

# Improving safety and efficiency of Operations via Wikis

A video of this presentation with audio is now available at  
[https://youtu.be/nkfykhk\\_HYQ](https://youtu.be/nkfykhk_HYQ)

Sean Cull, CEng.  
NEPIC Best Practice In Industrial Asset Management

# Wikipedia

 Not logged in [Talk](#) [Contributions](#) [Create account](#) [Log in](#)



**WIKIPEDIA**  
The Free Encyclopedia

[Main page](#)  
[Contents](#)  
[Featured content](#)  
[Current events](#)  
[Random article](#)  
[Donate to Wikipedia](#)  
[Wikipedia store](#)

[Interaction](#)

[Help](#)  
[About Wikipedia](#)  
[Community portal](#)  
[Recent changes](#)  
[Contact page](#)

[Tools](#)  
[What links here](#)  
[Related changes](#)  
[Upload file](#)  
[Special pages](#)  
[Permanent link](#)  
[Page information](#)

[Article](#) [Talk](#)

[Read](#) [Edit](#) [View history](#)



## Centrifugal pump

From Wikipedia, the free encyclopedia



This article **needs additional citations for verification**. Please help [improve this article](#) by [adding citations to reliable sources](#). Unsourced material may be challenged and removed.

*Find sources:* "Centrifugal pump" – [news](#) · [newspapers](#) · [books](#) · [scholar](#) · [JSTOR](#) (March 2009) ([Learn how and when to remove this template message](#))

**Centrifugal pumps** are used to transport fluids by the conversion of rotational kinetic energy to the hydrodynamic energy of the fluid flow. The rotational energy typically comes from an engine or electric motor. They are a sub-class of dynamic axisymmetric work-absorbing [turbomachinery](#).<sup>[1]</sup> The fluid enters the pump impeller along or near to the rotating axis and is accelerated by the impeller, flowing radially outward into a diffuser or [volute](#) chamber (casing), from which it exits.

Common uses include water, sewage, agriculture, petroleum and petrochemical pumping. Centrifugal pumps are often chosen for their high flow rate capabilities, abrasive solution compatibility, mixing potential, as well as their relatively simple engineering.<sup>[2]</sup> A [centrifugal fan](#) is commonly used to implement a [vacuum cleaner](#). The reverse function of the centrifugal pump is a [water turbine](#) converting potential energy of water pressure into mechanical rotational energy.

**Contents** [\[hide\]](#)




Warman centrifugal pump in a coal [preparation plant](#) application 

# Usual Strengths of a Wiki Approach

*Knowledge Management*

- Very rich knowledge base
- Easy to use
- Relatively simple to add information
- Lots of software options
  - Microsoft SharePoint
  - Alfresco
  - MediaWiki
  - Atlassian
  - Lotus IBM HCL Notes
  - Etc..

# Wikipedia



**WIKIPEDIA**  
The Free Encyclopedia

Main page  
Contents  
Featured content  
Current events  
Random article  
Donate to Wikipedia  
Wikipedia store

Interaction

Help  
About Wikipedia  
Community portal  
Recent changes  
Contact page

Tools

What links here  
Related changes  
Upload file  
Special pages  
Permanent link  
Page information


Not logged in | Talk | Contributions | Create account | Log in

Article | **Talk** | Read | Edit | View history

Search Wikipedia

## Centrifugal pump

From Wikipedia, the free encyclopedia




This article **needs additional citations for verification**. Please help improve this article by adding citations to reliable sources. Unsourced material may be challenged and removed.  
*Find sources: "Centrifugal pump" – news · newspapers · books · scholar · JSTOR (March 2009) (Learn how and when to remove this template message)*

**Centrifugal pumps** are used to transport fluids by the conversion of rotational kinetic energy to the hydrodynamic energy of the fluid flow. The rotational energy typically comes from an engine or electric motor. They are a sub-class of dynamic axisymmetric work-absorbing **turbomachinery**.<sup>[1]</sup> The fluid enters the pump impeller along or near to the rotating axis and is accelerated by the impeller, flowing radially outward into a diffuser or **volute** chamber (casing), from which it exits.

Common uses include water, sewage, agriculture, petroleum and petrochemical pumping. Centrifugal pumps are often chosen for their high flow rate capabilities, abrasive solution compatibility, mixing potential, as well as their relatively simple engineering.<sup>[2]</sup> A **centrifugal fan** is commonly used to implement a **vacuum cleaner**. The reverse function of the centrifugal pump is a **water turbine** converting potential energy of water pressure into mechanical rotational energy.

**Contents** [hide]



Warman centrifugal pump in a coal preparation plant application

# Usual Weaknesses of a Wiki Approach Knowledge Management

- “KM is dead! Artificial intelligence is the future”
- Very labour intensive
- Not Authoritative
- Too unstructured
- Too editable
- Not everyone sees that sharing is good
- Google is too good ( at a simplistic level )
- KM never incorporated knowledge derived from data and analytics

# Some NEPIC examples where a Wiki inspired approach does work

- Management of Change



- Asset Wiki

**Greenergy**

- Operations Wiki



# Management of Change for Process Safety

- Stage Gate Process needing rich collaboration across different functions
- Needs to encourage rich input => needs to be flexible
- But it also needs to be a very prescriptive process



## Home

Home

My To Do List

Dashboard

Change Requests

SRRs

Actions

Attachments

Execution Stages

## ▼ Top 25 Tags

All areas Awaiting Close Out  
Billingham Both Draft Effluent  
Gatehouse In Review In-Service M2.2  
**Middlesbrough MOC**  
Approved On Hold Operations Plant  
1.1 Plant 1.2 Plant 2.1 Plant 2.2  
Production QC Lab Reviews  
Complete Site Storage Tanks  
Temporary Mods Various

## Welcome to the Seqens Management Of Change Application

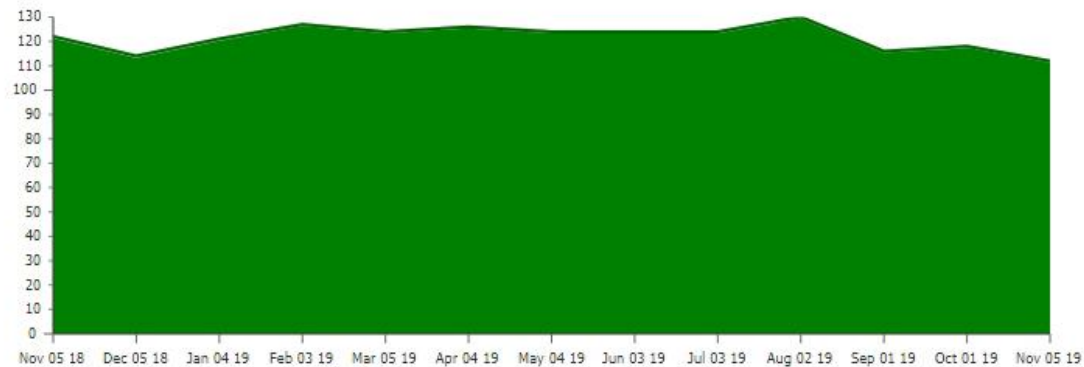
If you need any help please call us on 0161 660 8226 option 1 or email us via [support@focul.net](mailto:support@focul.net). The application is fully supported and we are keen to help you. The help documentation for the system can be accessed via the [help Wiki](#).

\_\_\_\_\_ can grant additional access for users.

 Enter dates in the format 01 Jan 2012

Date From To Intervals 

## Open Mods By Date

☐ Auto Recalculate Dashboard DataShow Top 

## Mods Currently With



## Open Actions







2019-10-006 : Bag Lifter Upgrade

Create Action

Attach File

Add linked File

MOC History

Send Link

Suggestion

Home

My To Do List

Dashboard

Change Requests

SRRs

Actions

Attachments

Execution Stages

Edit   Close   On Hold   [Cancel]   [Admin]   [Dump Item Values]

Basics   Actions   Change Impact Matrix   Risk Assess

In Review

Title: Bag Lifter Upgrade

Site: Billingham

Change Owner:

Created: Oct 29, 2019

Expected Benefits: Excellent

Expected Operational:

Area: Warehouse

Plant Item: 25 kg Bag Lifter

Cost Estimate  
GBPk

Temporary Mod: No

**Acknowledgements**

- Acknowledger Billingham A Shift
- Acknowledger Billingham B Shift
- Acknowledger Billingham C Shift
- Acknowledger Billingham D Shift
- Acknowledger Billingham Day Team
- Acknowledger Billingham E Shift
- Acknowledger Billingham Maintenance Management
- Acknowledger Billingham Operations
- Acknowledger EH&S
- Acknowledger Projects & Engineering
- Projects & Engineering Manager
- Reviewer Human Factors
- Reviewer Maintenance & Reliability
- Reviewer Operations/Operability
- Reviewer Personal Safety & Health
- Reviewer Process & Design Engineering

▼ Top 25 Tags

All areas Awaiting Close Out

Billingham Both Draft Effluent

Gatehouse In Review In-Service M2.2

**Middlesbrough MOC**

Approved On Hold Operations Plant

1.1 Plant 1.2 Plant 2.1 Plant 2.2

Production QC Lab Reviews

Complete Site Storage Tanks

Temporary Mods Various



2019-10-006 : Bag Lifter Upgrade

Create Action

Attach File

Add linked File

MOC History

Send Link

Suggestion

Home

My To Do List

Dashboard

Change Requests

SRRs

Actions

Attachments

Execution Stages

Edit

Close

On Hold

[Cancel]

[Admin]

[Dump Item Values]

Basics

Actions

Change Impact Matrix

Risk Assess

In Review

Specialist Risk Reviews

⚠ Based on the Specialist Risk Reviews below this change is a Full MOC.

Create additional Specialist Risk Review document

Previous 1 Next

Specialist Risk Review

Status

Responsibility

00. Common

In Progress

01. Personal Safety & Health

Complete

02. Environmental

Complete

06. Maintenance & Reliability

In Progress

07. Process & Design Engineering

Complete

08. I&E & Process Control

In Progress

09. Operations/Operability

In Progress

10. Process Safety & Loss Prevention

Complete

15. Business Planning

In Progress

16. Human Factors

Complete

17. Training

Complete

Show: 5 | 10 | 25 | 50 | 100 entries

Previous 1 Next

▼ Top 25 Tags

All areas Awaiting Close Out

Billingham Both Draft Effluent

Gatehouse In Review In-Service M2.2

**Middlesbrough MOC**

Approved On Hold Operations Plant

1.1 Plant 1.2 Plant 2.1 Plant 2.2

Production QC Lab Reviews

Complete Site Storage Tanks

Temporary Mods Various



## Specialist Risk Review

Suggestion

- Home
- My To Do List
- Dashboard
- Change Requests
- SRRs
- Actions
- Attachments
- Execution Stages
- Configuration
- Administration
- Developers

### ▼ Top 25 Tags

All areas Awaiting Close Out  
Billingham Both Draft Effluent  
Gatehouse In Review In-Service M2.2  
**Middlesbrough MOC**  
Approved On Hold Operations Plant  
1.1 Plant 1.2 Plant 2.1 Plant 2.2  
Production QC Lab Reviews  
Complete Site Storage Tanks  
Temporary Mods Various

Change Request: [2019-10-006 : Bag Lifter Upgrade \(In Review\)](#)  
SharePoint Folder: <http://sharepoint/MOCLibrary/MOCDocs/2019-10-006>  
Status: In Progress

Assessment  
Description: 06. Maintenance & Reliability

MOC Owner:

Reviewer:

Font  Size

Specific Impact	Response	Comments
General	Yes/No	
LOPC - Does containment need to be considered for this change, such as for deluge water, rainwater runoff, etc.?		
Have the process or design boundary conditions changed? (Consider whether existing equipment, instrumentation, process control, etc. will be impacted?)		
Where applicable, have all engineering disciplines been involved with the design or review of this change?		

## Specialist Risk Review

Suggestion

Home

My To Do List

Dashboard

Change Requests

SRRs

Actions

Attachments

Execution Stages

Configuration

Administration

Developers

Save Save &amp; Close Cancel Edit [Change The Reviewer] [Cancel Risk Review] Create Action

- ⇒ Benefits of sharing knowledge are implicit in the MOC process
- ⇒ Authoritative
- ⇒ Both Structured and Flexible
- ⇒ Stage gate process i.e. protected from edits
- Improves Safety and Efficiency

abc

## ▼ Top 25 Tags

All areas Awaiting Close Out  
Billingham Both Draft Effluent  
Gatehouse In Review In-Service M2.2  
**Middlesbrough MOC**  
Approved On Hold Operations Plant  
1.1 Plant 1.2 Plant 2.1 Plant 2.2  
Production QC Lab Reviews  
Complete Site Storage Tanks  
Temporary Mods Various

Specific Impact	Response	Comments
General	Yes/No	
LOPC - Does containment need to be considered for this change, such as for deluge water, rainwater runoff, etc.?	No	
Have the process or design boundary conditions changed? (Consider whether existing equipment, instrumentation, process control, etc. will be impacted?)	No	
Where applicable, have all engineering disciplines been involved with the design or review of this change?	Yes	

- A Wiki Page for each asset
- Data automatically pulled in from other sources
- Data aggregated and summarised
- Knowledge added by key users
- Records Tagged

## Greenergy

### A midstream oil company

We supply more than a quarter of the UK's road fuel and have a growing fuel supply business in Canada.

[Find out more >](#)



### Immingham

[Management of Change](#)

[Ops Wiki](#)

[Logistics Wiki](#)

### Plymouth

[Management of Change](#)

[Ops Wiki](#)

[Permits \(Sandbox\)](#)

### Seal Sands

[Management of Change](#)

[Operations Wiki](#)

[Asset Wiki](#)

[Permits](#)

[Logistics Wiki](#)

### Thames Oilport

[Management of Change](#)

[Ops Wiki](#)

[Permits \(Sandbox\)](#)

### Amsterdam

[Management of Change](#)

[Ops Wiki](#)

[Asset Wiki](#)

[Logistics Wiki](#)

### Thunder Bay

[Management of Change](#)

[Ops Wiki](#)

[Asset Wiki \(Sandbox\)](#)

[Permits](#)



Home / Asset List / Asset - Low Pressure Boiler - [redacted]

## Asset : BL01 Low Pressure Boiler - [redacted]

Edit

New Note To File

Open W Drive



### Summary

#### Defect

- Equipment Doc
- Failure Note
- Isolation Drawing
- Maintenance Plan
- Memo
- Motor Data Sheet
- Note
- Service Report
- Simple Spares Record
- Work Order
- Memo ( via email )

Mttce Tasks (22)

Spares

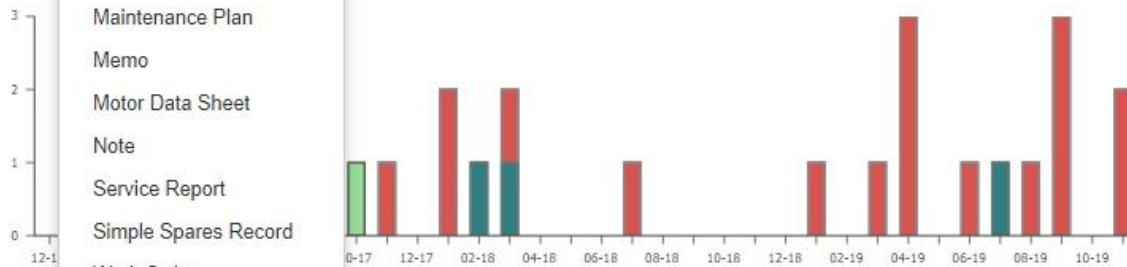
Isol Dwgs (2)

Service Reports (5)

Registers

Images

### Records



### Records

Date	Record Title	Record Type	Status	Due
Mar 06 2020	LP Boiler Insurance Inspection (12 Monthly)	Work Order	Open	Mar 06 2020
Nov 18 2019	Evapouration Test (6 Weekly)	Work Order	Open	Nov 20 2019
Nov 18 2019	combustion checks of the boilers	Work Order	Open	Nov 20 2019



### Record Summary

Record ID BL01

Record Title Low Pressure Boiler

Record Type Asset

Site Seal Sands

Area Utilities

Plant Boilers

Asset Type Boiler

Manufacturer Bib Cochran Limited

Model Thermax IV

Parent Item BL01

Created On Jun 28 2017



Home / Asset List

Asset : BL01

Edit

Summary

Records by



Records

Date

Mar 06

Nov 18

Nov 18 2019

combustion checks of the boilers

Work Order

Open

Nov 20

Parent Item BL01

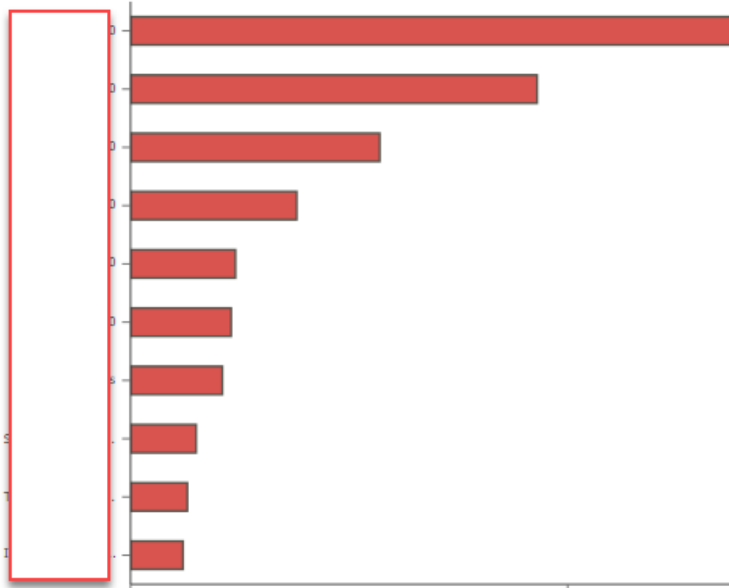


Home / My Dashboard

Dashboard Bad Actors

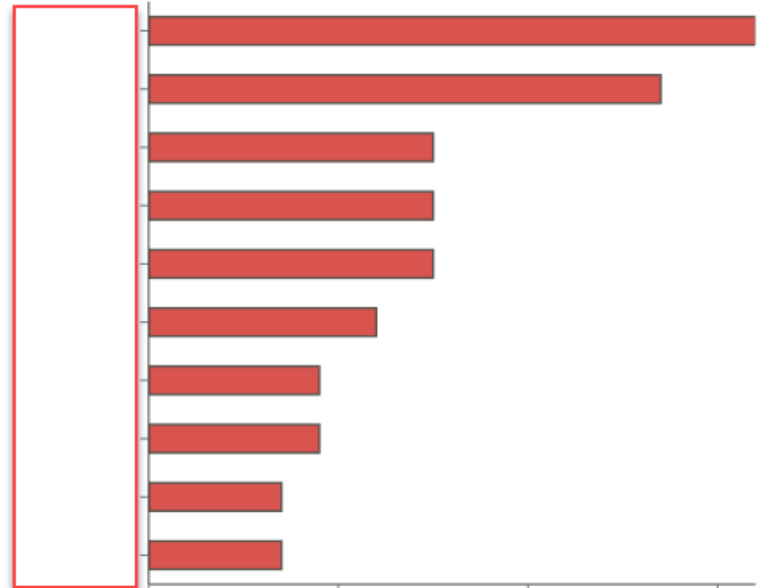
Top 10 Emergent Work Orders By Plant

Updated: Nov 05 08:10



Top 10 Emergent Work Orders By Asset

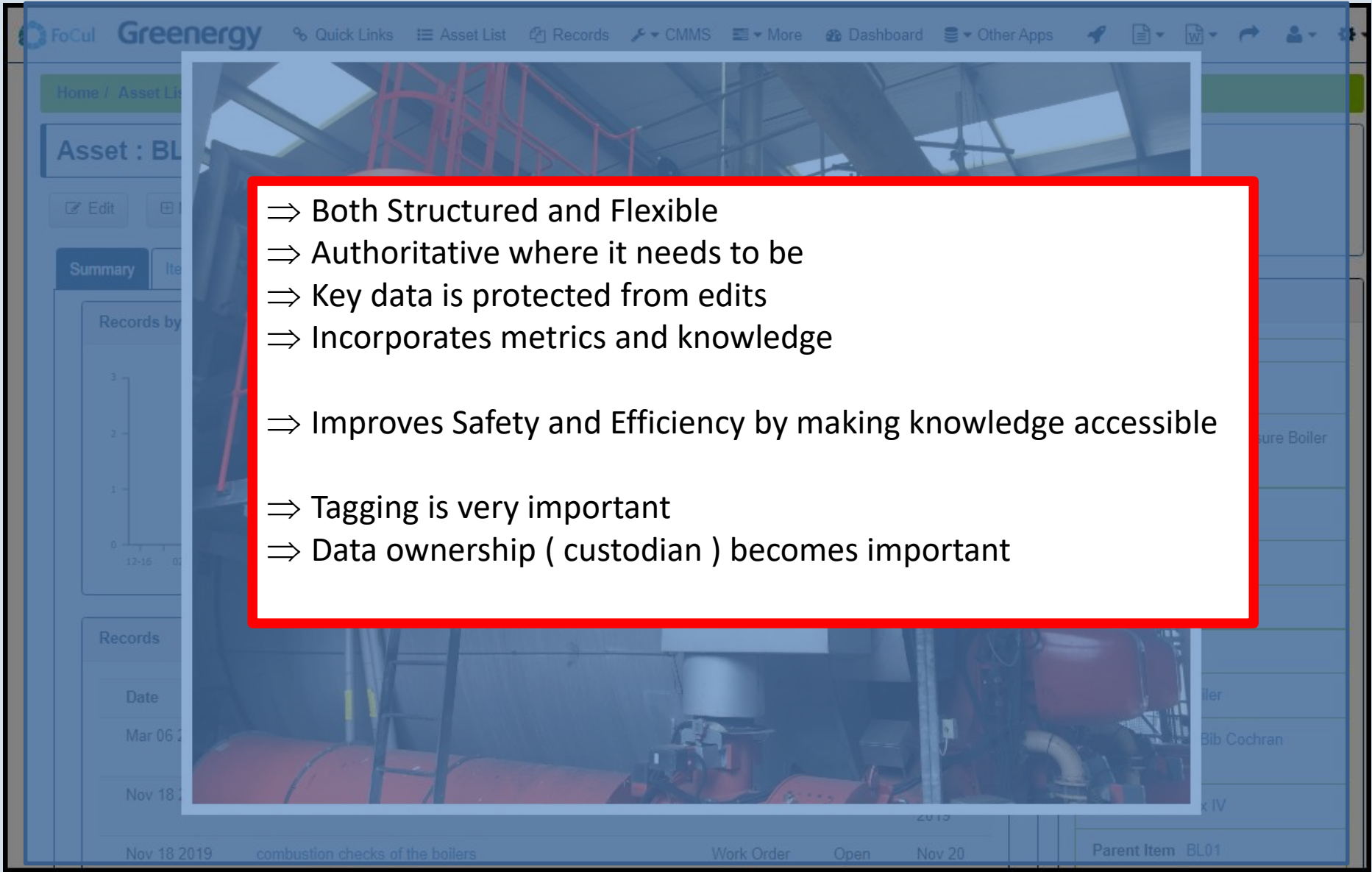
Updated: Nov 05 08:10



Distribution of Work Orders By Equipment Type (Rolling 12 Months)

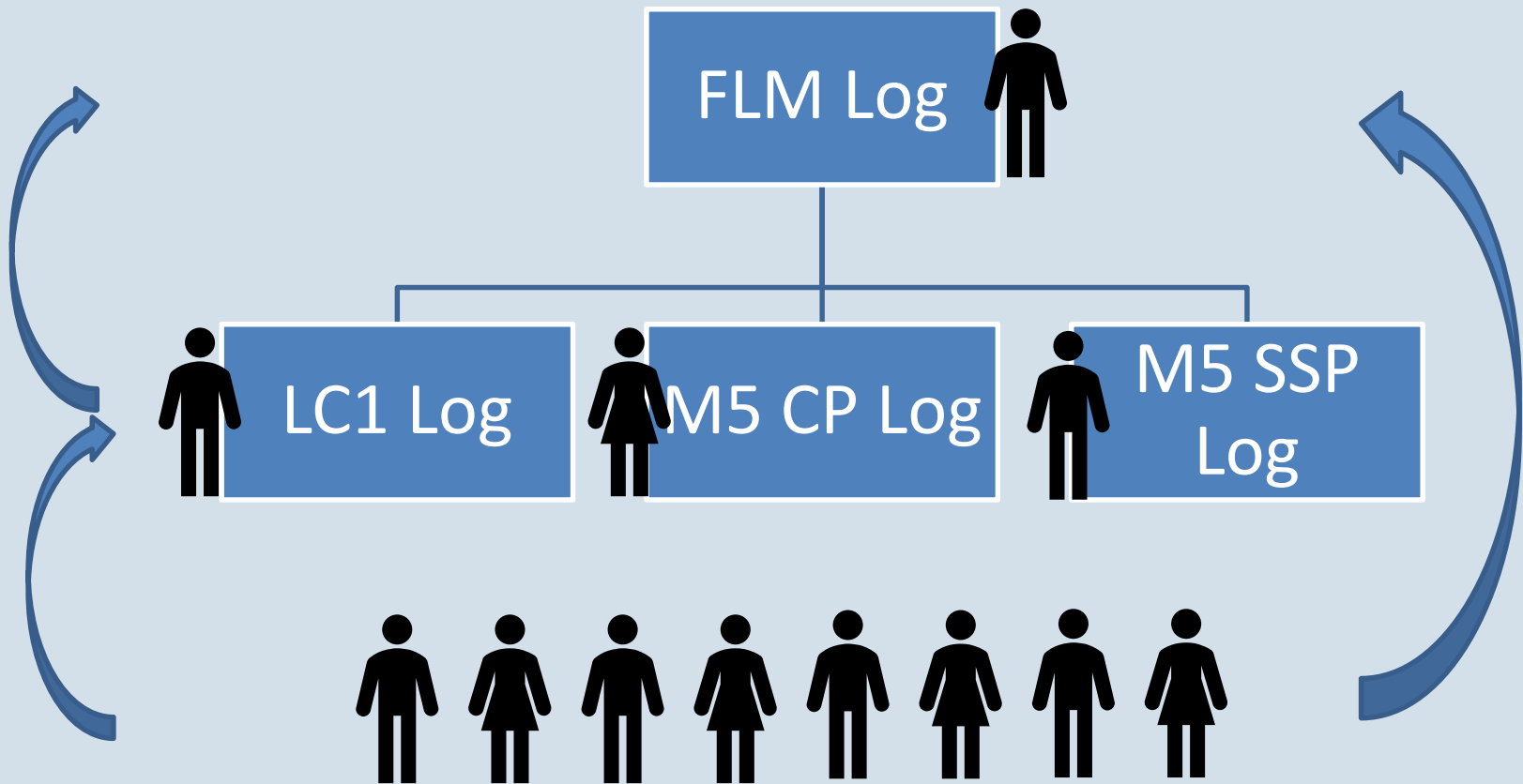
Updated: Nov 05 08:10



- 
- ⇒ Both Structured and Flexible
  - ⇒ Authoritative where it needs to be
  - ⇒ Key data is protected from edits
  - ⇒ Incorporates metrics and knowledge
  - ⇒ Improves Safety and Efficiency by making knowledge accessible
  - ⇒ Tagging is very important
  - ⇒ Data ownership ( custodian ) becomes important

- A series of structured Wiki Pages per shift team
- Everyone is encouraged to contribute
- Double Handling of information is reduced
- Data is automatically pulled in from other sources
- Data aggregated and summarised
- Hierarchy of Authoritative Views

# Lotte Operations Wiki



# Operations Wiki - Observation

## New Observation

☒ Comment ☐ Reading ☐ SHE ☐ Important

Nov 06 2019



12:41



### Plant

LC1

### Area

11.PTA/IPA

### Observation

Cancel

Submit Observation



Home / Logs / Shift Log - Nov 05 2019 Night Shift Log / LC1 Log - Nov 05 2019 Night LC1 Log

## LC1 Log : ShiftLog\_R1-FD TT-

This record is Complete



Uptime and Handover

Readings

Observations

All Observations

Comments

Readings

SHE Notes

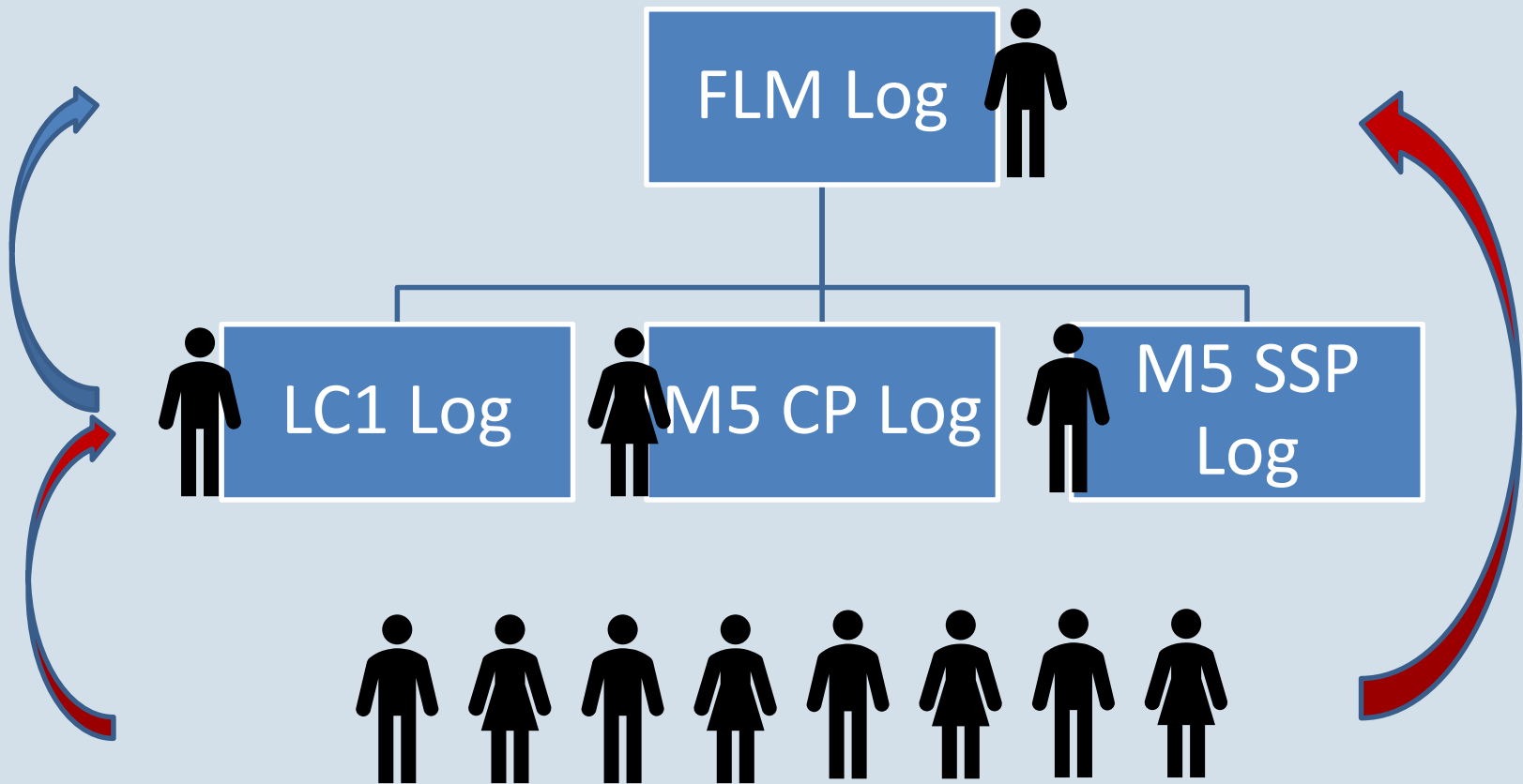
Important

### All Observations

Time	Person	Area	Observation
Nov 5 2019 19:25	BShift Tech	28.CIPPING AND DRYING	BFT waste bins emptied and Classifier bins checked OK
Nov 5 2019 19:30	BShift Tech	26.MELT POLYMER	Piston ends cleaned
Nov 5 2019 19:30	BShift Tech	18.PASTE	Powder chute cleared
Nov 5 2019 19:35	BShift Tech	20.ESPREE	Venting carried out as required
Nov 5 2019 19:45	BShift Tech	20.ESPREE	20P230-1 KO pot drained down
Nov 5 2019 19:50	BShift Tech	28.CIPPING AND DRYING	HMB to B divert valve cracked open
Nov 5 2019 20:25	BShift Tech	61.HTM	61D51 and 61D53 Steam on to heating coils
Nov 6 2019 03:20	BShift Tech	18.PASTE	Powder chute cleared
Nov 6 2019 03:25	BShift Tech	20.ESPREE	Venting done as required
Nov 6 2019 04:00	BShift Tech	11.PTA/IPA	IPA Off-loading started
Nov 6 2019 05:20	BShift Tech	20.ESPREE	20E24A Drained down for maintenance, drain valves left open



# Lotte Operations Wiki



## FLM Report

### LC1 Shift Summary

Plant at 480 TPD Papet Max.

5 trips overridden as per trip defeat section.

22E25 and 20E15A/B evaporator levels topped up.

D42 / 43 Hotwell overflows crunched to clear chokes.

'A' BFT belt motor (A28FM23) in fault, reset OK.

IPA Off-loading x 1.

### M5 Shift Summary

2 trips overridden as per trip defeat section.

Vapouriser Area fire alams (Zone 22 D49, D51, D48, D43). Came into fault, area investigated, nothing found. Defect raised.

Adds as required.

# FLM LOG

### Observations Summary

LC1.

HMB to B divert valve cracked open - all valves now fully open.

20E24 C/O 'B' On, 'A' Off & drained for maintenance.(as per ops wiki task)

24P618 Pressure control to OSC blowers 24B61A/B/C seems a bit erratic, not sure why?

## LC1

### 11.PTA/IPA

04:00 - BShift Tech - Comment

IPA Off-loading started

### 15.ADDITIVES

23:25 - BShift Tech - Comment

Stabiliser importing

### 18.PASTE

19:30 - BShift Tech - Comment

## FLM Report

### LC1 Shift Summary

Plant at 480 TPD Papet Max.

5 trips overridden as per trip de

22E25 and 20E15A/B evapora

D42 / 43 Hotwell overflows cru

'A' BFT belt motor (A28FM23)

IPA Off-loading x 1.

### Observations Summary

LC1.

HMB to B divert valve cracked

20E24 C/O 'B' On, 'A' Off & dr

24P618 Pressure control to OS

### LC1

#### 11.PTA/IPA

04:00 - BShift Tech - Comment

IPA Off-loading started

#### 15.ADDITIVES

23:25 - BShift Tech - Comment

Stabiliser importing

#### 18.PASTE

19:30 - BShift Tech - Comment

### M5 Shift Summary

## FLM LOG

- ⇒ Both Structured and Flexible
- ⇒ Knowledge is captured as part of core tasks
- ⇒ Double handling is reduced
- ⇒ Hierarchy of Authoritative views
- ⇒ Key data is protected from edits
- ⇒ Improves Safety and Efficiency

# Learning from using a Wiki Approach

- You need a blend of flexibility and structure
- Capturing knowledge needs to become a natural by-product of work tasks – easier in the process sector than other sectors?
- It is Important to separate observations/opinions and authoritative knowledge
- Incorporate knowledge derived from data and analytics
- Start gradually but have a strong vision

## Home

Shift Log

Logistics Log

Latest Shift Log

Latest Logistics Log

### My Activities

Updated at 16:50



0 In Total



0 New



0 Due Now



0 Overdue

### Open MOCs (11)

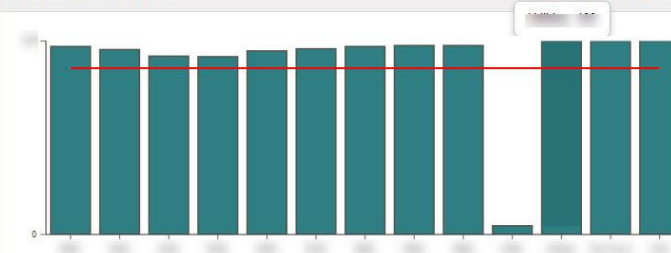
2017-002	Remove E305A/B From Service as equipment is now redundant	Awaiting Risk Assessment Authorisation
2017-001	Installation of a Temporary 17barg Steam Boiler	Awaiting Risk Assessment Authorisation
2016-022	Installation of new P801 Feed Pumps	Awaiting Risk Classification
2016-021	Operation of Plant 150 using LP Steam to the Ejectors	Awaiting Specification Review
2016-020	V304 Acid Fume Neutralisation Re-	Awaiting Risk Assessment

### Trip Defeats (6)

Jan 10 2017	Valve Limit Switch - 2AAM80AA501	Live
Jan 10 2017	Valve Limit Switch - 2AAM81AA501	Live
Jan 10 2017	Valve Limit Switch - 2AAM82AA501	Live
Jan 10 2017	Valve Limit Switch - 2AAM83AA501	Live
Jan 10 2017	Valve Limit Switch - 2AAN30AA501	Live
Jan 10 2017	Low level trip - LT7801	Live

### Plant Uptime % (YTD)

Updated: Jan 20 16:43



### Last 7 Days SHE Entries (4)

Jan 17 2017	Isotanker rejected due to unsafe trailer unit - H&P should not have sent the unit to site
Jan 18 2017	Tanker Rejected due to product temperature being 92oC
Jan 16 2017	Hot well vent support is a trip hazard. Redesign required.
Jan 20 2017	CausticBC with a weeping bottom valve

### Ongoing Maintenance (10)

Jan 18 2017	290 bund pump on wall not pumping - p290 air pump	Permit to Prep
Jan 17 2017	sump pump between V820 and V800 not working - p12110	Permit to Prep
Jan 16 2017	LT7801 not reading correct, unable to control level in V1511 barometric tank - LT7801	Isolated and ready for Maintenance
Jan 16 2017	effluent pump on wall not working - n/a	To Maintenance
Jan 14 2017	V800 Bund air pump not pumping - V800 Bund pump	To Maintenance
Jan 13 2017	V806 batch meter not tripping out at set	Permit to Prep

### Open Permits (18)

Jan 20 2017	569 - Jetwash, degrease, paint handrails, steelworks, kickplates and ground level firemain.	-11	Permit to Prepare
Jan 20 2017	572 - Fit cladding and flashing to new fabrication building	7	Permit Live
Jan 20 2017	570 - H153 - Remove bonnet end, jet wash and refit	1	Permit Live
Jan 19 2017	798 - spool piece nat gas line	-	Permit to Prepare
Jan 19 2017	565 - weld set work shop	-	Permit