Safe aquaculture operations

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Challenges:

- More exposed fish farm sites
- Few regulations when it comes to environmental limits and operational limits
- Safety for personnel on site
- Normal operations cannot be performed on regular basis / difficult planning
- Loss of valuable and expensive time due to weather conditions

Project:

- Together with Bremnes Seashore we installed a solar powered wave buoy and an ultrasonic wind sensor at one of their exposed sites
- Site personnel logged and reported to us every time they needed to abort an operation or when an operation was challenging to perform. Time period from January to June 2022.
- By summer we could find the boundaries for a certain type of operation. The same boundaries can be used throughout the company and possibly be adapted to similar sites in other companies.
- The data will be utilized in our Aquacom software used by more than 650 sites ww.

Data capture and analysis

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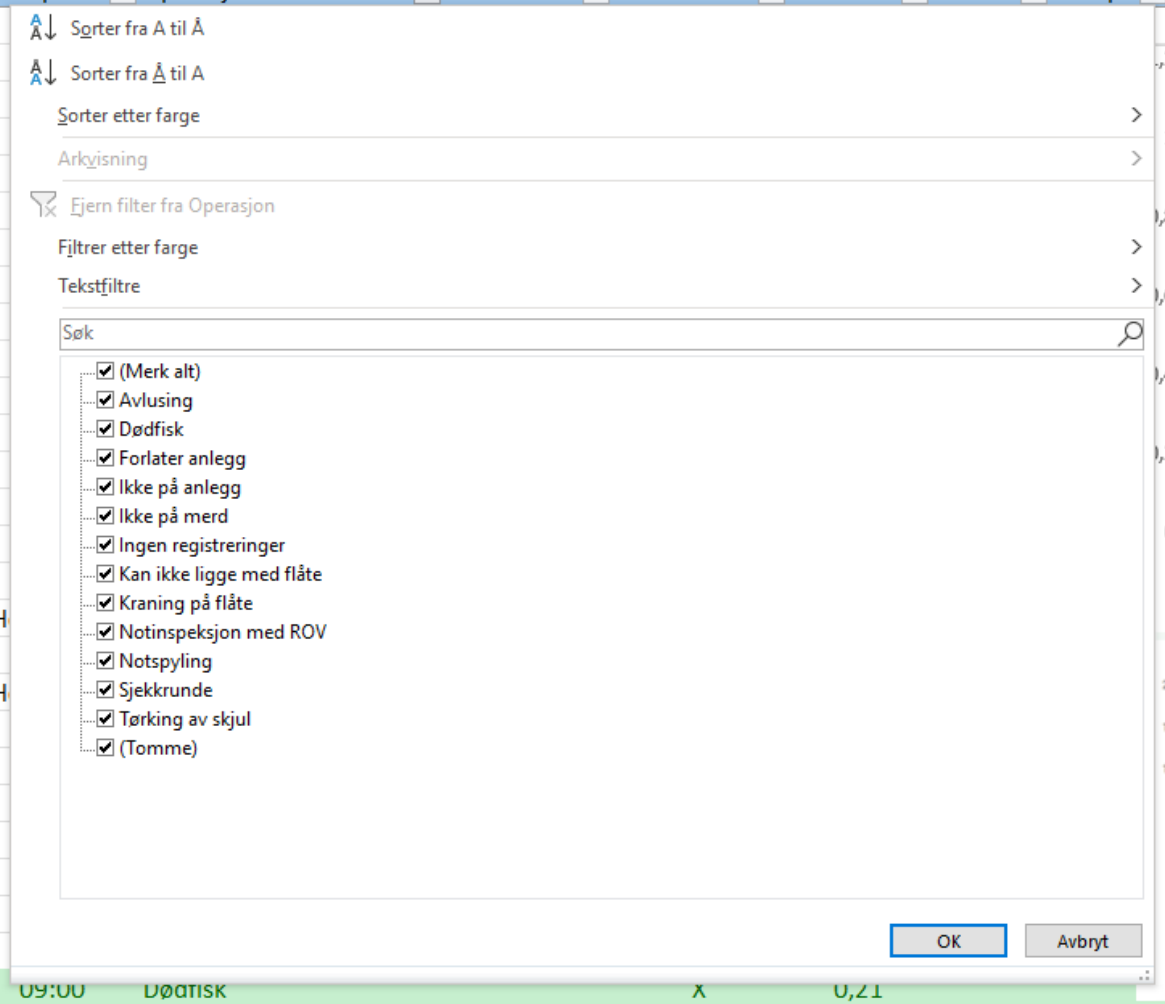
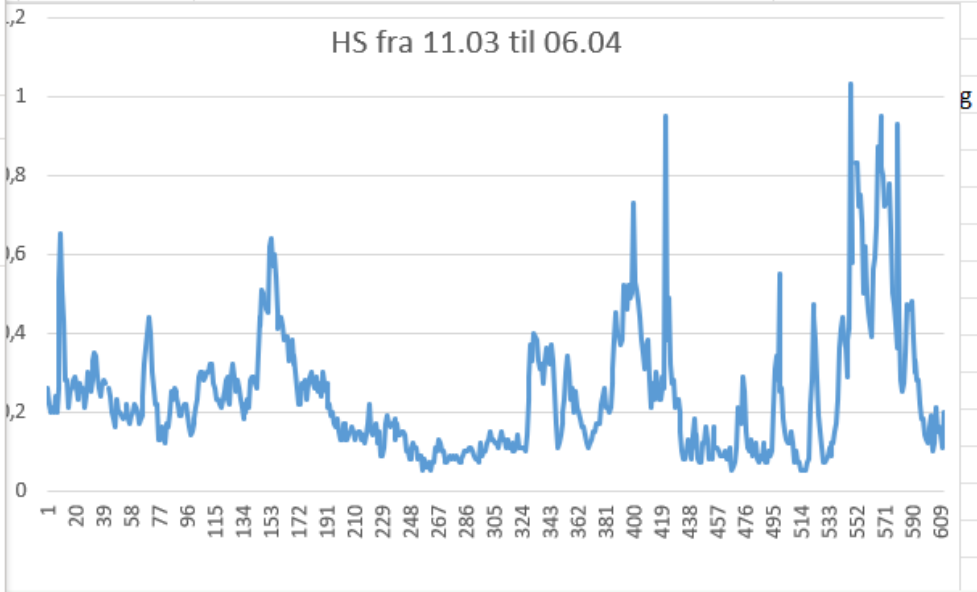
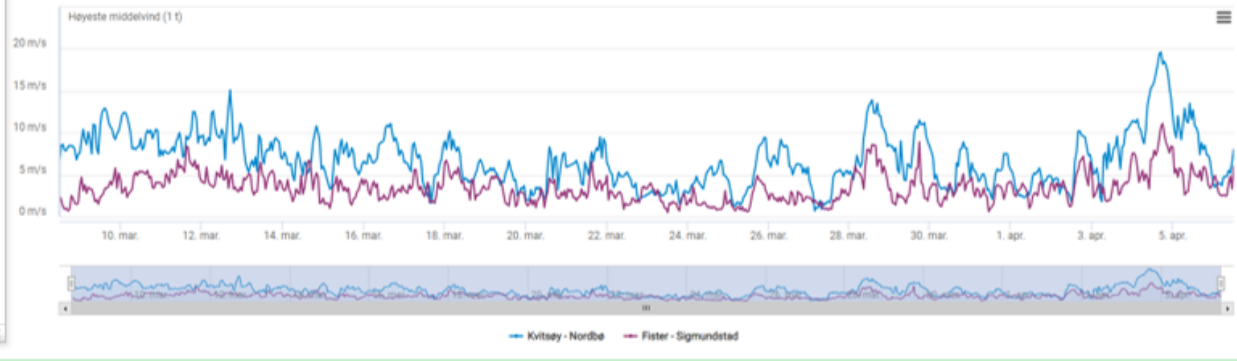
Dato	Tidspunkt	Operasjon	Avbrutt	Krevende	Hs	Vind	Tp	Strøm	Kommentar	Utfyllende kommentar
29.jan										
30.jan										
31.jan										
01.feb										
02.feb										
03.feb										
04.feb										
05.feb										
06.feb										
07.feb										
08.feb										
09.feb										
10.feb										
10.feb										
11.feb										
12.feb										
12.feb	H									
13.feb										
13.feb	H									
13.feb										
13.feb										
14.feb										
15.feb										
16.feb										
17.feb										
18.feb										
19.feb	09:00	Dødfisk		X	0,21					
20.feb	09:00	Dødfisk		X	0,34					
21.feb										
22.feb										







Vind og strøm

Live monitoring in Grafana

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4.4 Rengjøring av not og not inspeksjon (vinter 2019/2020)

Operasjonelle grenseverdier OP_{lim}		
$OP_{lim,Hs}$ [m]	$OP_{lim,Tp}$ [s]	$OP_{lim,U}$ $\left[\frac{m}{s}\right]$
1.0	9.77	10

Result related to different operations throughout a full production cycle

Ved å benytte fastsatte grenseverdier inn i en «værvindu analyse» for vinter månedene (des-feb) 2019/2020 og 2020/2021 kan man se at det var mer oppetid enn nedetid for alle operasjonen bortsett fra not-spyling/inspeksjon. I løpet av disse vintermånedene var antall oppetid og nedetid i prosent følgende:

	2019/2020		2020/2021	
	Oppetid (%)	Nedetid (%)	Oppetid (%)	Nedetid (%)
Brønnbåt operasjon	58%	42%	86%	14%
Dødfisk opptak	63%	37%	89%	11%
Not- spyling/inspeksjon	45%	55%	77%	23%
Tilgjengelighet anlegg	66%	34%	77%	23%

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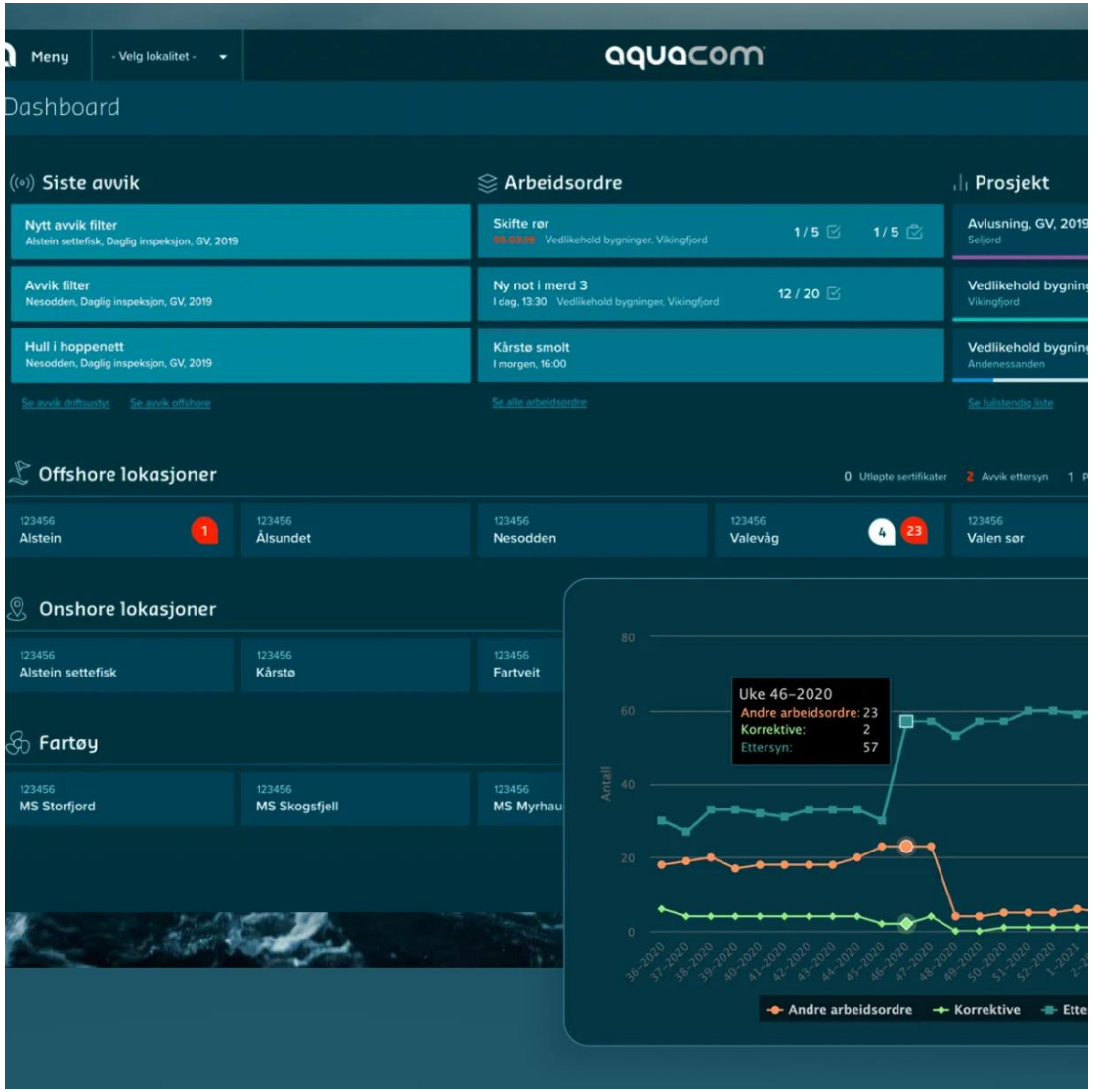
Next steps:

- Implement environmental limits for certain operations in the Aquacom system
- Warnings to site personnel if the operation will be difficult or not possible to perform

- Utilize real time data in daily tasks
- Utilize historical data to help understand incidents etc.
- Utilize statistics and historical data to predict the future

- More data analysis and machine learning