



SCOTTISHPOWER

Process Safety Key Performance Indicators

Martin Sedgwick – Head Of Engineering and R&D Iberdrola Group

23rd July 2012

Process Safety Key Performance Indicators

Iberdrola Group and ScottishPower  SCOTTISHPOWER

One of the **fifth** largest generator / retailers, **1st** wind company




IBERDROLA
USA



2nd wind company
3rd player in gas storage

One of the **fifth** largest generator / retailers
1st wind company

1st private producer in Mexico
1st distributor in Brazil

Main energy company

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Process Safety



What if Process Safety risks were as visible as Health & Safety risks?

Which warning signs are most likely to help you avoid an incident ?



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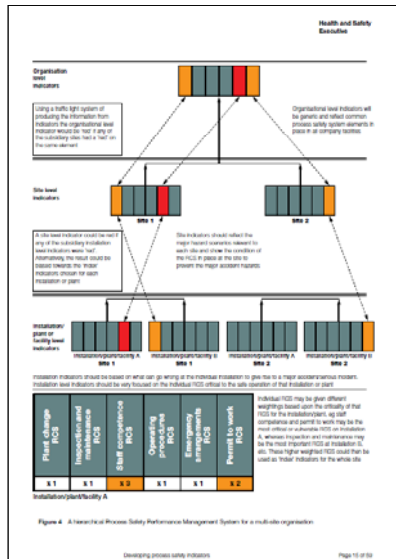
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Visible Process Safety Management System



Based on Key Concepts in HSG 254, API 754 and CCPS...



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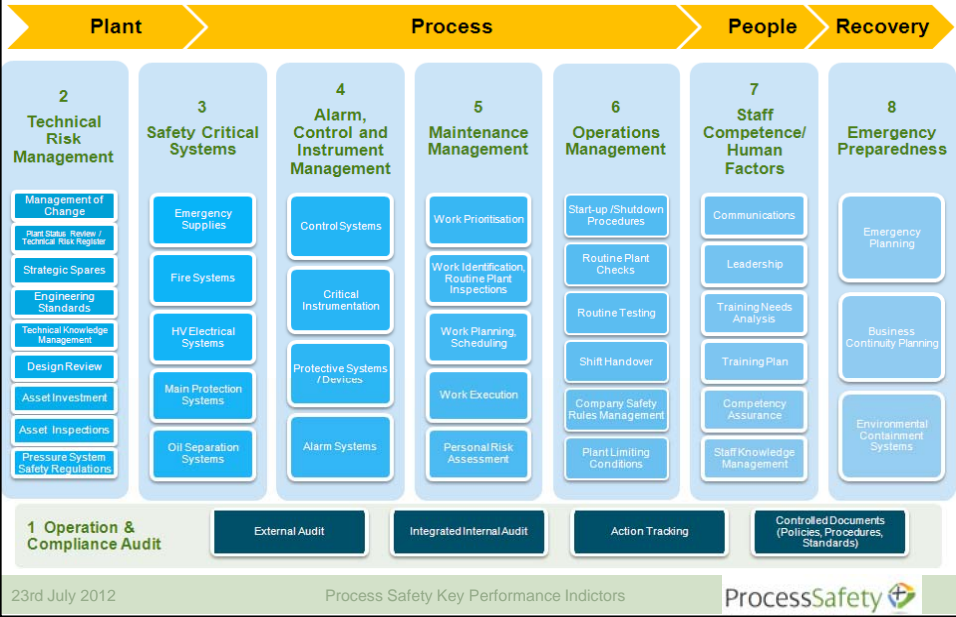
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Swiss Cheese Model



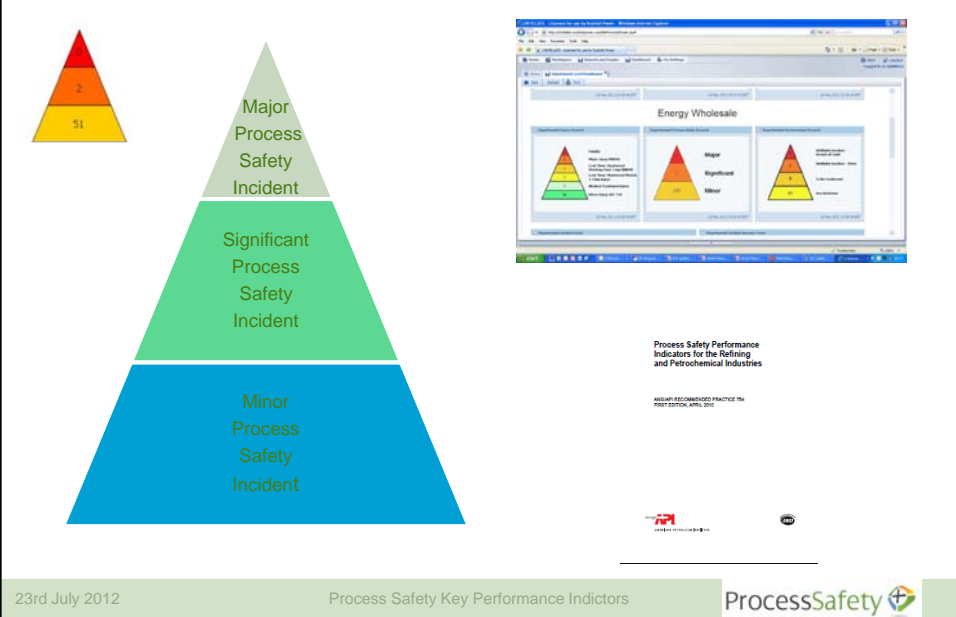
Understanding hazards & creating barriers (People, Process & Plant)...



Classification Of Incidents



3 tier approach based on API guidance...



Process Safety Management System

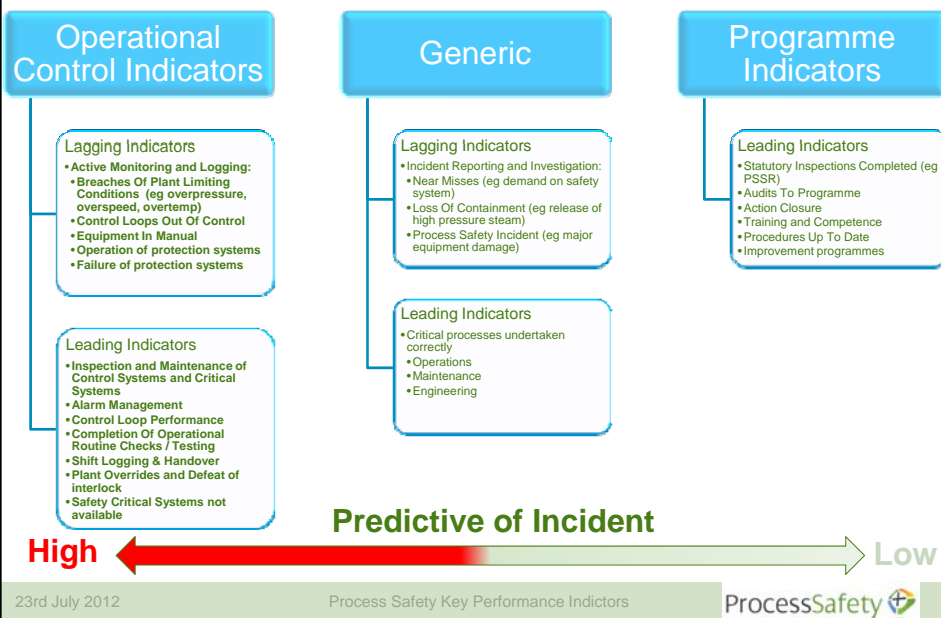
Philosophy is to visualise Swiss Cheese Model.....



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Further Guidance

Not All Indicators are of Equal Importance...



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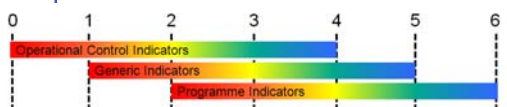
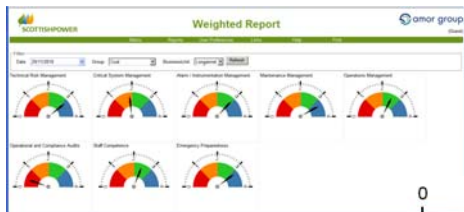
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KPI Risk Ranking



Operational Indicators are the key to avoiding incidents...



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Major Hazard Accidents



Indicators Need To Be Visible to prevent accidents....

Sayano-Shushenskaya Russia
 15 lives were lost after poor maintenance and high vibration levels were accepted.

- Protection System Overvoltage
- Emergency Response Plan Not Tested
- Safety Critical System Not Available
- Inspected Spares Not Been Fit

BP TEXAS CITY USA
 15 lives were lost after failure to check and test key instrumentation and controls.

- Plant Checks Ignored
- Safety Critical System Not Available
- MAN-SEK Control Locked on Manual
- Shift Handover Not Complete

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Process Safety Management System SCOTTISHPOWER

Real Time Visibility and Drill Down Information Is Key...



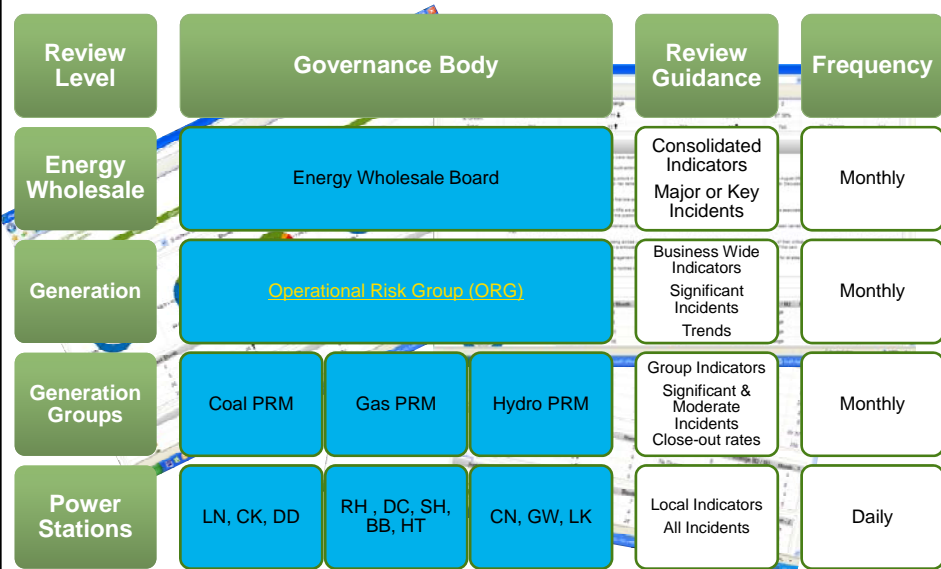
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Group Governance Process SCOTTISHPOWER

Cascade up approach...



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