

Loss potential hunters: Higher education version

March 4, 2021

Michael Fairfield, CSP Property Account Engineer

The Zurich Services Corporation

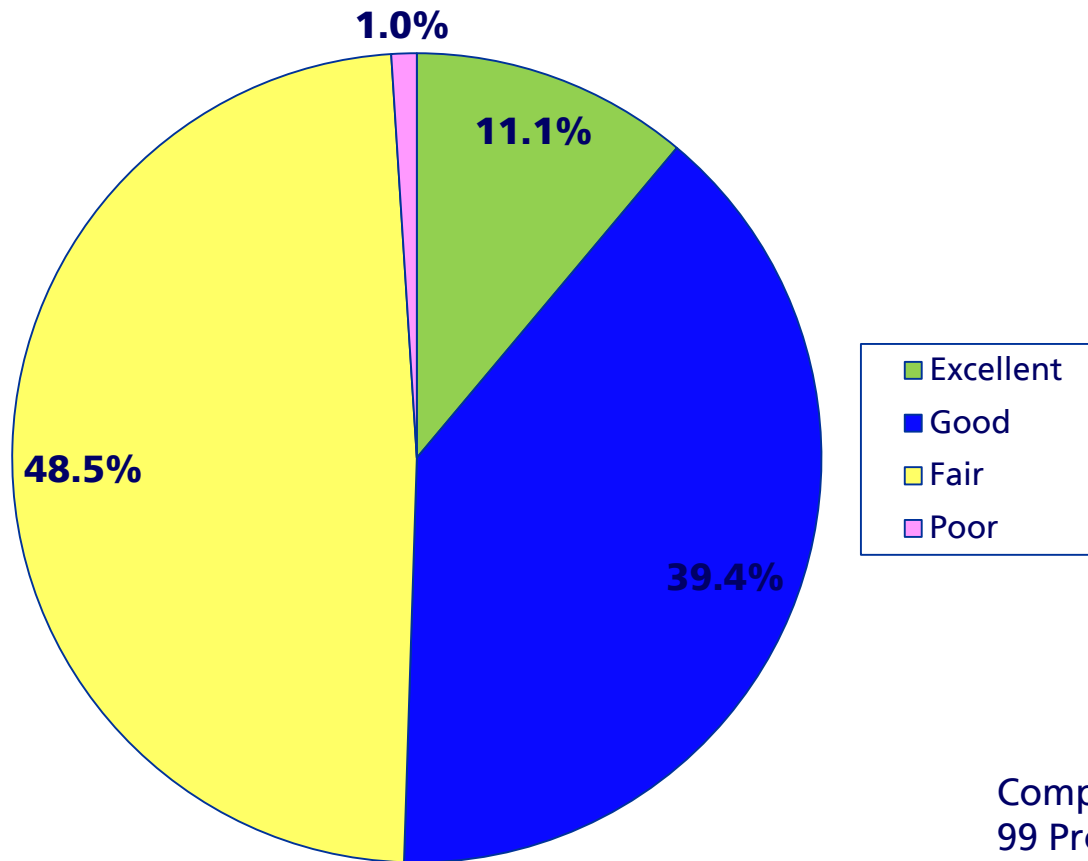
Risk Engineering National Accounts



Property assessment results

Current property risk quality

Split of Risk Quality Levels - Fire

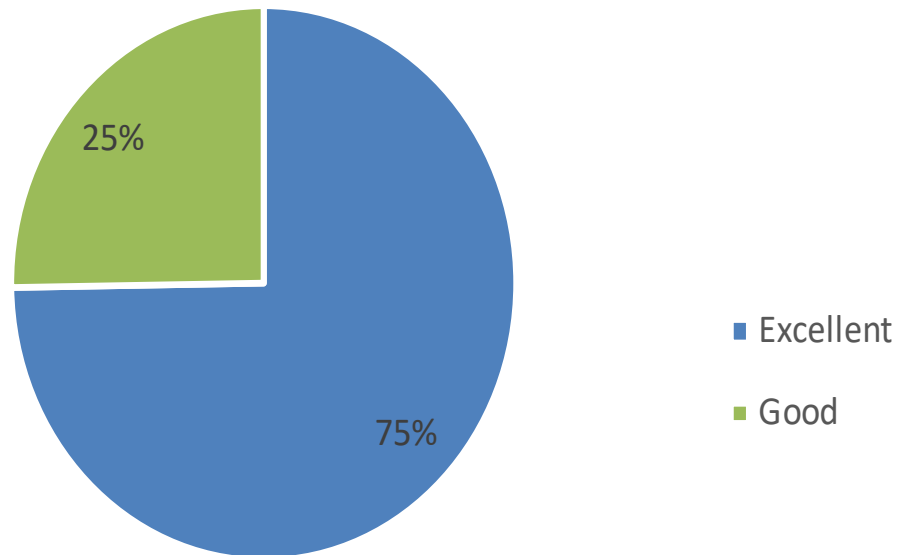


Completed 2/26/2021
99 Property Risk Assessments

Property assessment results

To be property risk quality

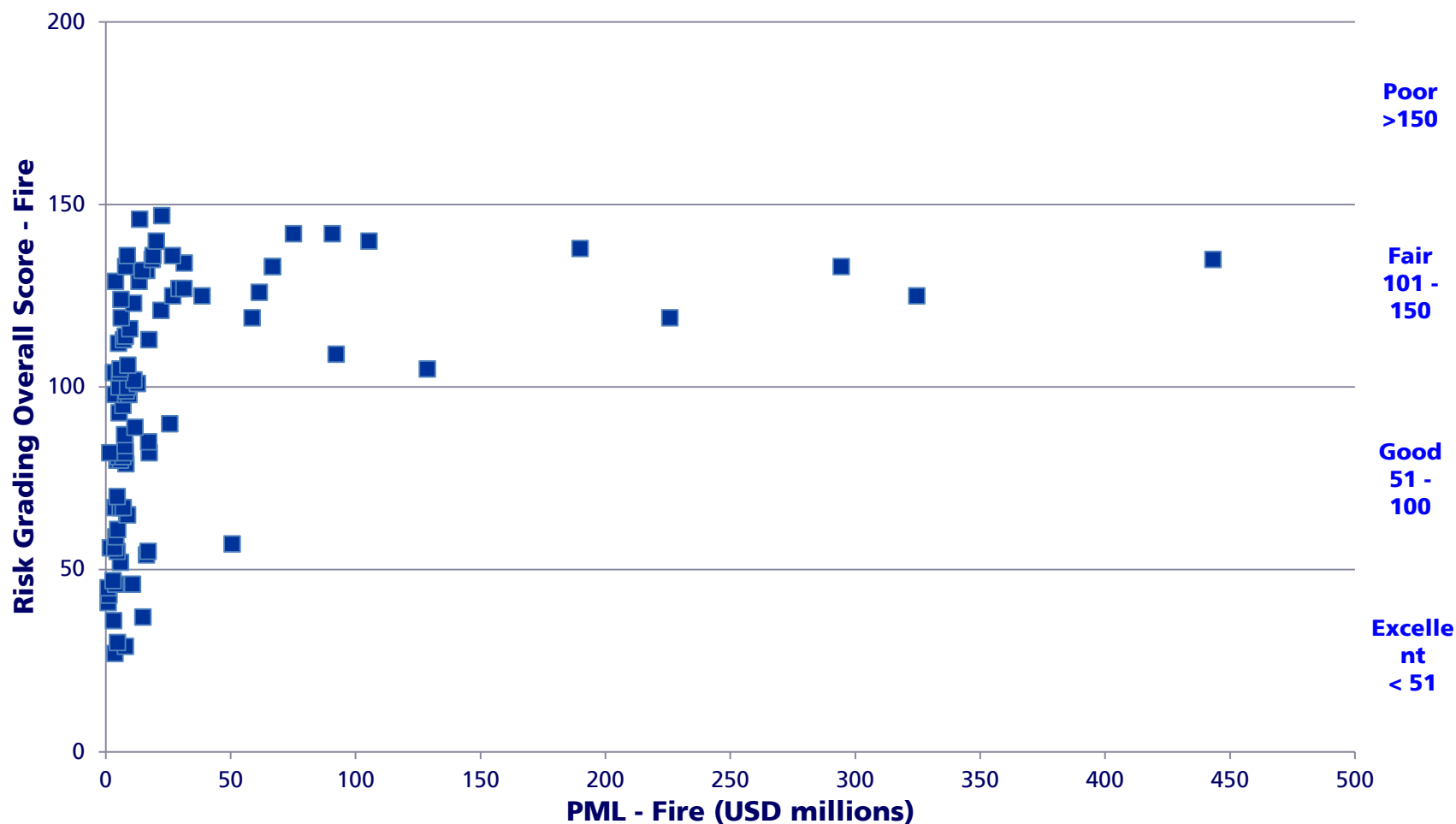
To Be Risk Grades



Property assessment results

Probable Maximum loss vs. Risk grades

PML Overview - Fire



Property assessment results

MHEC Defined critical recommendations

Customer Category	Defined Recommendation	Current Number Recommendations
A	Hot Work Management (lack of program)	26
B	Impairment Management (lack of program)	19
C	Roof Maintenance (lack of semi-annual, formalized & documented inspection protocol – can be in-house or contractor) Or, Roof Deficiency (observed damage, imminent loss)	44
D	Fire Pump/Water Supply – major deficiency (i.e. a reduced pump test curve is not a critical deficiency unless it becomes inadequate for the fire protection demand) Or, Fire Pump/Water Supply – major deficiency (i.e. a reduced pump test curve is not a critical deficiency unless it becomes inadequate for the fire protection demand)	3
E	Flammable liquids/ spécial hazard – LE>\$10M	1

Machinery Breakdown

March 4, 2021

Irfan Ahmad,
Machinery Breakdown

Risk Engineering



MHEC Jurisdictional for 2020-2021

- Approx. 5000 objects at almost 1000 locations
- In the last year:
 - 1896 inspections completed
 - Over 230 recommendations made
 - Over 200 violations found

Common issues

- Leaks
- Pressure Relief valves (PRV)
 - leaking
 - not working properly
 - capacity or set pressure (too high or low)
 - testing program
 - PRV discharge piping
- Pressure gauge
- Name plates obscured or missing (vessel and or PRV)

Maximizing efficiency and safety

- How to: Maximize boiler efficiency
 - boiler water chemistry
 - proper burner tuning
 - replace Worn parts
 - check for leaks
 - make sure combustion air inlet is unobstructed
- Conducting annual maintenance helps
 - improves safety
 - reduces operating and energy costs
 - extends life of boiler

Boiler daily maintenance

- For example:
 - blow downs and test low water cut-offs
 - blow down gauge glasses
 - blow down the boiler
 - check boiler and system for leaks
 - check burner flame

Boiler monthly maintenance

- For example:
 - check boiler water treatment test results and adjust as necessary
 - lubricate motors and equipment bearings
 - test fans and air pressure interlocks
 - check main burner fuel safety shutoff valves for leakage
 - check low fire start interlock
 - check high pressure/ temperature interlocks
 - check high- and low-pressure interlocks on gas train
 - check safety valve

Boiler annual maintenance

- For example:
 - check all equipment coils and diaphragms
 - recondition or replace low water cut-off
 - check gas drip leg and gas strainer
 - clean boiler firesides
 - drain boiler, open manholes, handholes, and clean water sides
 - have boiler inspected by a commissioned inspector
 - clean burner and fans
 - replace gaskets
 - leak test all fuel valves
 - test operation of all controls and safety devices
 - adjust combustion
 - test and re-certify boiler monitoring system

How to contact Commissioned inspector to schedule an inspection

- Contact local Risk Engineer directly (if known)
 - Zurich Machinery Breakdown Risk Engineer
 - One CIS (3rd party)
- Contact Account Manager if local engineer is not known
Irfan Ahmad
Irfan.ahmad@zurichna.com
630-673-1323
- Call Zurich Jurisdictional Hot Line - 800-562-5814
- [Zurich On Line Boiler Inspection Request](#)
 - Google: Zurich Boiler inspection request

On line Boiler Inspection Request



Zurich

Boiler Inspection Request System



Boiler Inspection Requests can be reported to Zurich via online form or phone.

1. Complete the online form

Instructions: Enter the requested information and click on the Next button. At the bottom of the form, click Submit to complete your inspection request.

Upon submitting the inspection request, a confirmation will be emailed to you. Please save this email! It also includes contact information if your inspection request is of an immediate nature.

For the best user experience, please use an up to date version of your web browser. You may also need to open access in your firewall and spam filter to receive email confirming your inspection request.

2. Call us by phone:

Request Hotline 800-562-5814

[Machinery Breakdown Regional Manager Contacts](#)

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Attention: The Zurich Group Companies and SurveyGizmo's software used to operate our inspection request system are located in the U.S. Zurich has appropriate measures and controls in place to ensure that this data transfer is carried out securely and in compliance with our legal obligations. If you do not care to complete this form, please exit now.

Next

0%

Fill out contact information



Contact Information

Name - *First, Last* *This question is required.

Title or Department *This question is required.

Telephone Number *This question is required.

Email Address *This question is required.

Additional Contact Name - *First, Last*
(e.g., coworker, manager, owner, etc.)
(enter "N/A" if no alternate contact available)
*This question is required.

Additional Contact's Email Address
(e.g., coworker, manager, owner, etc.)
(enter "N/A" if no alternate contact available)
*This question is required.

Additional Contact's Telephone Number
(enter "N/A" if no alternate contact available)
*This question is required.

Fill out location information

Location Information

Account/Company Name **This question is required.*

Other Company/Location Name

Street **This question is required.*

City **This question is required.*

Zip Code **This question is required.*

County **This question is required.*

State **This question is required.*

-- Please Select -- ▼

Province/District

Zurich Policy Number if available/known

Fill out Inspection information

Inspection Information

Type of Inspection (select any that would apply) **This question is required.*

- ☐ External
- ☐ Internal
- ☐ Other

Equipment to be inspected if known (select any that would apply) **This question is required.*

- ☐ Hot water heater
- ☐ Low pressure steam boiler
- ☐ High pressure steam boiler
- ☐ Hot water heating boiler
- ☐ Hot water supply boiler
- ☐ Air tank
- ☐ Unfired pressure vessel
- ☐ High pressure, high temperature boiler
- ☐ Fired pressure vessel
- ☐ Unknown/other

Reason for Inspection **This question is required.*

- ☐ Operating certificate renewal
- ☐ New installation certification
- ☐ Other

State Registration / Certificate Number(s) if available:

Certificate due date(s) if known:
(e.g., mm/dd/yyyy use comma to separate dates)



Comments

(Best time to visit, best time to call for appointment, special rules to enter facility, etc.)

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Back

Submit

50% 

Thank you

Risk Engineering
www.zurichna.com

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Infrared Testing of Energized Electrical Assets MHEC 2021

seamgroup.com

WHERE SAFETY & UPTIME ALIGN

4 disciplines of Electrical Risk control ...

A logical progression

Infrared Inspections



Arc Flash Hazard
And Training



 WARNING	
Arc Flash and Shock Hazard Appropriate PPE Required	
14.2	cal/cm2 @ 18"
6 ft 9 in	Arc Flash Boundary
480 VAC	Nominal System Voltage
42 inches	Limited Approach Boundary
12 inches	Restricted Approach Boundary
Bus: RDC 1 CP Prot: SWGR 1 CB 8	
800-242-6673 Analysis conducted by Lewellyn Technology 05/05/15	

Lock Out Tag Out



Infrared Windows



Infrared Programs

- Electrical failure is a leading cause of fires in all types of facilities. . Infrared is the only PM to detect thermal problems early on the failure cycle
- On Average 5-8% of all assets have at least one thermal or compliance anomaly, none get better on their own
- NFPA suggested Infrared inspections should be conducted regularly (every 1-3 years) depending on tolerance to failure, and mean time to repair.
- The average Thermal anomaly wasted about \$1.00 a day in energy. Inspections tend to pay for themselves
- Opening cabinets and dead fronts introduces the possibility of shock or flash and should be done only by trained technicians with proper PPE and NFPA 70 E safety training.
- You cannot do this with panels covers or dead fronts on. No repairs or PM tasks should be done on energized assets

Typically, what is inspected

All Electrical energized and accessible systems and components

- Power Distribution
- Substations
- Breakers
- Fuses
- Panelboards
- Transformers
- Motor / Generator Control Centers
- Starters and Thermal Overloads
- Disconnects
- Bus Connections
- Relays
- Electrical Vaults
- Transfer switches
- Voltage Regulators
- Distribution Panels/sub panels
- Mechanical/Motors and drives/bearings/belts/anything as directed



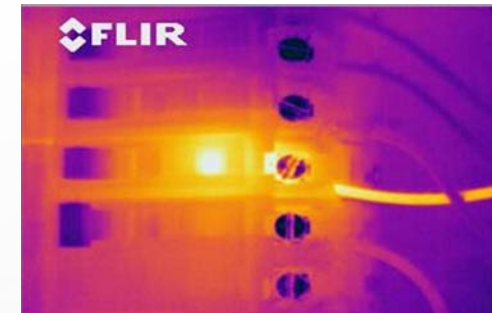
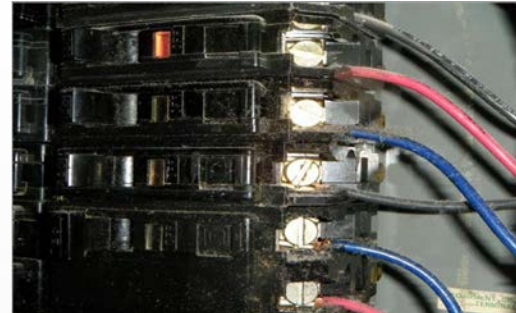
Or whatever we are directed to inspect, that is safe and operational

Typical Thermal Problems – By Type

1) Loose connections (80%)



2) Faulty Parts/Internal Flaw(10%)



3) Overloads > 80% (NEC Code)7 %

4) Phase Imbalance/Other 3%

- By Criticality (delta temp to normal) takes load into consideration
- Determine Probable Cause/Recommended repairs
- By Asset Criticality-Non essential, Essential or Critical to operations

How do we determine heat “relevance”

- Patented software with heat curve calculation (“T-Max corrected”) confirms problem severity
- Thermal anomalies measured against “normal” (not ambient) using rated vs measured @ ambient vs “heat curve” or rated rise”
- Problem forecasting at different equipment loads as an example
- Global standards for data collection/handling ensures consistency of information and trending.

Measured Amps:	3 Amps
Rated Amps:	20 Amps
Room Temp:	73°F
Problem Temp:	124°F
At 50% Load:	243.00°F
At 100% Load:	413.00°F
Maximum Temp:	74.53°F

Defines and confirms 4 levels of criticality

- Minor- 
- Important- 
- Serious- 
- Critical- 

We also catalogue NEC and OSHA code violations.
Non-Thermal problems can be just as dangerous
as the most critical thermal ones...worse.



PPE is dictated by ratings on labels and proximity to restricted boundaries

ARC FLASH PPE

Information Gathered from NFPA 70E-2018 Edition



INCIDENT ENERGY ANALYSIS METHOD*

PROTECTIVE CLOTHING AND PPE	INCIDENT ENERGY EXPOSURE		
	<1.2 cal/cm ²	≥1.2 to 12 cal/cm ²	>12 cal/cm ²
Protective Clothing, non-melting (in accordance with ASTM F 1506) or untreated natural fiber, long sleeve shirt and pants or coveralls	✓		
Safety glasses	✓	✓	✓
Hard hat	✓	✓	✓
Hearing protection	✓	✓	✓
Leather footwear	✓	✓	✓
Rubber insulating gloves with leather protectors for arc and shock protection	✓	✓	✓
Arc rated long sleeve shirt and arc rated pants or arc rated coverall		✓	
Arc rated face shield and arc rated balaclava		✓	
Arc rated arc flash suit hood, jacket and pants			✓
Undergarments shall be made of a non-melting material in accordance with ASTM F 1506	✓	✓	✓

*This table is for use only when an incident energy analysis has been completed. If incident energy exposure has not been determined, refer to NFPA 70E-2018 Edition for PPE Category Method



<1.2 cal/cm²

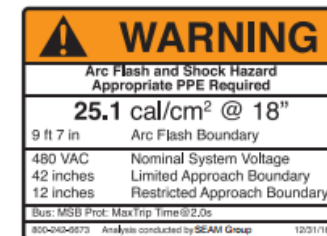


≥ 1.2 to 12 cal/cm²



> 12 cal/cm²

EXAMPLE LABEL
(Not actual size)



DISCLAIMER: This PPE guide and any information contained within is for reference purposes only and not meant to replace any regulation, code or standard. For detailed information regarding appropriate PPE selection, please refer to NFPA 70E-2018 Edition.

FOR MORE DETAILED INFORMATION REGARDING PROPER PPE SELECTION, VISIT SEAMGROUP.COM



ViewPoint® (Web Based) & VPOD (App Based) for BOTH Infrared, LOTO and Arc Flash data



Royal Towers Trailing 12 Months English

Overview Problems Inventory Cost Benefit Other Lists System

Main List > Problem Details Admin Functions Acknowledge First Prev Page 10 / 18 Next Last

Problem on #1A Control Cabinet (P29KSY)
Royal Towers > Main Hall > Main Production Room > 1242 Area > 1244 S3

Inspection Completion Date: 26/Jan/2019
Date Reported: 28/Jan/2019
Acknowledged: -
Acknowledged by: -
Days Open: 42 Days

Problem Temp: 76.67 °C
Ambient Temp: 31.67 °C
Max Temp: 32.03 °C

Measured Amps: 9 Amps
Rated Amps: 100 Amps
@50% Load: 281.67 °C
@100% Load: 531.67 °C

Problem Open
Probable Cause: Poor Connection
Recommended Repair: Replace Component
Est. Failure Downtime: -
Operational Impact: -

Actual Repair:
Repair Entered By: -
Repair Cost: \$83.84
Repair Tech: -

Field Engineer Comments:
RE-SEAT CONNECTION WITH FRESH WIRE TIP.

Reviewer Comments:
-

Recommended Actions:
-

Repair Tech Comments:
-

Equipment Information
Type: Control Cabinet
Asset Tag: PSC136978
Barcode: N/A
QR Code: N/A
Size: VAR Controls
Manufacturer: 600 or Less
Voltage: -
Rated Amps: DFG-10T
Model Number: CTO
Priority: -

Component Information:
Problem Component: Connector
Component Issue: Line Side
Feeds: A Phase
Issue Location: MCS
Manufacturer: 102QW
Model Number: -

Edit Repair
View Equipment
Cost Benefit

FLIR
Expand

ViewPoint and ViewPoint On-Demand® are SEAM Group's patented application for the delivery and management of our Safety Services and Condition Monitoring Services. The suite of ViewPoint applications provide program or individual assets information. One can access infrared inspections results, arc flash data and lock-out tag-out information along with a host of other asset information.

