

掌控报表

用自动生成的多种运营数据报告取代单一报表

彭成奎 OSIssoft中国产品支持
2020-7-21

报表帮助我们分析生产状况

产量是否达标？

哪个装置耗能最大？

排放物是否超标？



生产常态 = 没有常态





制作报表的流程


```
input")?val":{"html";e="Text",r.setTextText
{e="loadingText"?n.addClass(t).attr(t,t).n.r
.closest('[data-toggle="buttons-radio"]');e&&
n=e.fn.button;e.fn.button=function(n){return
.data("button",i=new t(this,s)),n=="toggle"?i
.button.Constructor=t,e.fn.button.noConflict=
"[data-toggle^=button]",function(t){var n=e(t
,!function(e){"use strict";var t=function(t,n
.options=n,this.options.pause=="hover"&&this.
this));t.prototype={cycle:function(t){return
.interval&&!this.paused&&(this.interval=setIn
{return this.$active=this.$element.find(".ite
.$active)},to:function(t){var n=this.getActiv
.$element.one("slid",function(){r.to(t)});n=
(t){return t||(this.paused=!0),this.$element.
.support.transition.end(),this.cycle(!0)),clea
return;return;return;prev:functi
r=this.$element.one("slid",function(){r.to
this.sliding=!0,pause(!0),i.length?i
if(i.hasClass("active"))return;this.$indicato
"slid",function(){var t=e(a.$indicators.chil
.$element.hasClass("slide")){this.$element.tr
,i.addClass(o),this.$element.one(e.support.tr
.removeClass(["active",o].join(" ")),a.slidin
(f);if(f.isDefaultPrevented())return;r.remove
}return s&&this.cycle(),this}};var n=e.fn.car
("carousel"),s=e.extend({},e.fn.carousel.defa
t(this,s),typeof n=="number"?i.to(n):o?i[o](
pause:"hover"),e.fn.carousel.Constructor=t,e.
.carousel.data-api,"[data-slide],[data-slid
.replace(/.*(?=[^\s]+$)/,""),s=e.extend({},
.pause().to(o).cycle(),t.preventDefault())}(
.options=e.extend({},e.fn.carousel.defaults,n
.toggle());t.prototype={constructor:t,dimensi
show:function(){var t,n,r,i;if(this.transitio
t].join("-")),r=this.$parent&&this.$parent.fi
```

数据收集



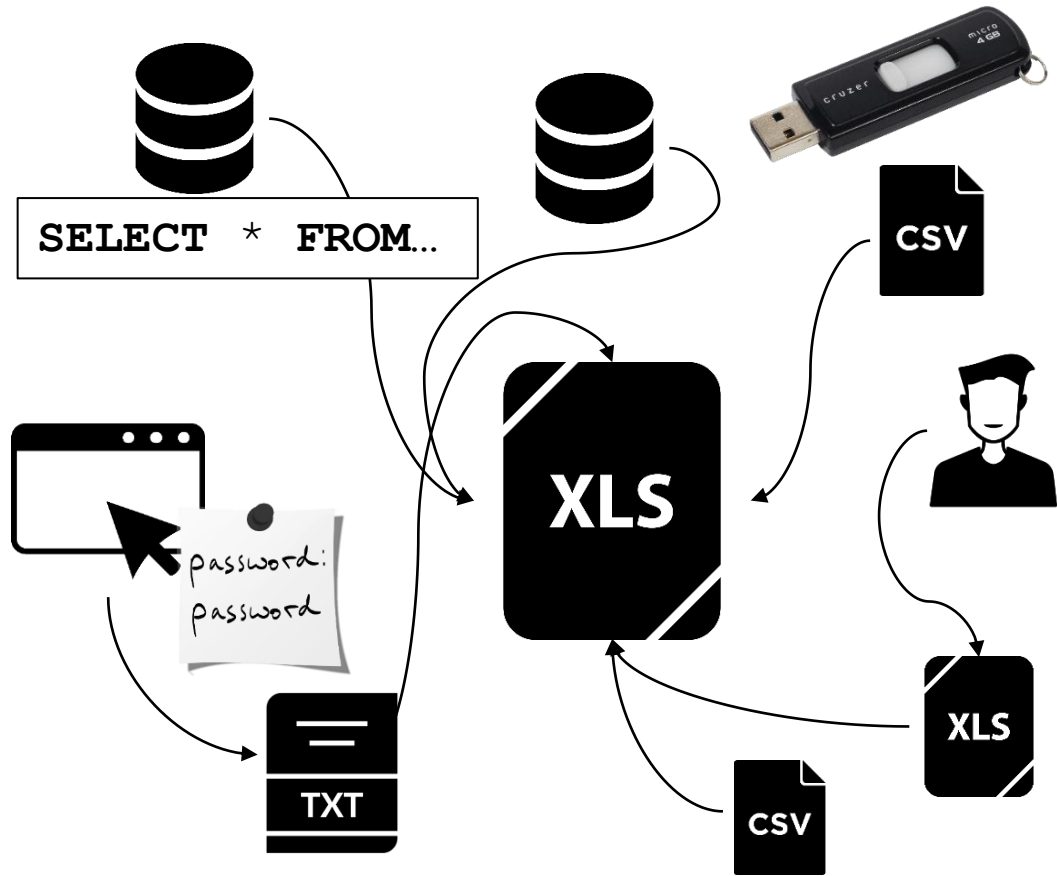
数据清洗



制作及发布

```
$(input).val().html();e="text";e.resetText||n.data
{e=="loadingText"?n.addClass(t).attr(t,t):n.removeCl
.closest('[data-toggle="buttons-radio"]');e&&e.find(
n=e.fn.button;e.fn.button=function(n){return this.ea
.data("button",i=new t(this,s)),n=="toggle"?i.toggle
.button.Constructor=t,e.fn.button.noConflict=function
"[data-toggle^=button]",function(t){var n=e(t.target
,function(e){"use strict";var t=function(t,n){this.
options=n,this.options.pause=="hover"&&this.$elemen
});t.prototype={cycle:function(t){return t||(th
.interval||this.paused||(this.interval=setInterval(
{return this.$active=this.$element.find(".item.activ
.$active)),to:function(t){var n=this.getActiveIndex(
.$element.one("slid",function(){r.to(t)}):n=t,this
(t){return t||(this.paused=0),this.$element.find(".
.support.transitionEnd)||this.cycle(0)},clearInterv
return;return this.$element.find(".item.active")&&[t],s=
this.sliding=0,s&&this.pause(),i=i.length-i,this.$e
(i.hasClass("active"))return;this.$indicators.leng
"slid",function(){var t=e(a.$indicators.children())[
.$element.hasClass("slide")}{this.$element.trigger(f
,i.addClass(o),this.$element.one(e.support.transition
.removeClass(["active",o].join(" ")),a.sliding=1,se
(f);if(f.isDefaultPrevented())return;r.removeClass("
}return s&&this.cycle(),this}};var n=e.fn.carousel;e
("carousel"),s=e.extend({},e.fn.carousel.defaults,{
t(this,s),typeof n=="number"?i.to(n):o?i[o]()&&s.inte
pause:"hover"},e.fn.carousel.Constructor=t,e.fn.carol
.carousel.data-api,"[data-slide],[data-slide-to]",
.replace(/.*(?=#[^\s]+$)/,""),s=e.extend({},i.data(
.pause().to(o).cycle(),t.preventDefault()))}(window.
.options.e.extend({},e.fn.collapse.defaults,n),this.
.toggle());t.prototype={constructor:t,dimension:func
show:function(){var t,n,r,i;if(this.transitioning||t
t].join("-")),r=this.$parent&&this.$parent.find(">
```

数据收集



可能遇到的问题

数据收集

Region, City, Vendor, Product ID, Product, Unit, Cases Sold, Total Sales
North GA, Blue Ridge, Mountain Fruit, 0100, oranges, Case, 6168, 61680
North GA, Blue Ridge, Mountain Fruit, 0200, Apples, Case, 6079, 85106
North GA, Blue Ridge, Mountain Fruit, 0300, Kiwi, Case, 6058, 66638

Convert Text to Columns Wizard - Step 3 of 3

This screen lets you select each column and set the Data Format.

Column data format

- General
- Text
- Date: MDY
- Do not import column (skip)

'General' converts numeric values to numbers, date values to dates, and all remaining values to text.

Advanced...

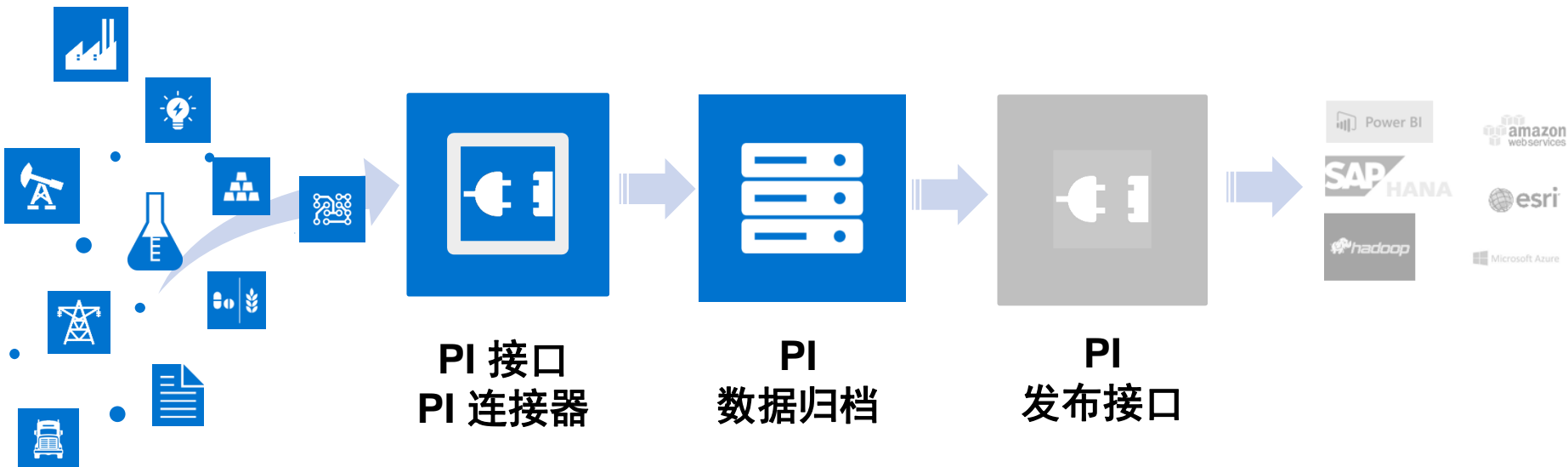
Destination: \$A\$1

Data preview

Ski	General	General	Gene	General
Date				
Wed	Jun 30	08:00:01	GMT	2010
Tue	Jun 29	08:00:01	GMT	2010
Mon	Jun 28	08:00:01	GMT	2010
Sun	Jun 27	08:00:01	GMT	2010

Microsoft Visual Basic
Run-time error!
End Debug

数据收集自动化



数据收集自动化

公共协议

- RDBMS – 关系库
- UFL – CSV files
- OPC DA/HDA/UA
- Modbus/Ethernet
-共400+种



配置简单



自动读取



高吞吐量

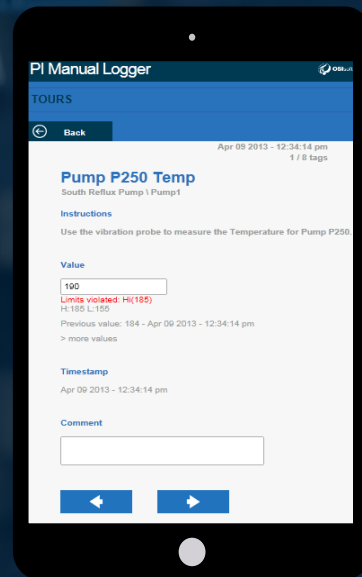


安全机制



PI Manual Logger

现场巡视手动录入



数据清洗



如何处理数据缺失？



是否有异常数据？



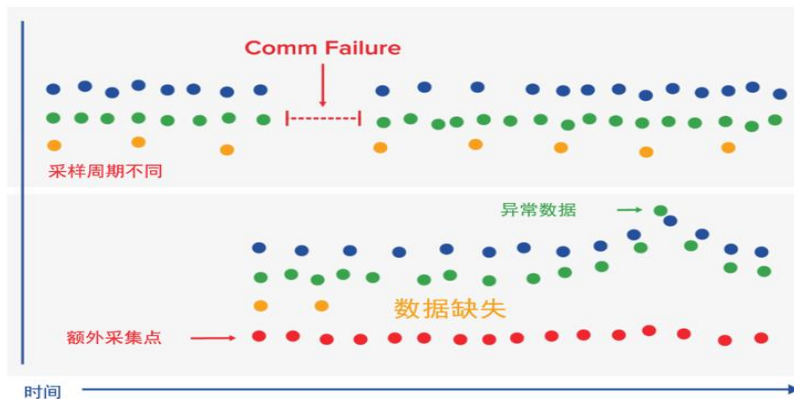
数据是否可信？



锅炉 1



锅炉 2

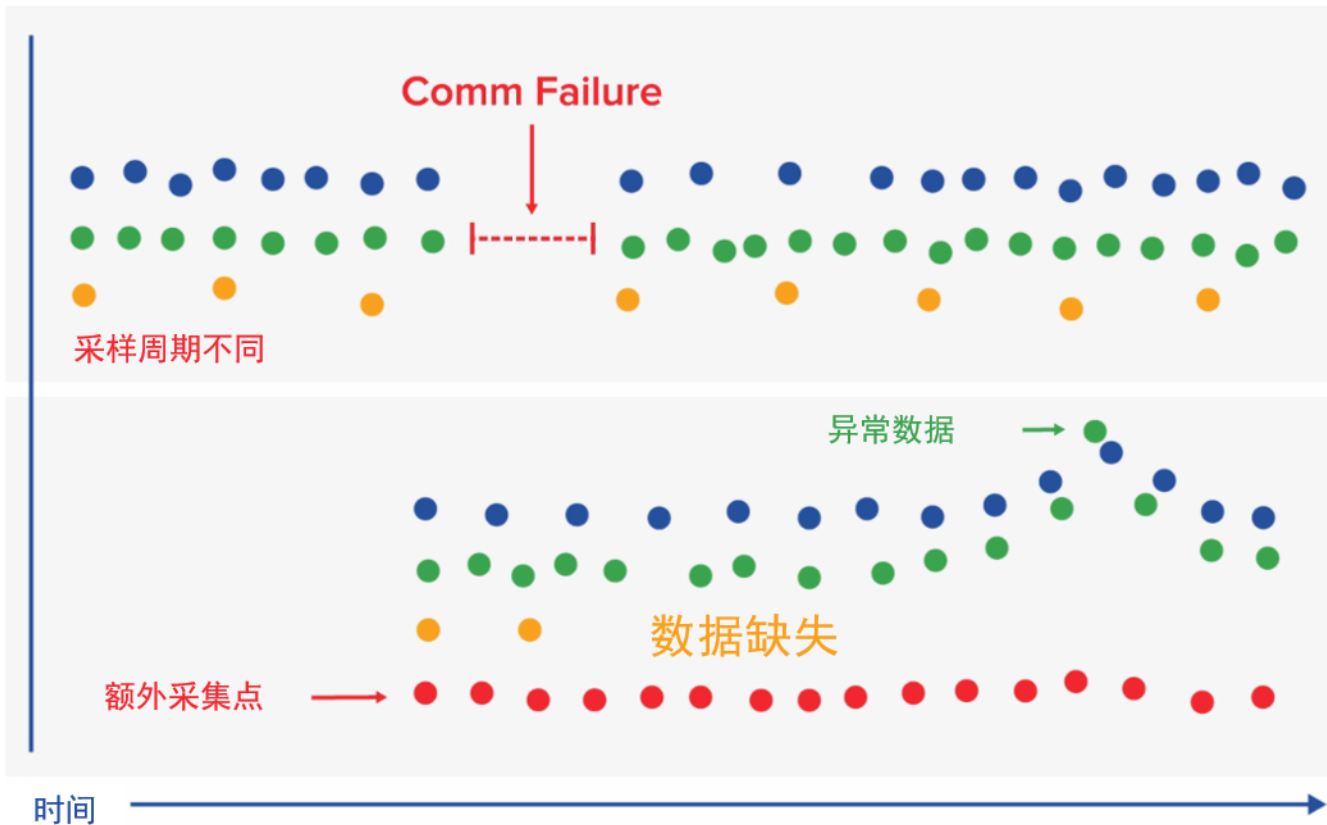




锅炉 1



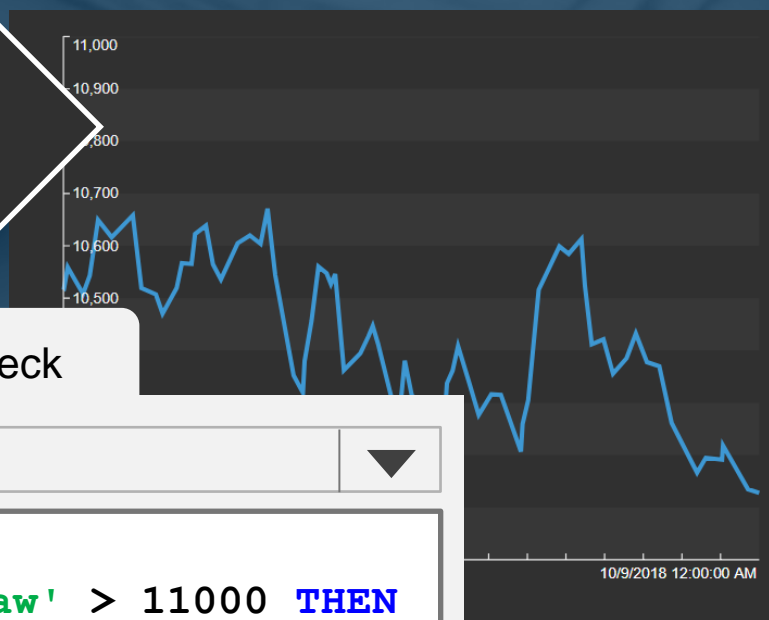
锅炉 2



原始数据

报表数据

资产分析



Gas Feed Quality Check

Template: Steam Boiler

Expression:

```
IF 'Gas Feed Rate_Raw' > 11000 THEN  
NoOutput() ELSE 'Gas Feed Rate_Raw'
```

Scheduling: Event-Triggered Periodic

数据收集和清洗集中化、自动化



发电量

发电量

发电量

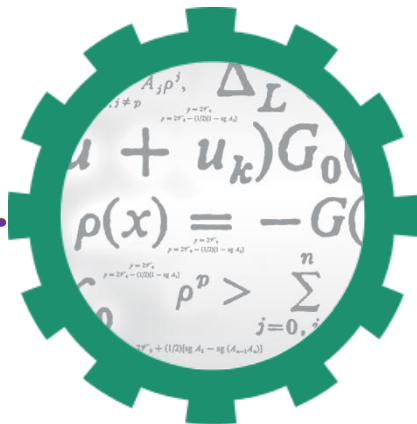
状态

状态

状态

链接数据

能耗目标
排放限值
...



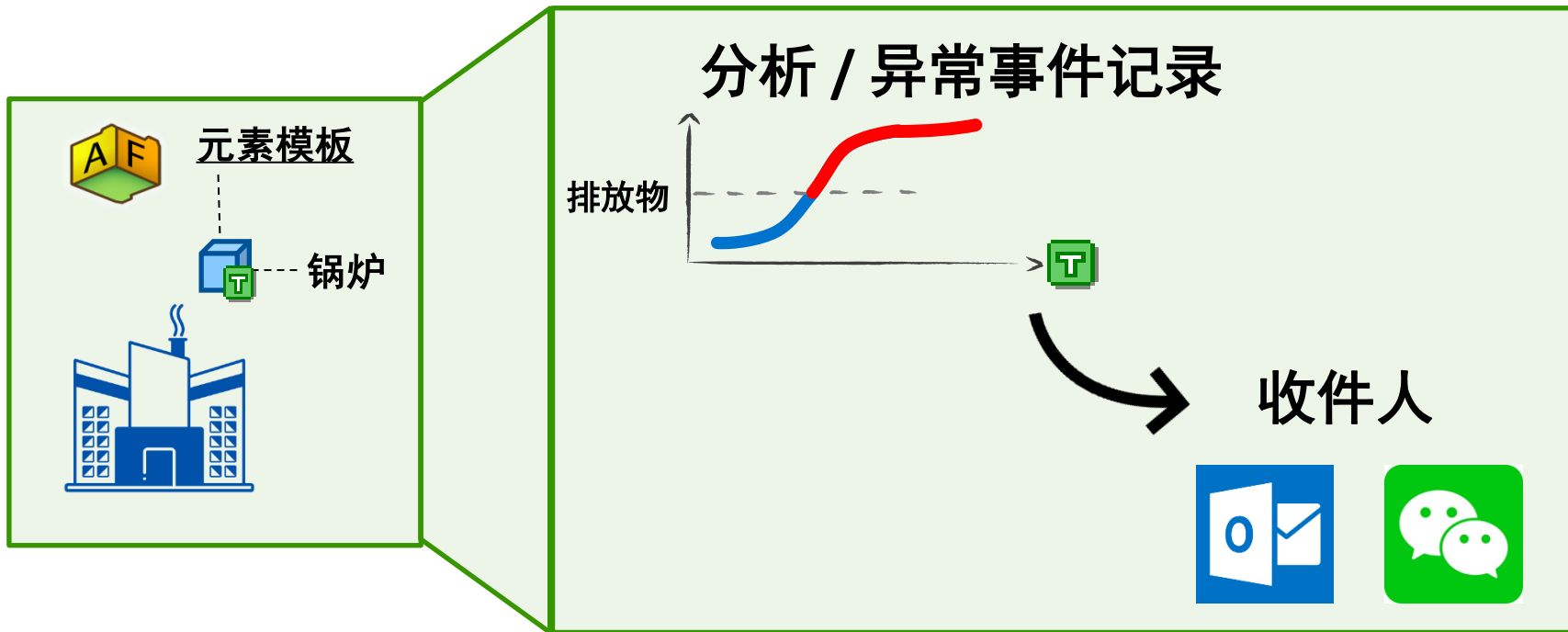
全局效率

设备运转率

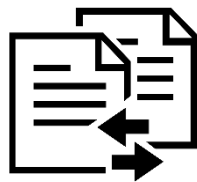
总排放

主动发现数据异常

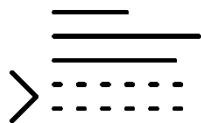
PI 通知服务



制作及发布



报表样式是否统一？

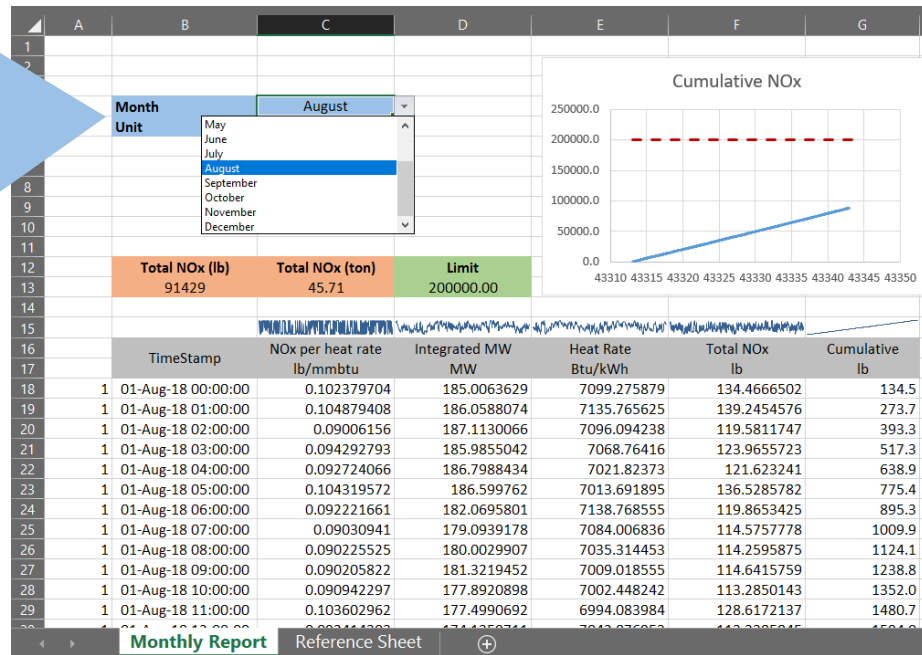
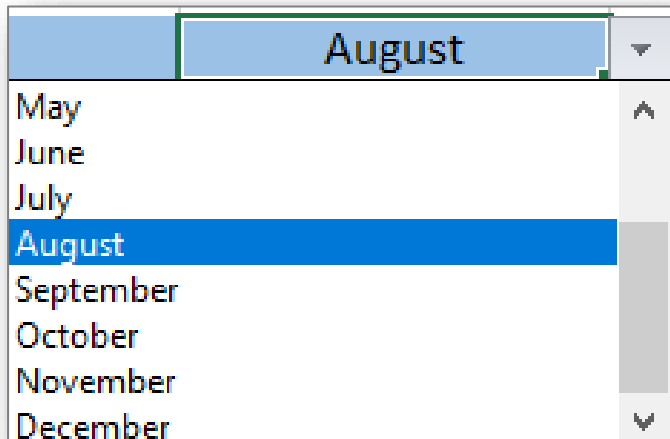


数据格式是否正确？

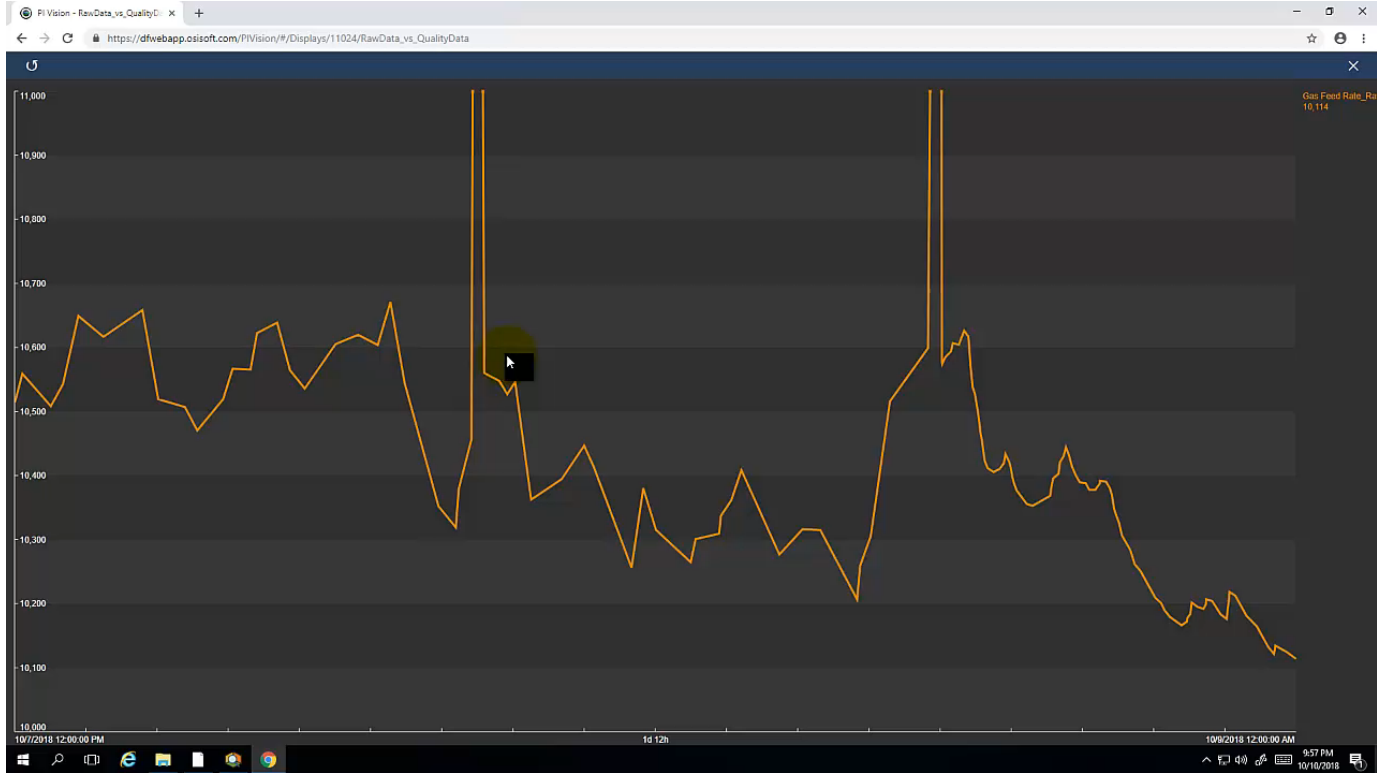


报表是否标注异常点？

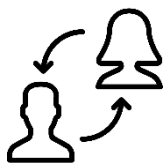
更新报表 – 只需更新一个单元格



简要演示



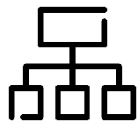
掌控报表



使用简单



快速更新



随开随用





巴克利黄金 自动制作能耗排放报表

巴克利黄金——自动制作能耗排放报表

挑战



超过1000条相关法规



超过140个各类系统
报表复杂，并且相互关联



1名全职员工
负责处理每月报表

巴克利黄金——自动制作能耗排放报表

挑战

解决办法



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负责处理每月报表



集中法规

1

标准化计算

2

使用PI Vision推送异常

3

自动更新报表

4

巴克利黄金——自动制作能耗排放报表

挑战



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解决办法

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通过AF查表功能自动引用及填充数据

将表格导入AF中
- 及 -
直接通过AF查询其它表格

AF TABLE: Title V Permit Line items

System	Line Item	Permit Limit	Permit Value
System 017	Coal	< 6.8 tons/hr	6.8
System 018	Secondary Current	≤ 8 milliamps	8

Elements

- System 017
 - System 018**
 - Emissions CO
 - Emissions NOx
 - Secondary Current**
- Permit value: 8

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解决办法

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4

Category	Name	Value
Items that Define Operation	ESP Discharge Valve (A)	1
	ESP Discharge Valve (B)	1
	Roaster Status	3
Permit Calculations	In Compliance	1
Real-time Data	Bucket Elevator Amps (R1)	104.753494
	Bucket Elevator Amps (R2)	96.16089
	KiValve (R1)	83.0232544
	KiValve (R2)	73.19825
	Natural Gas Totalizer	135308240
	Slide Gate (R1)	open
	Slide Gate (R2)	open
	Throughput (R1)	384.5193 t/h
	Throughput (R2)	357.4196 t/h
	Total Roaster Throughput	741.939 t/h
SMA data	Daily Roaster Availability	49.098075866699219
	Daily Total throughput SMA	0
System Information	Common Name	North and South Roasters
	System Description	Roaster Circuit: Ore Roasting Process
	System Location	Roaster
	System Number	System 018

- Define operation
- Compliance status
- Advanced analytics
- System description

Name
<input checked="" type="checkbox"/> Average every hour Analysis
<input checked="" type="checkbox"/> Compliance Analysis
<input checked="" type="checkbox"/> Out of Compliance Analysis

在PI资产分析中统一计算

- 以小时为单位统计
- 合规评估：是\否
- 抓取违规事件



Hourly Average

Template: Secondary Current

Expression

```
TagAvg('Current', '*-1h', '*')
```

Periodic Schedule

```
01 h 00 m 00 s
```

巴克利黄金——自动制作能耗排放报表

挑战



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负责处理每月报表



解决办法

集中法规

1

标准化计算

2

使用PI Vision推送异常

3

自动更新报表

4



发生异常事件及时
推送通知

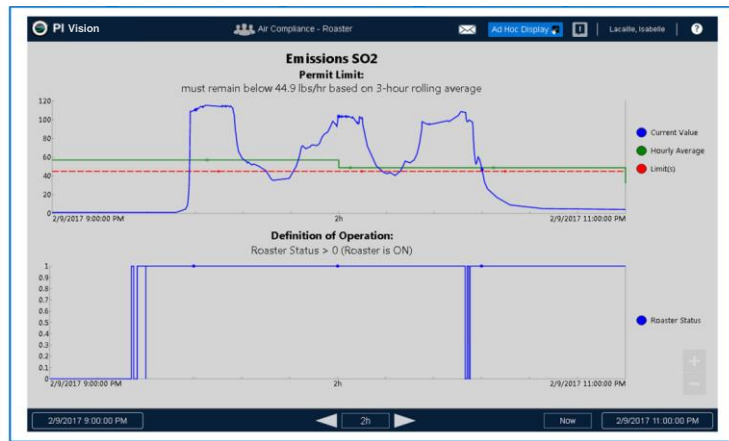


展示关键信息：
设备
限值
历史值
平均值



添加超链接
显示详细数据

Use PI Vision to easily Investigate Compliance Alerts



**This is not a real event. It was generated purposely for this demonstration*



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巴克利黄金——自动制作能耗排放报表

挑战



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自动更新报表

4

快速自动生成月度报告

S18 Roaster PIAF Template.xlsx - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Developer PIA DataLink PIA Builder Enterprise Connect

Calibri 10 A⁺ A⁻ B I U Font Alignment Number Styles

B4 AP1041-0739.01

1 **Class I Air Quality Operating Permit and Mercury Operating Permit to Construct: Phase 1 Monitoring Form** Page 1 of 7

2

3 **Data Month/Yr:** December-2016 (Enter in the month and year representative of the data provided in this report.)

4 **Permit No.:** AP1041-0739.01

5 **System:** 18 - Roaster Circuit: Ore Roasting Process

6 **Unit No.:** S2.209 Roasters 1 and 2

7 **Signature:** Report Preparer

8 **Print Name:** Report Preparer

9 **Date:** February 1, 2016

10

124 **Requirement:** Monitor and record the water flow rate through the off-gas quenchers, based on a one-hour period, once during each day of operation.
The off-gas quencher water flow rate must be maintained at or above gallons per minute.

Unit No.	Date	Off-Gas Quencher 1 Water Flow Rate (gal/min)*	Off-Gas Quencher 2 Water Flow Rate (gal/min)*	Date	Off-Gas Quencher 1 Water Flow Rate (gal/min)*	Off-Gas Quencher 2 Water Flow Rate (gal/min)*	Date	Off-Gas Quencher 1 Water Flow Rate (gal/min)*	Off-Gas Quencher 2 Water Flow Rate (gal/min)*
S2.209	12/1/2016	429.9	429.7	12/12/2016	375.0	375.1	12/23/2016	429.8	429.7
	12/2/2016	429.9	429.8	12/13/2016	429.7	429.8	12/24/2016	429.8	429.6
	12/3/2016	429.7	429.7	12/14/2016	429.9	429.7	12/25/2016	429.9	429.7
	12/4/2016	429.7	429.7	12/15/2016	429.9	429.7	12/26/2016	429.8	429.2
	12/5/2016	429.7	429.5	12/16/2016	429.8	429.8	12/27/2016	429.9	429.7
	12/6/2016	429.7	429.7	12/17/2016	429.7	429.7	12/28/2016	429.8	429.7
	12/7/2016	429.7	429.6	12/18/2016	429.8	237.3	12/29/2016	429.8	429.4

Ready 18 S18 Deviations S18 Manual Meas. Issues Log 110% 94% 1:30 PM 3/13/2017

Step 4: You are done! Enjoy!

巴克利黄金——自动制作能耗排放报表

公司目标

巴克利黄金在法规最严格的内华达州运营，需要更高效的办法去生成合规报告



挑战

现有报告编写流程太过繁琐，数据汇总及编写过程较耗时

- 数据采集滞后
- 报表调整耗时
- 关联报表多

解决办法

利用实时数据架构，部署资产分析系统去自动生成报表

- PI资产分析
- PI数据归档
- PI通知服务
- PI Datalink (Excel插件)
- PI Vision (网页端展示)

成果

集中数据，叠加资产分析功能后，能更快、更精准的做出决策。

- 将实时数据引入，并能实时追踪数据
- 取代复杂的关联报表
- 资产分析功能实时统计生产状况

问答环节?



謝謝

KEA LEBONA

TAPADH LEIBH

고맙습니다

DZIĘKUJĘ CI

БАЯРЛАЛАА

MISAOTRA ANAO

NGIYABONGA

TEŞEKKÜR EDERİM

OBRIGADO شكرا

KÖSZÖNÖM

DANKIE

TERIMA KASIH

GRACIES

DANKON

TANK

TAPADH LEAT

SALAMAT

СПАСИБО

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TEŞEKKÜR EDERİM

GO RAIBH MAITH AGAT

БЛАГОДАРЯ GRACIAS

ТИ БЛАГОДАРАМ

TAK DANKE

MAHADSANID

DANK JE

ΕΥΧΑΡΙΣΤΩ GRATIAS TIBI

AČIŪ

SALAMAT

MAHALO IĀ 'ŌE

TAKK SKALDU HA

ДЗЯКУЙ

GRAZIE

RAHMAT

MERCI

GRAZZI

PAKKA PÉR

ありがとうございました

DI OU MÈSI

ĎAKUJEM

HATUR NUHUN

PAHMAT CAĜA

SIPAS JI WERE

TERIMA KASIH

MATUR NUWUN

CẢM ƠN BẠN

FALEMINDERIT

UA TSAUG RAU KOJ

ТИ БЛАГОДАРАМ

СИПОС

WAZVIITA