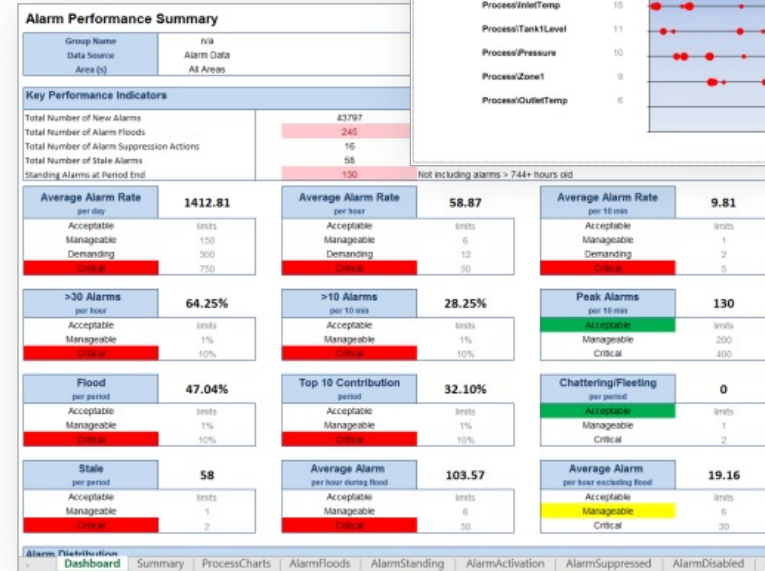




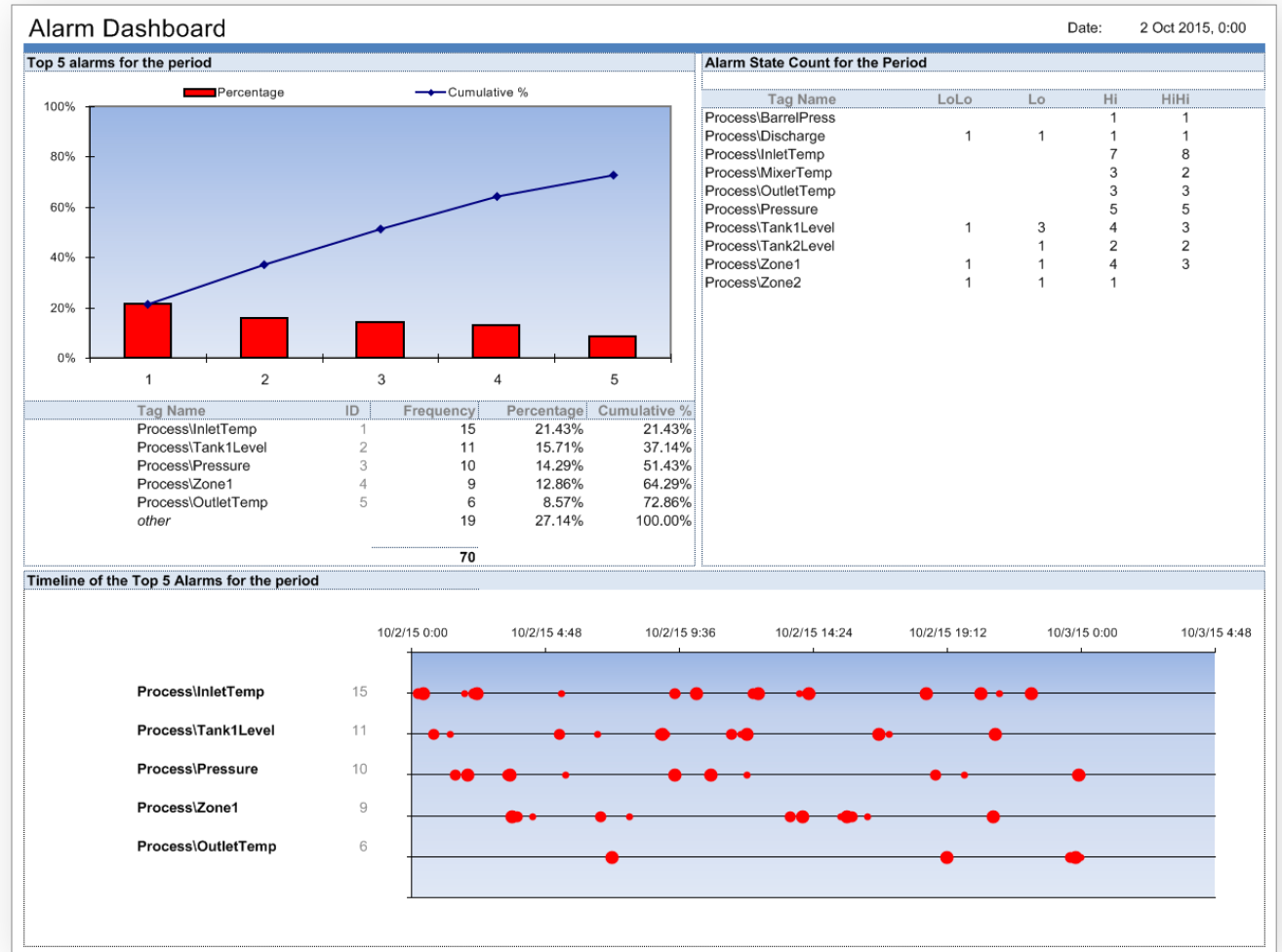
ISA-18.2, IEC-62682 Alarm Reports

XLReporter Alarm Reports

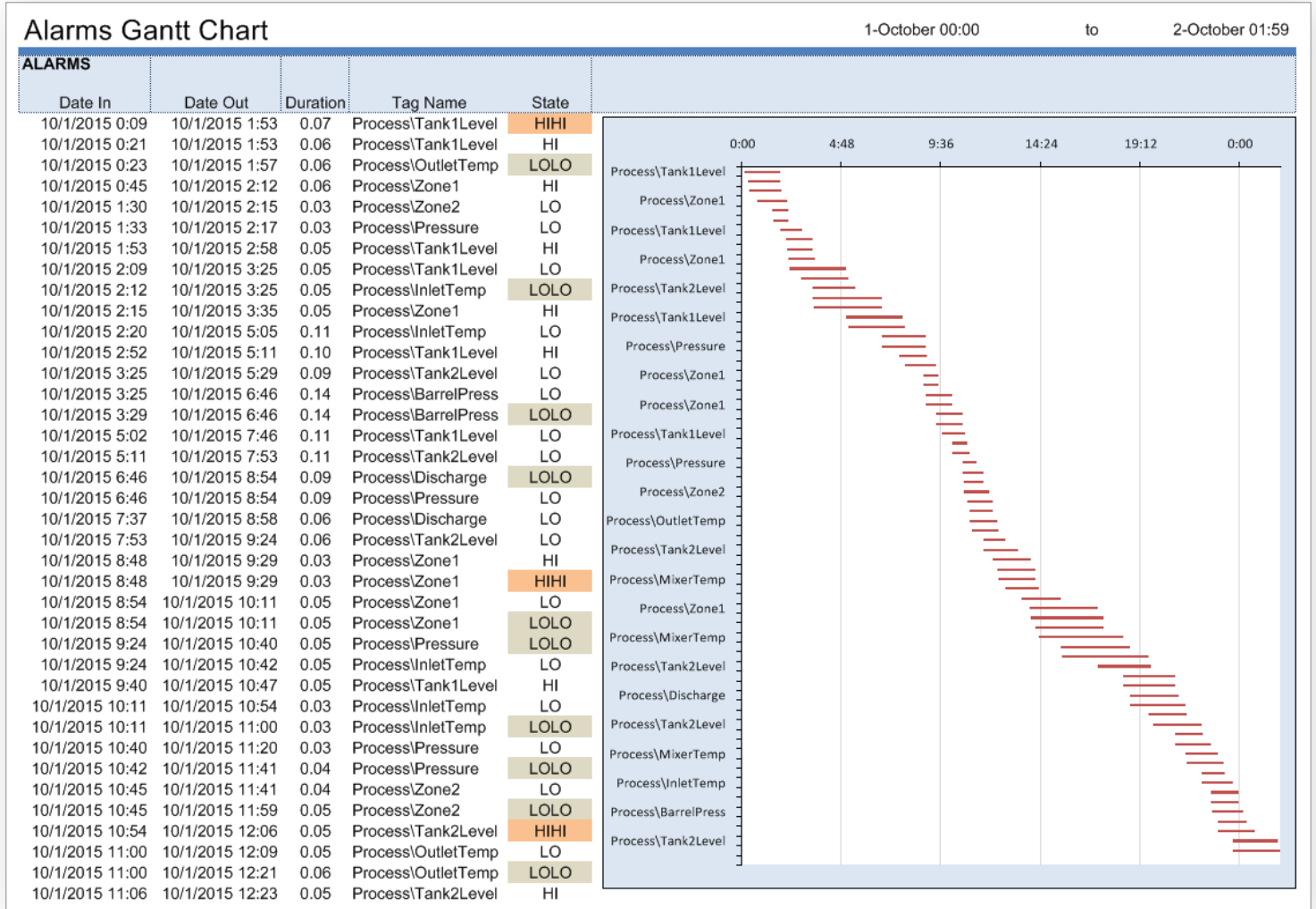
- Standard Alarm Reports
 - Report from the result of database queries
- ISA-18.2 Compliant Reports
 - Report from the result of database queries and an ISA-18.2 compliant calculations engine



Standard Alarm Reports



Standard Alarm Reports



Standard Alarm Reports

Alarms with Process Values											Date:	10/1/2015 0:00
Date	Mixer Zone 1 (deg F)			Mixer Zone 2 (deg F)			Mixer Speed (RPM)			Alarm	State	
	min	max	avg	min	max	avg	min	max	avg			
10/1/15 0:00	78.35	76.53	77.36	94.02	92.85	93.46	36.65	32.56	34.54			
10/1/2015 0:09										Process\Tank1Level	HIHI	
10/1/15 0:15	79.02	76.24	77.57	94.58	93.02	93.76	39.30	32.77	36.32			
10/1/2015 0:21										Process\Tank1Level	HI	
10/1/15 0:30	80.63	16.00	70.24	95.00	7.00	33.26	40.51	36.32	38.79			
10/1/15 0:45	80.90	16.00	57.80	59.00	31.00	45.00	37.70	33.52	35.00			
10/1/2015 0:45										Process\Zone1	HI	
10/1/15 1:00	80.71	16.00	54.21	78.10	61.00	71.96	38.10	35.99	36.96			
10/1/15 1:15	80.31	16.00	54.11	78.15	76.70	77.52	39.93	37.03	38.78			
10/1/15 1:30	80.61	16.00	50.57	78.28	77.26	77.82	43.80	40.84	42.46			
10/1/15 1:45	76.31	28.00	61.52	78.70	77.57	78.14	45.03	41.36	43.31			
10/1/2015 1:53										Process\Tank1Level	HI	
10/1/15 2:00	76.59	75.38	76.02	79.34	77.72	78.47	45.27	41.84	43.23			
10/1/15 2:15	76.95	75.74	76.33	80.47	77.08	78.53	46.13	43.49	44.91			
10/1/2015 2:15										Process\Zone1	HI	
10/1/15 2:30	77.16	76.00	76.60	91.08	81.43	86.86	48.90	43.85	47.01			
10/1/15 2:45	77.49	76.34	76.90	90.44	88.22	89.42	51.21	48.92	50.11			
10/1/2015 2:52										Process\Tank1Level	HI	
10/1/15 3:00	77.91	76.73	77.21	90.48	89.10	89.87	53.36	49.92	51.92			
10/1/15 3:15	78.30	76.81	77.51	90.62	89.60	90.16	51.63	46.55	49.38			
10/1/15 3:30	78.80	76.95	77.78	91.06	89.86	90.45	51.08	46.63	48.96			
10/1/15 3:45	79.45	76.58	78.00	91.69	90.05	90.78	54.48	50.46	52.96			
10/1/15 4:00	80.31	16.00	54.81	93.50	89.70	91.58	52.01	49.19	50.67			
10/1/15 4:15	80.84	16.00	54.11	92.66	87.12	89.32	50.46	48.47	49.61			
10/1/15 4:30	79.27	75.23	77.07	91.00	88.63	89.78	51.05	46.74	48.50			
10/1/15 4:45	78.99	76.83	78.04	90.65	89.42	90.07	51.89	49.79	50.78			
10/1/15 5:00	78.98	77.36	78.16	90.75	89.74	90.34	55.94	52.49	54.31			
10/1/15 5:15	79.21	77.88	78.55	91.31	90.07	90.62	59.30	54.77	57.28			
10/1/15 5:30	79.39	78.25	78.77	91.79	90.19	90.94	61.92	57.94	59.05			
10/1/15 5:45	79.65	78.48	79.12	93.73	89.82	91.81	61.88	57.99	60.03			
10/1/15 6:00	80.01	16.00	71.36	92.79	87.68	89.78	58.84	56.55	57.47			
10/1/15 6:15	76.62	28.00	61.66	91.51	89.21	90.33	57.97	55.28	56.69			
10/1/15 6:30	76.88	75.65	76.31	91.26	89.99	90.64	58.71	55.41	57.52			
10/1/15 6:45	77.43	75.86	76.62	91.39	90.36	90.92	61.20	58.26	60.00			

ISA 18.2 Alarm Management

- **ISA-18.2 Intent is to Improve Safety**

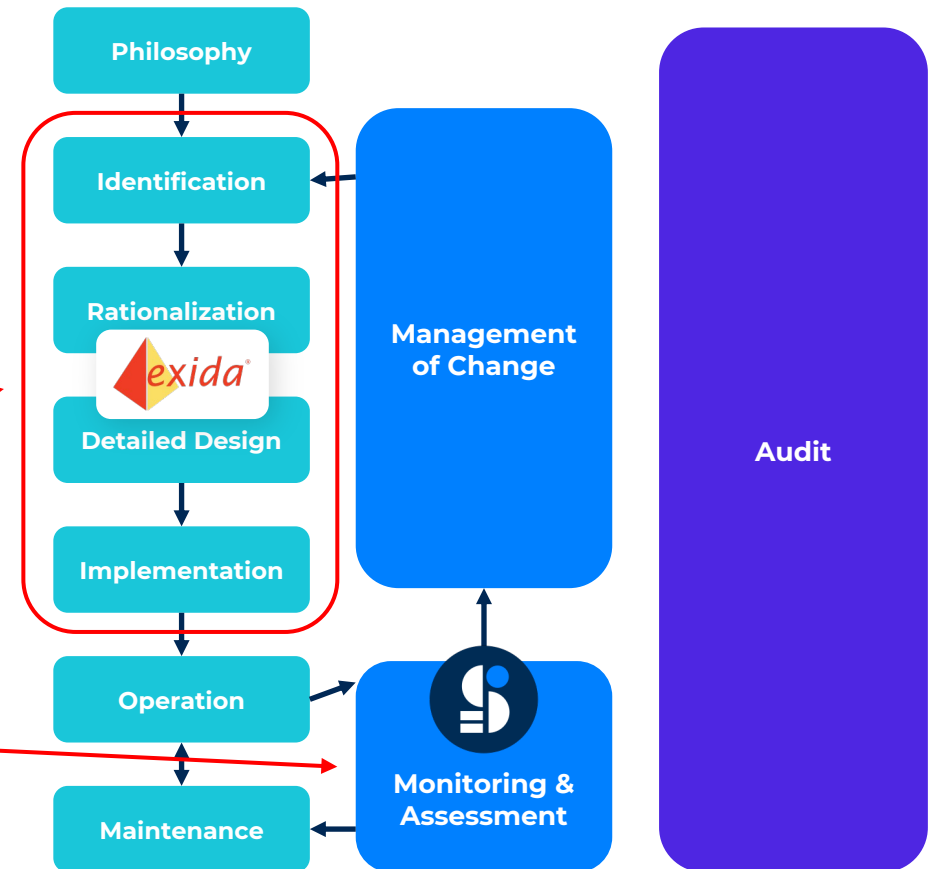
- “An alarm is audible and/or visible means of indicating to the operator an equipment malfunction, process deviation, or abnormal condition requiring a response.”
- Proposes a Multi-stage Life Cycle

- **Partnership with exida**

- Identification to Implementation

- **SmartSights**

- Benchmark
- Monitor and Assess



Benchmark Report

- **Free to Eligible Users**
 - Users Provide Data (30+ days)
 - 20+ Page Report Returned at No Cost
- **Purpose**
 - Initial Benchmark
 - Justify Investment
- **Periodic Publication**
 - By Subscription
 - User Provides Data
 - Purchase of XLReporter/Alarm Module
 - Install on premises

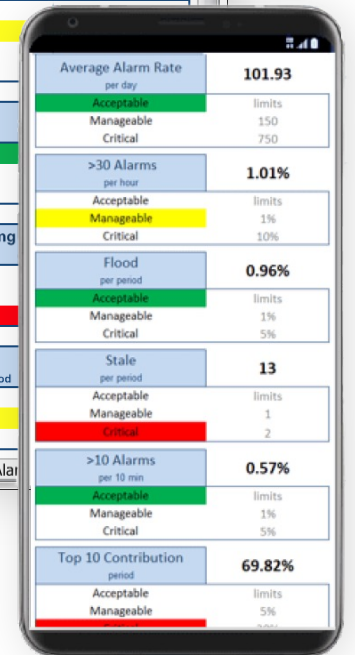
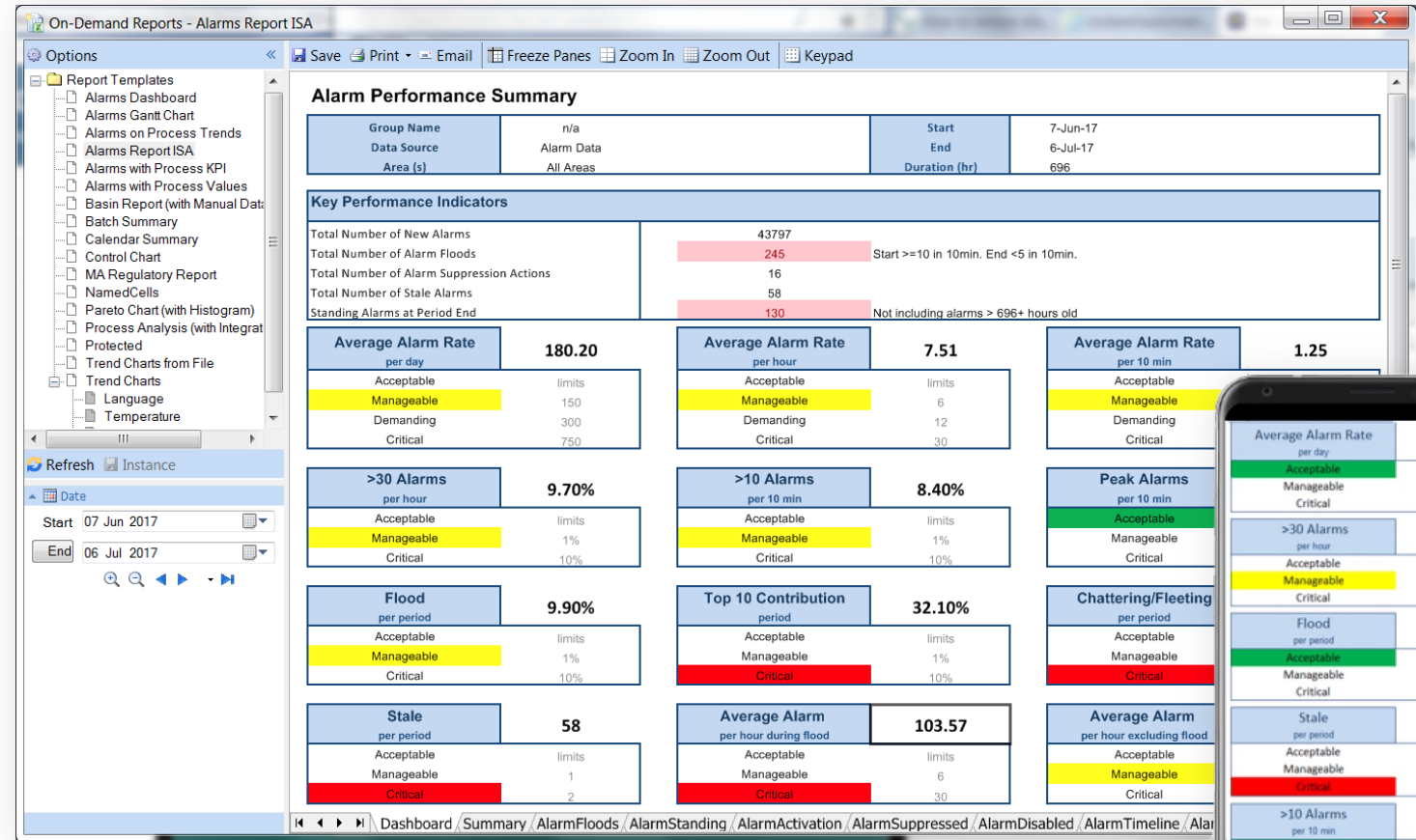
Metric	Target		As Found	Evaluation
Annunciated alarms per hour per operator console (average)	~6	~12	5.8	Acceptable
Annunciated alarms per 10 minutes per operator console (average)	~1	~2	0.9	Acceptable
Percentage of 10-minute periods containing more than 10 alarms	~<1%		6.20%	Critical
Maximum number of alarms in a 10 minute period	≤10		157	Critical
Percentage of time the alarm system is in a flood condition	~<1%		22.30%	Critical
Percentage contribution of the top 10 most frequent alarms to the overall alarm load	~<1% to 5% maximum		4.70%	Manageable
Quantity of chattering and fleeting alarms	Zero,		132	Critical
Stale alarms	Less than 5 present on any day		2	Acceptable
Annunciated Priority - % of Highest Priority Alarms	~<1%		0.75%	Acceptable
Annunciated Priority - % of High Priority Alarms	~5%		9.19%	Critical
Annunciated Priority - % of Medium Priority Alarms	~15%		15.00%	Manageable
Annunciated Priority - % of Low Priority Alarms	~80%		75.06%	Acceptable

Monitor and Assess Reports

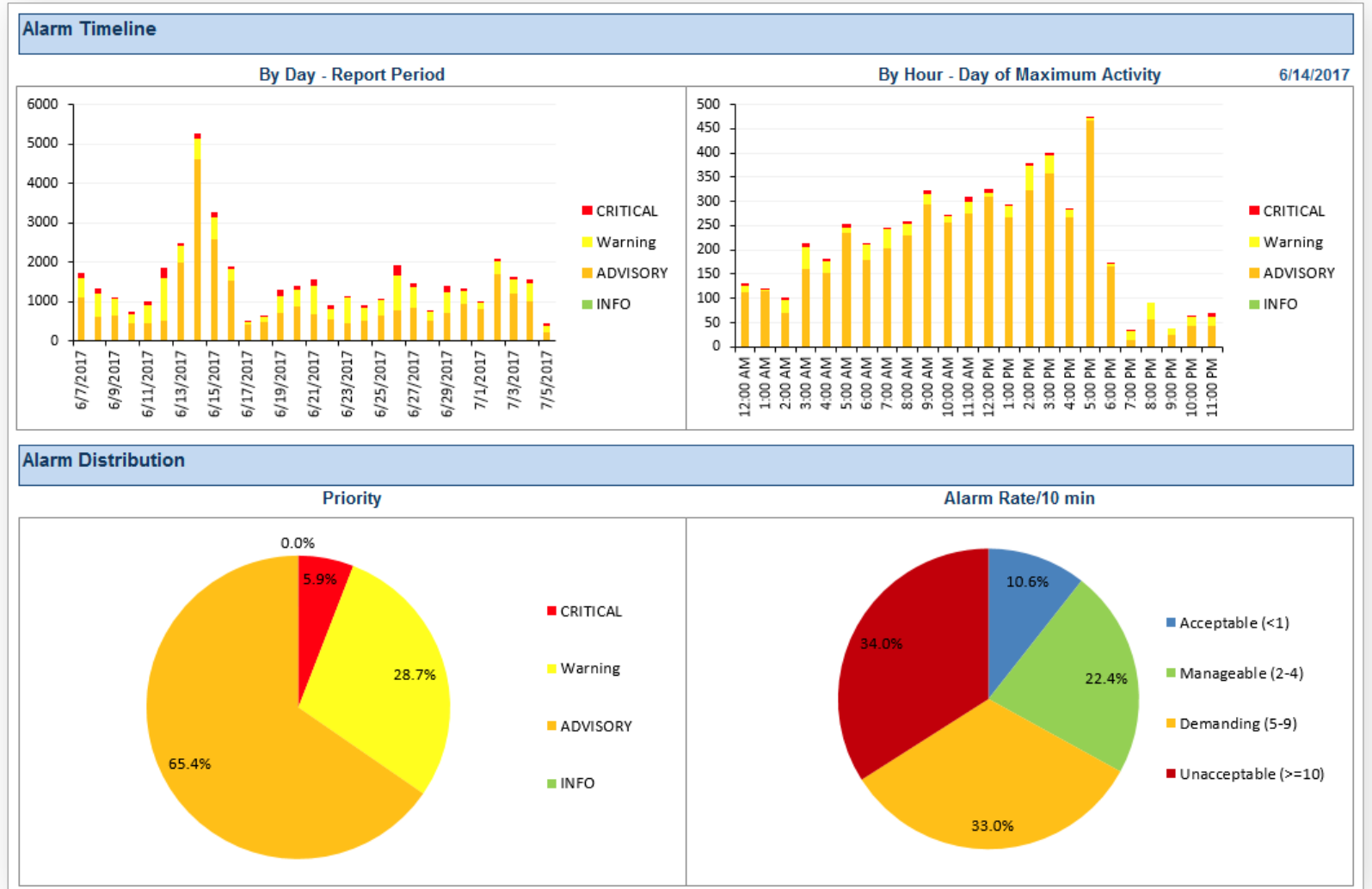
- Based on ISA 18.2
- KPI Dashboards
- Drill Down to Details
- Scheduled and On-Demand
- Customize to Needs
- Combine with Process Data
- Automated Report Distribution



Alarm Dashboard



Alarm Timeline



Identifying Chattering/Stale Alarms

Alarm Activation					
Data Source Area (s)	Alarm Data All Areas	Report Start Date	5-Jun-17	Alarm Period (hrs)	744
		Report End Date	6-Jul-17		
Key Performance Indicators					
Chattering Alarm Sources based on average activation < 1 min		246			
Chattering Total based on average activation < 1 min		7300			
Stale Alarm Sources based on average activation > 24 hours		58			
Stale Total based on average activation > 24 hours		271			
Highest average time active		22.20:05:07			
Area\Module of highest average time active					
Module/Node	Description	Time Active	Average Time	Total Time	Alarm Area
12-11-XA-216	Alarm 12-11Q31C	4	0.00:00:01	0:00:00:04	12-11-SP
12-21-XA-101	Alarm 12-21S11A	2	0.00:00:01	0:00:00:02	12-21-MALT
12-21-XA-103	Alarm 12-21S11B	1	0.00:00:01	0:00:00:01	12-21-MALT
12-21-XA-201	Alarm 12-21S21	2	0.00:00:01	0:00:00:02	12-21-MALT
12-21-XA-413	Alarm 12-21S24	2	0.00:00:01	0:00:00:02	12-21-MALT
12-23-FIC-202	Air flow regulator 23T02	1	0.00:00:01	0:00:00:01	12-23-FERMENT
12-23-XS-316	On/off CO2 to RTO	8	0.00:00:01	0:00:00:08	12-23-FERMENT
12-24-PI-810	Pressure CIP t. dest	1	0.00:00:01	0:00:00:01	12-24-DISTILLATION
12-24-SIC-307	Speed 12-24-P31B	3	0.00:00:01	0:00:00:03	12-24-DISTILLATION
12-31-LIC-781	Level 12-31P99	1	0.00:00:01	0:00:00:01	12-31-REFINING
12-32-GA-242	Bland. guard 12-32J04B	3	0.00:00:01	0:00:00:03	12-32-TRANSPORTER
12-32-GA-342	Bland. guard 12-32J04C	1	0.00:00:01	0:00:00:01	12-32-TRANSPORTER
12-32-GA-442	Bland. guard 12-32J04D	1	0.00:00:01	0:00:00:01	12-32-TRANSPORTER
12-32-GA-443	Bland. guard 12-32J03D	2	0.00:00:01	0:00:00:02	12-32-TRANSPORTER
12-32-GA-445	Bland. guard 12-32J05D	1	0.00:00:01	0:00:00:01	12-32-TRANSPORTER
12-32-SA-165	rotation valve 12-32A01A	1	0.00:00:01	0:00:00:01	12-32-TRANSPORTER
12-32-SA-243	rotation valve 12-32J43	1	0.00:00:01	0:00:00:01	12-32-TRANSPORTER
12-32-SA-266	rotation valve 12-32J03B	7	0.00:00:01	0:00:00:07	12-32-TRANSPORTER
12-32-SA-365	rotation valve 12-32A01C	1	0.00:00:01	0:00:00:01	12-32-TRANSPORTER
12-32-VI-401	Vibration drivsida dryer D	1	0.00:00:01	0:00:00:01	12-32-TRANSPORTER
12-32-XA-422	Alarm 12-32S23B	4	0.00:00:01	0:00:00:04	12-32-TRANSPORTER
12-33-SA-203	rotation valve 12-33J07	2	0.00:00:01	0:00:00:02	12-33-LAGER
12-61-XA-101	Hydrogen peroxide	1	0.00:00:01	0:00:00:01	12-61-LQWVAT

Alarm Activation Time (D:H:M:S)

Identifying Alarm Floods

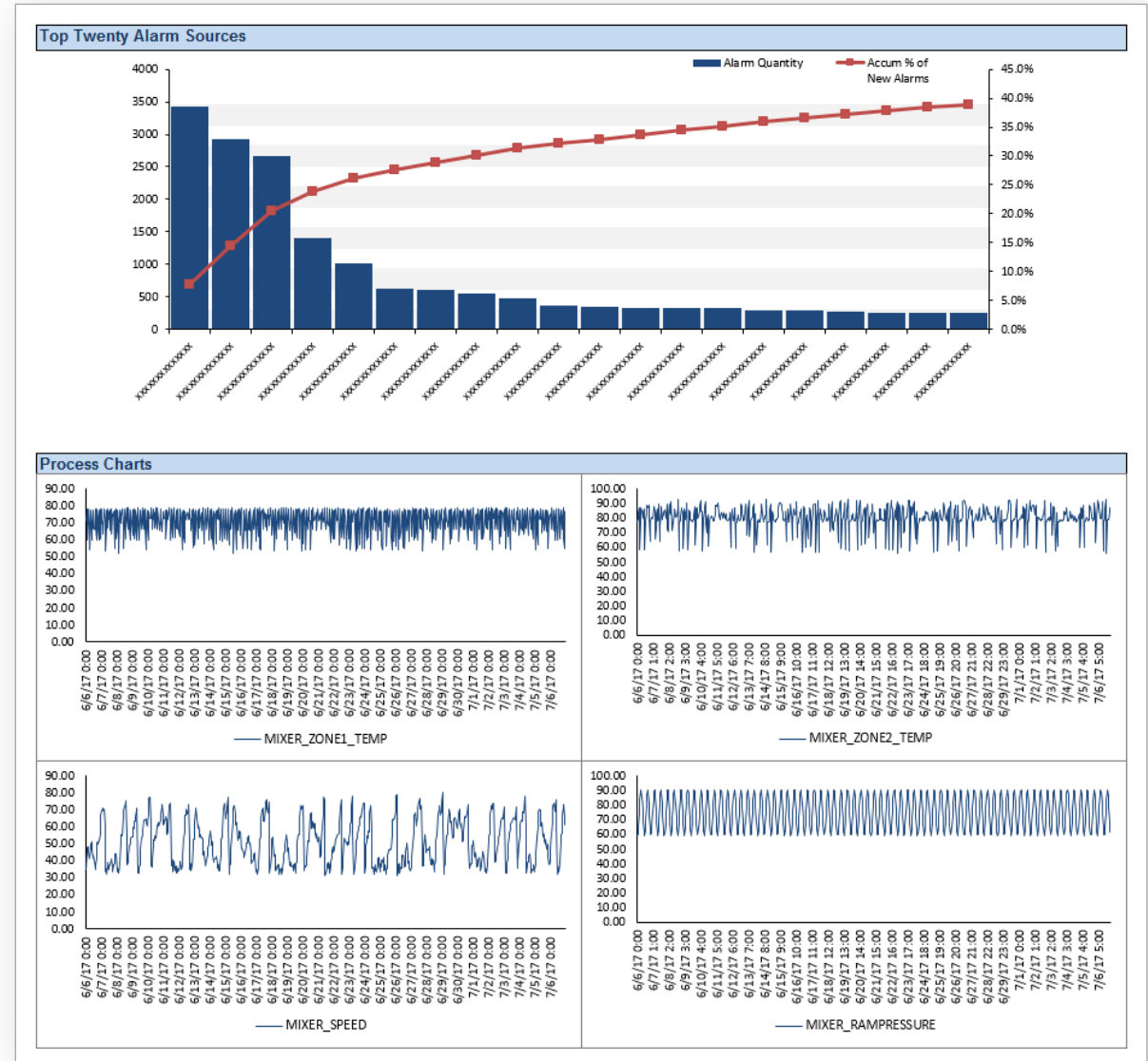
Alarm Floods					
Data Source Area (s)	Alarm Data All Areas	Report Start Date Report End Date	5-Jun-17 6-Jul-17	Alarm Period (hrs)	744
Key Performance Indicators					
Total number of floods	245				
Total time in flood (d.hh:mm:ss)	14.14:00	(day.hour:minute)			
Total alarms in flood	36248				
Average alarms in flood (per Hr)	103.57				
Peak alarm count during flood	130				
Start time of peak during flood	7/5/2017 5:00				
Start	End	Duration (mins)	Peak Start	Peak Count	Alarm Total
6/7/2017 2:10	6/7/2017 2:40	30	6/7/2017 2:10	18	31
6/7/2017 4:20	6/7/2017 4:50	30	6/7/2017 4:30	23	44
6/7/2017 5:00	6/7/2017 7:50	170	6/7/2017 6:50	39	306
6/7/2017 8:30	6/7/2017 9:00	30	6/7/2017 8:30	25	47
6/7/2017 9:20	6/7/2017 14:20	300	6/7/2017 9:40	64	590
6/7/2017 14:40	6/7/2017 15:50	70	6/7/2017 15:10	36	150
6/7/2017 17:00	6/7/2017 18:10	70	6/7/2017 17:20	16	81
6/7/2017 18:40	6/7/2017 19:10	30	6/7/2017 18:40	21	38
6/7/2017 21:50	6/7/2017 22:20	30	6/7/2017 21:50	21	37
6/7/2017 22:30	6/7/2017 23:40	70	6/7/2017 22:50	50	192
6/7/2017 23:50	6/8/2017 0:10	20	6/7/2017 23:50	15	24
6/8/2017 1:20	6/8/2017 1:50	30	6/8/2017 1:20	12	23
6/8/2017 2:50	6/8/2017 3:00	10	6/8/2017 2:50	11	11
6/8/2017 4:00	6/8/2017 4:10	10	6/8/2017 4:00	12	12
6/8/2017 4:40	6/8/2017 6:00	80	6/8/2017 4:40	29	145
6/8/2017 6:10	6/8/2017 7:10	60	6/8/2017 6:30	19	84
6/8/2017 7:30	6/8/2017 10:50	200	6/8/2017 10:00	59	366
6/8/2017 11:10	6/8/2017 12:50	100	6/8/2017 11:20	22	134
6/8/2017 13:10	6/8/2017 13:50	40	6/8/2017 13:10	15	50
6/8/2017 14:30	6/8/2017 16:00	90	6/8/2017 14:40	23	93
6/8/2017 16:30	6/8/2017 16:50	20	6/8/2017 16:30	16	22

Floods last a long period of time

Multiple Flood scenarios

Alarms Combined with Process Trends

- **Metrics and KPIs**
 - Uptime/Downtime starts/stops e.g., OEE
- **Export to Back Office**
 - Produce XML, CSV from worksheet
 - Export used in SAP, Quality Control.
- **Web Portal**
 - Open from any browser.
 - No Access Limits
- **Email, FTP, Printer**
 - Mobile, Email, Text Message
 - Dynamic/Compressed attachments
 - Live values in content





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