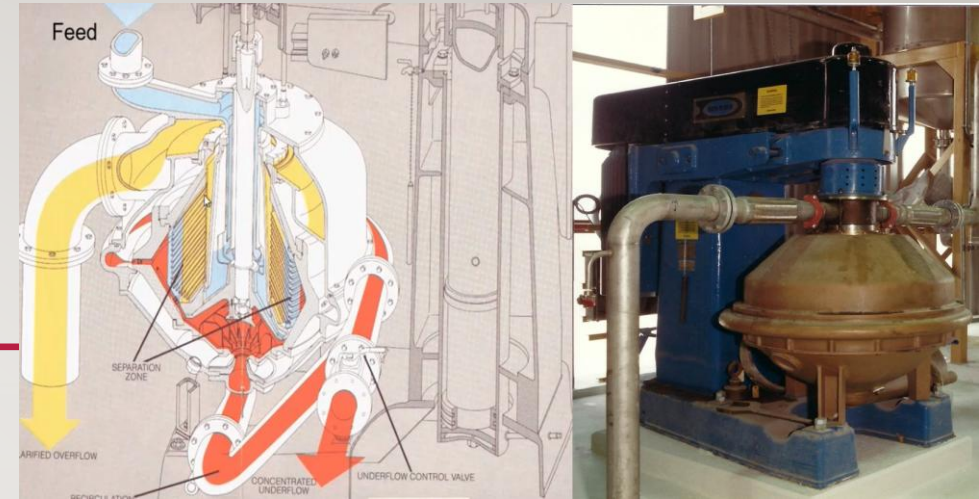
EXAMPLE OF FAILURE

The Case of Centrifuges:

Context:

- They are safe if they are full loaded and have no imbalance
- These machines run 3000 – 4000 r.p.m.
- They have no break mechanism

See what happens as in these days we were fully relying on the human factor , well trained teams !

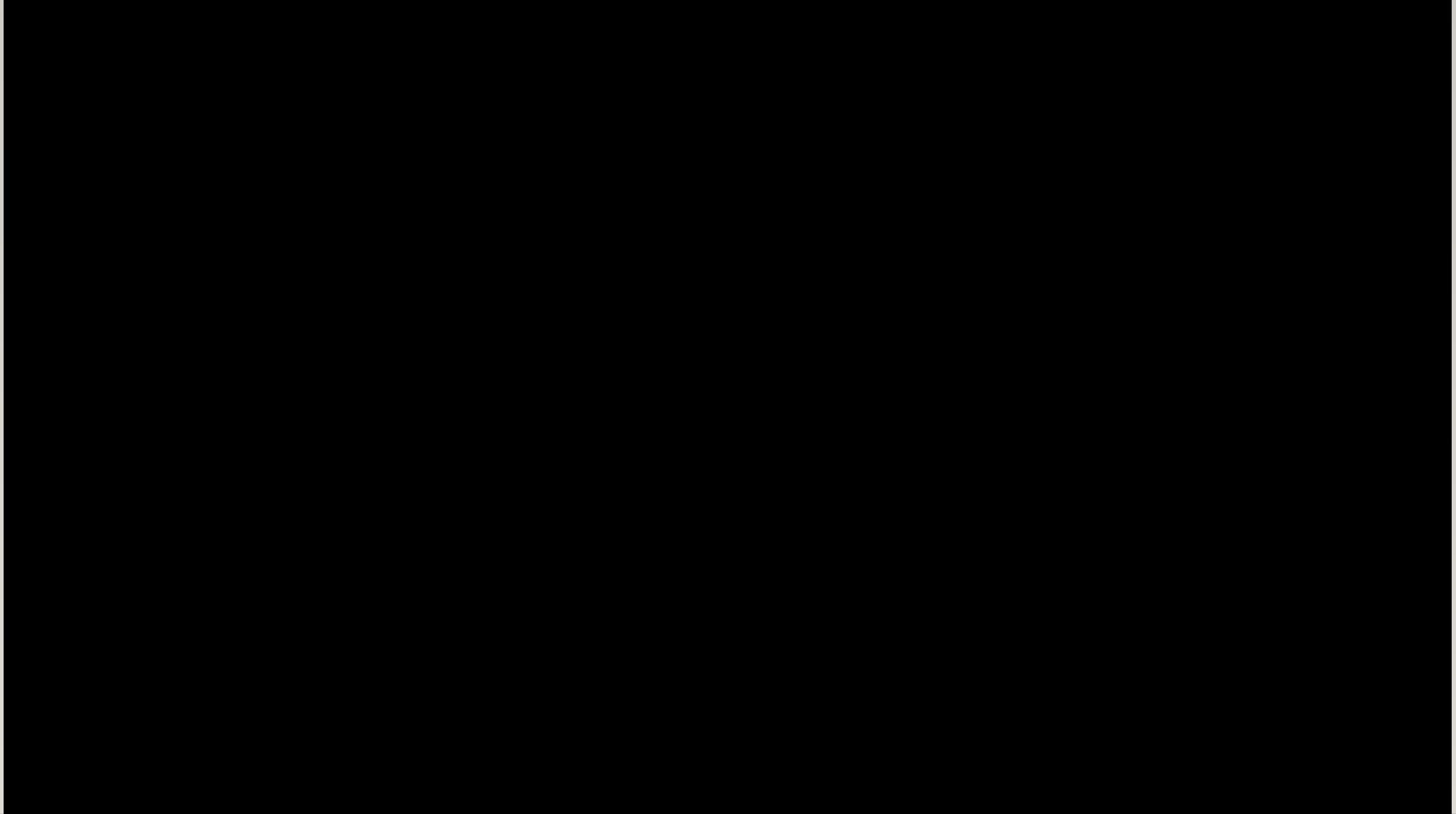


CENTRIFUGE FAILURE SMALL SCALE TEST



CENTRIFUGE FAILURE SMALL SCALE TEST

SLOW MOTION



PICTURES OF A REAL CENTRIFUGE CRASH



NEXT 7 YEARS IN PROJECTS 1986 - 1992

I believed that if we designed the process well,
we can prevent catastrophic incidents on top of
well-trained teams

I WAS WRONG !



PICTURES OF ANNOTHER CENTRIFUGE CRASH



NEXT 10 YEARS IN PROJECTS AND PRODUCTION MANAGEMENT 1992 - 2002

I believed that if we fully automate the process we can
prevent catastrophic incidents ,
On top off intrinsic safe design
and well-trained teams

I WAS WRONG AGAIN !



Pictures of another Centrifuge Crash



HOWEVER ?

New tools and systems came along
to help and support all elements of
process safety



WHAT TRIGGERD THIS IN THE FOOD INDUSTRY ?

- 1998 Debruce Largest Grain Elevator
- 2008 Imperial Sugar



1998 DEBRUCE LARGEST GRAIN ELEVATOR



2008 IMPERIAL SUGAR

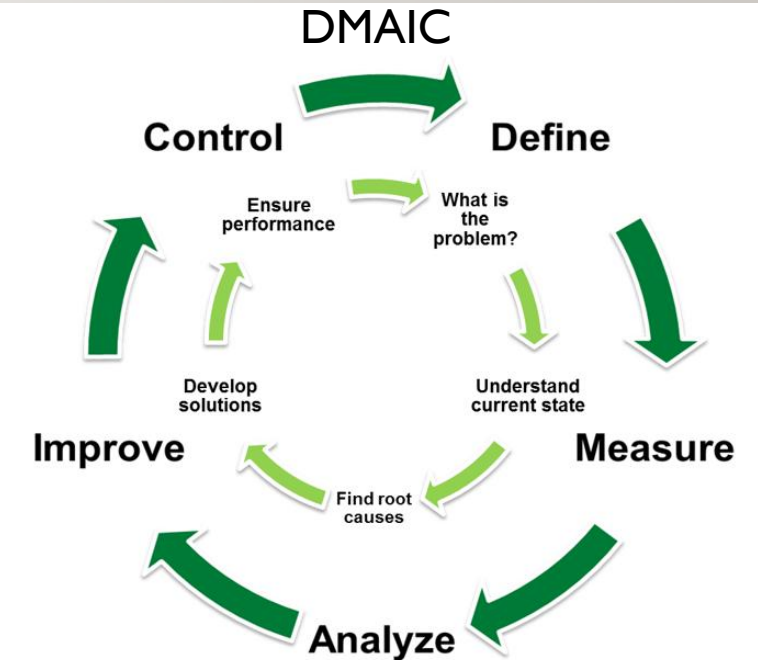
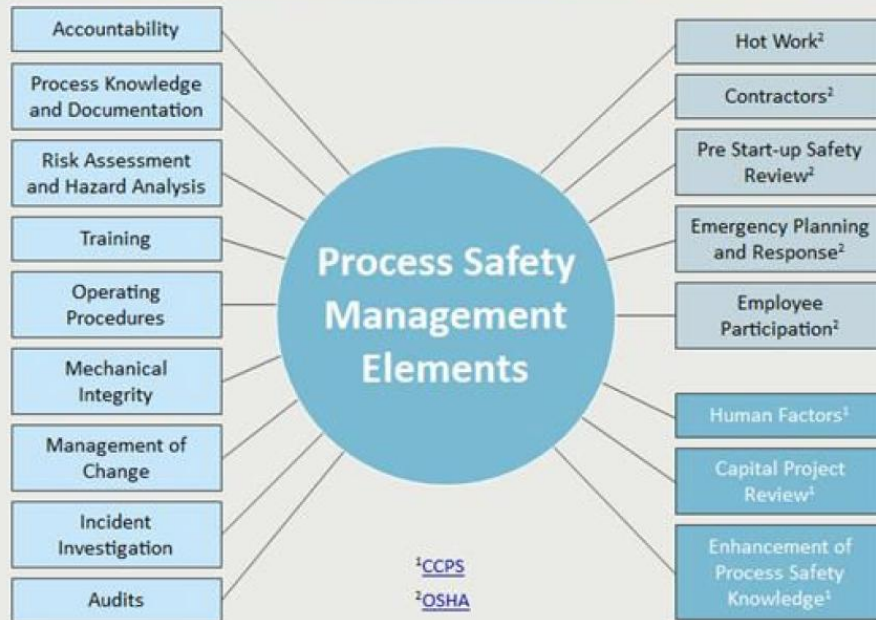


THE NEXT YEARS UNTIL 2024

I WAS RESPONSABLE FOR PROCESS SAFETY (AS MANUFACTURING TECHNOLOGY LEADER)



Process Safety Management Elements



My learning :All these things are as good as the quality of people involved in all these aspects

HOW I SAW PROCESS SAFETY TEAMS BECOMING MORE EFFICIENT AND “BLENDED OUT THEIR BOXES”



HOW I SAW PROCESS SAFETY TEAMS BECOMING MORE EFFICIENT AND “BLENDED OUT THEIR BOXES”

Some other examples :

Organize these sessions in nice efficient room(s)

- **Take short breaks with some humour / jokes / “Icebreakers”**
- **Limit the total time of these sessions**
- **Open and honest communication**
- **Inspiring Leadership during these sessions**
- **Combine sessions with team events**
- **Everybody gets his say in these sessions**

BUT MAYBE THE MOST IMPORTANT ONE !

Recognize and reward participants !



Always create a BLEND of engineering , management, and operational skills focussed on preventing (catastrophic) incidents.

“Keep It Simple Stupid”

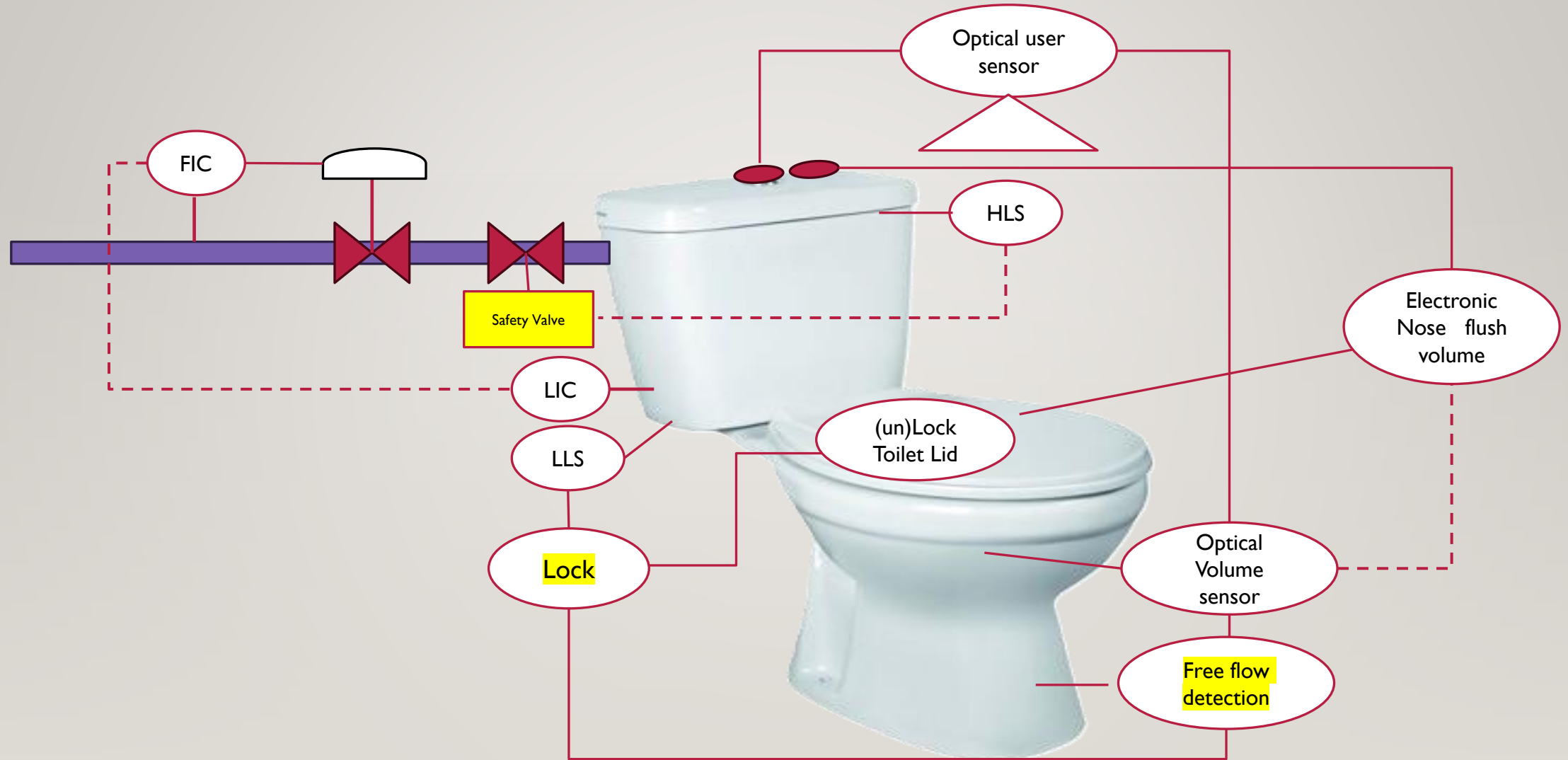
Use (KISS) as building a kind of Christmas tree of sensors and detections will be so hard to maintain look at the next example !



KISS TOILET EXAMPLE



“Over” complicated toilet system



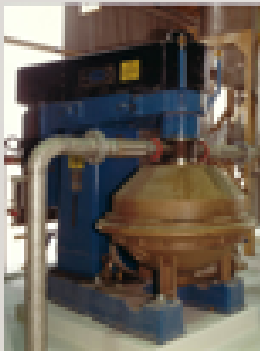
HOW DOES IT LOOKS FOR THE
CENTRIFUGE CASE ?



EXAMPLE ISL S FOR CENTRIFUGES IN FOOD INDUSTRY

“Keep the barriers Strong”

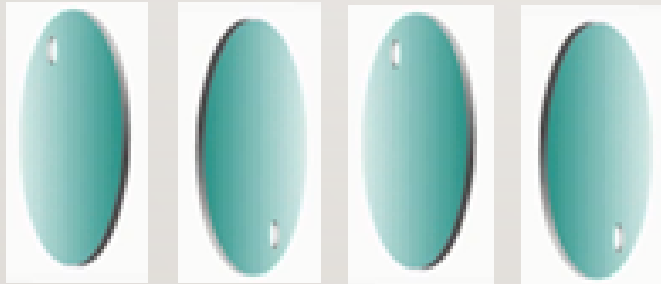
**Initiating
Event**



**Operating
Control within
Safe Window**

**Preventive
Maintenance**

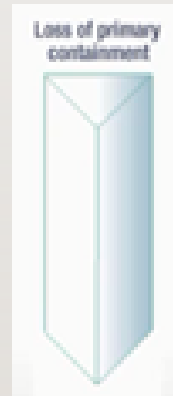
Preventing



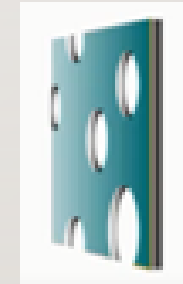
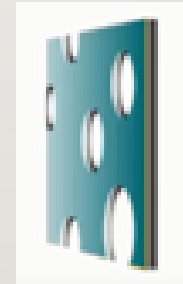
**Inspections
(fouling)**

**Nozzle open
detection**

LOPC



Mitigation



**Emergency
Safety
water
system**

**Reduce
RPM
power off**

**Consequence full
rupture of the Machine**



**Early warning
Emergency Action
Plan**

All Safety devices , systems , controls ,procedures and design...etc
is eventually human work !

All with a possibility of a human error !!

Maybe in the near future A.I. can eliminate some of those errors ??



MY “PERSONAL MESSAGE” FOR PROCESS SAFETY:

Always create a BLEND of engineering , management, and operational skills focussed on preventing (catastrophic) incidents.

And Keep It Simple (KISS)

Thank You



Q & A