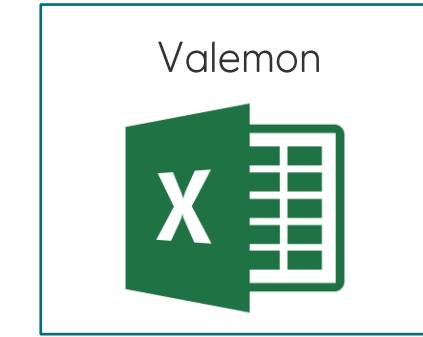
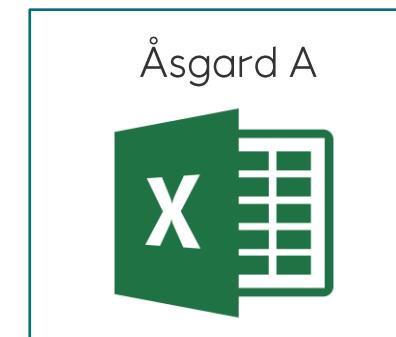




# FiscalQA – Kvalitetssikring av fiskale målestasjoner

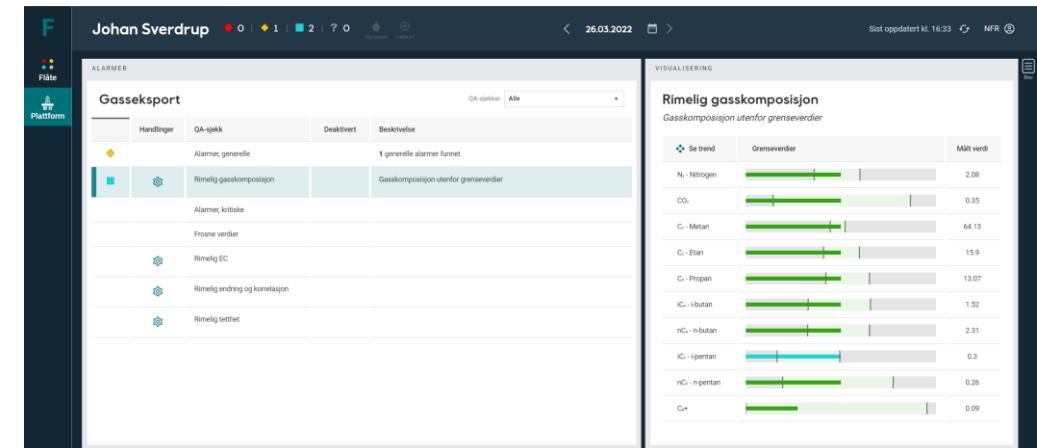
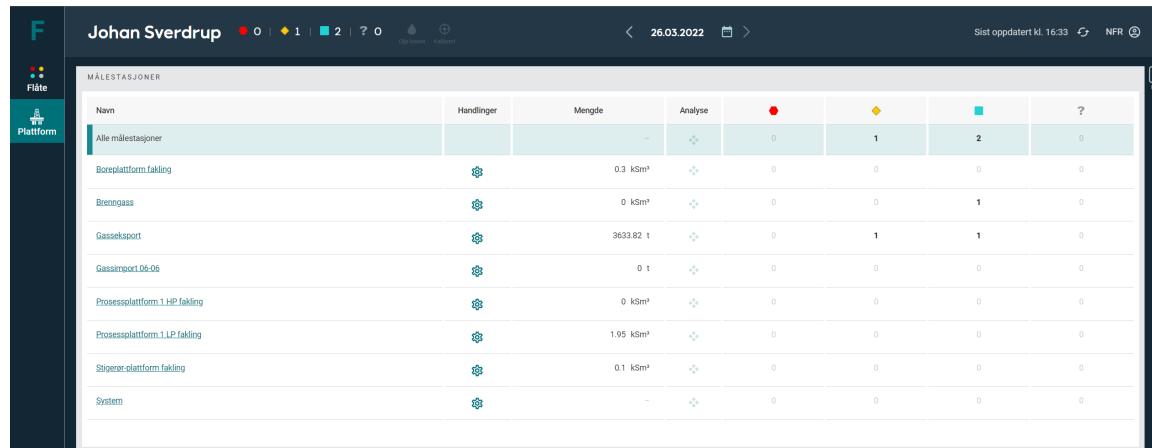
NFOGM Fagdag

## Kvalitetssikring av fiskale tall – før FiscalQA

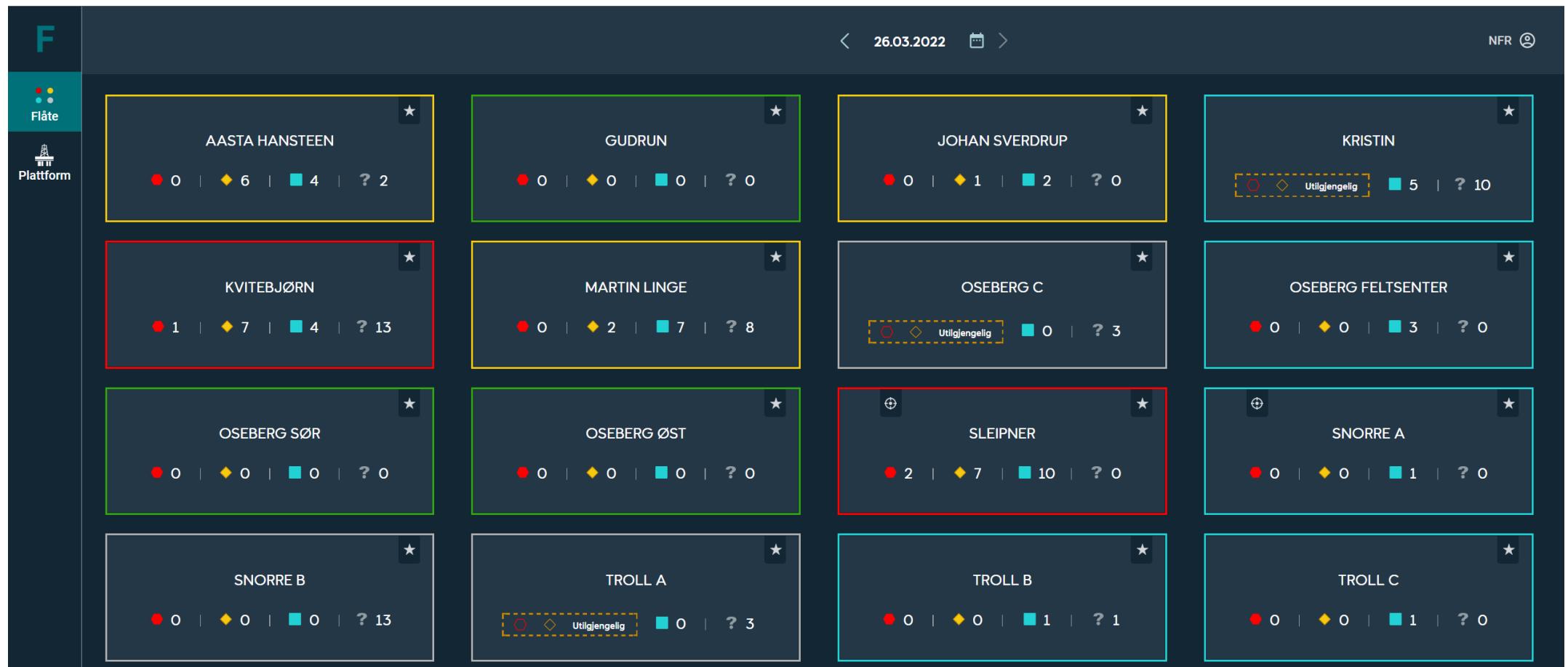


# Bakgrunn og utvikling av FiscalQA

- 2018 Utvikling av FiscalQA starter i samarbeid mellom Integrated Operations Centre & Technical Efficiency (IOCT) og avdeling for fiskalmåling
- 2019 FiscalQA lansert med en håndfull offshoreanlegg
- 2020-2021 Implementering av flere offshoreanlegg
  - Totalt 23 anlegg implementert per i dag, flere er på vei
- 2021 Begynt arbeid med å implementere landanlegg



# FiscalQA



# Oversikt målestasjoner

**F**

Johan Sverdrup • 0 | ♦ 1 | ■ 2 | ? 0      Ölje løsset      Kalibrert

< 26.03.2022 >

Sist oppdatert kl. 16:33      NFR

**MÅLESTASJONER**

| Navn                          | Handlinger | Mengde                | Analyse | • | ♦ | ■ | ? |
|-------------------------------|------------|-----------------------|---------|---|---|---|---|
| Alle målestasjoner            |            | –                     | ❖       | 0 | 1 | 2 | 0 |
| Boreplattform fakling         | ⚙          | 0.3 kSm <sup>3</sup>  | ❖       | 0 | 0 | 0 | 0 |
| Brenngass                     | ⚙          | 0 kSm <sup>3</sup>    | ❖       | 0 | 0 | 1 | 0 |
| Gasseksport                   | ⚙          | 3633.82 t             | ❖       | 0 | 1 | 1 | 0 |
| Gassimport 06-06              | ⚙          | 0 t                   | ❖       | 0 | 0 | 0 | 0 |
| Prosessplattform 1 HP fakling | ⚙          | 0 kSm <sup>3</sup>    | ❖       | 0 | 0 | 0 | 0 |
| Prosessplattform 1 LP fakling | ⚙          | 1.95 kSm <sup>3</sup> | ❖       | 0 | 0 | 0 | 0 |
| Stigerør-plattform fakling    | ⚙          | 0.1 kSm <sup>3</sup>  | ❖       | 0 | 0 | 0 | 0 |
| System                        | ⚙          | –                     | ❖       | 0 | 0 | 0 | 0 |

**Kritiske alarmer fra målesystem**  
**Generelle alarmer fra målesystem**  
**Prealarm (rimelighetssjekker)**  
**Manglende data**

# Detaljer gasseksport

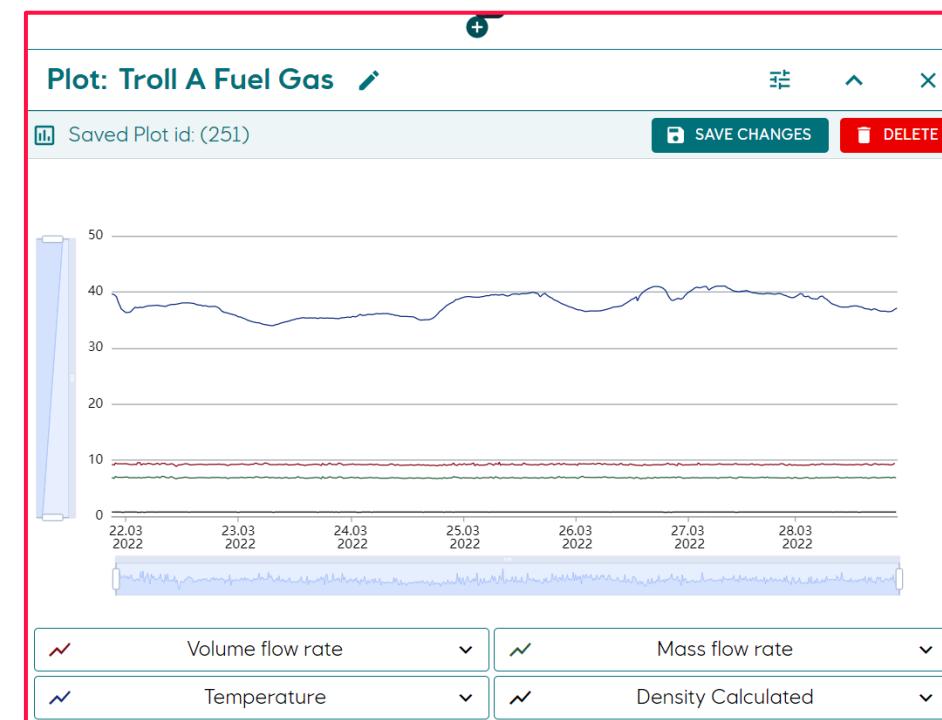
## Mengde fra produksjonsrapporteringssystem

| DETALJER              |              |                  |                     |                   |                       |
|-----------------------|--------------|------------------|---------------------|-------------------|-----------------------|
| Fiskale måleparameter |              |                  |                     |                   |                       |
| Dato                  | EC masse [t] | Brutto masse [t] | Brutto volum [kSm³] | Tetthet [kg/kSm³] | Driftstid x Choke [h] |
| 26.03.2022            | 3633.818     | 3633.818         | 3522.399            | 1.032             | 21268.450             |
| 25.03.2022            | 3795.296     | 3795.296         | 3677.057            | 1.032             | 20676.699             |
| 24.03.2022            | 3791.366     | 3791.366         | 3676.250            | 1.031             | 20414.721             |

| DETALJER        |            |             |            |            |            |             |             |             |             |             |  |
|-----------------|------------|-------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|--|
| Gasskomposisjon |            |             |            |            |            |             |             |             |             |             |  |
| Dato            | N₂ [mol %] | CO₂ [mol %] | C₁ [mol %] | C₂ [mol %] | C₃ [mol %] | iC₄ [mol %] | nC₄ [mol %] | iC₅ [mol %] | nC₅ [mol %] | C₆+ [mol %] |  |
| 26.03.2022      | 2.081      | 0.347       | 64.125     | 15.898     | 13.071     | 1.525       | 2.306       | 0.304       | 0.258       | 0.086       |  |
| 25.03.2022      | 2.109      | 0.348       | 64.059     | 15.902     | 13.113     | 1.525       | 2.298       | 0.303       | 0.259       | 0.085       |  |
| 24.03.2022      | 2.110      | 0.348       | 64.087     | 15.917     | 13.113     | 1.518       | 2.278       | 0.296       | 0.252       | 0.081       |  |

## Flere detaljer



MÅLESTASJONER

| Navn                                       | Handler | Mengde                | Analyse |   |   |   |   |
|--------------------------------------------|---------|-----------------------|---------|---|---|---|---|
| Alle målestasjoner                         |         | -                     |         | - | 0 | 0 |   |
| <a href="#">Brenngass til pilotbrenner</a> |         | 0.22 kSm <sup>3</sup> |         |   | - | 0 | 0 |
| <a href="#">HP fakling</a>                 |         | 0.16 kSm <sup>3</sup> |         | - | 0 | 0 |   |
| <a href="#">LP fakling</a>                 |         | 4.65 kSm <sup>3</sup> |         | - | 0 | 0 |   |
| <a href="#">Vent fakkel</a>                |         | 1.54 kSm <sup>3</sup> |         | - | 0 | 0 |   |

# Prealarmer

**F**

Johan Sverdrup    0 | 1 | 2 | 0    Ölje losset    Kalibrert

26.03.2022    Sist oppdatert kl. 16:33    NFR

Flåte

Plattform

**ALARMER**

**Gasseksport**

| Handlinger                     | QA-sjekk | Deaktivert | Beskrivelse                           |
|--------------------------------|----------|------------|---------------------------------------|
| Alarmer, generelle             |          |            | 1 generelle alarmer funnet            |
| Rimelig gasskomposisjon        |          |            | Gasskomposisjon utenfor grenseverdier |
| Alarmer, kritiske              |          |            |                                       |
| Frosne verdier                 |          |            |                                       |
| Rimelig EC                     |          |            |                                       |
| Rimelig endring og korrelasjon |          |            |                                       |
| Rimelig tetthet                |          |            |                                       |

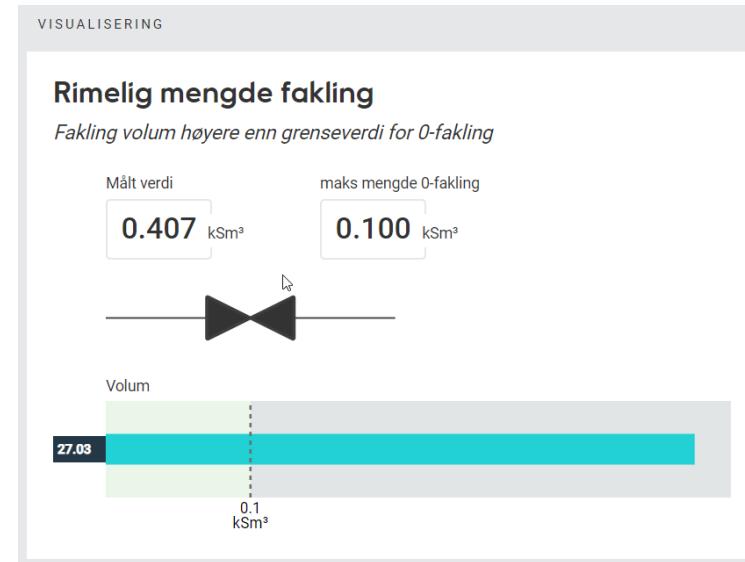
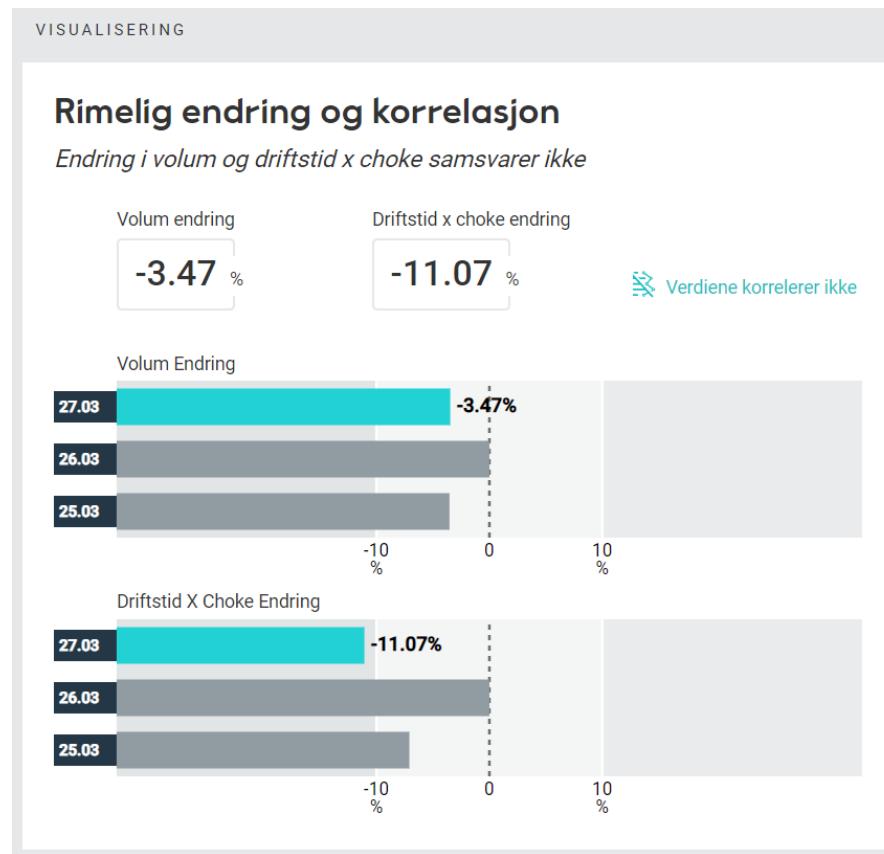
**VISUALISERING**

**Rimelig gasskomposisjon**

Gasskomposisjon utenfor grenseverdier

| Se trend                    | Grenseverdier | Målt verdi |
|-----------------------------|---------------|------------|
| N <sub>2</sub> - Nitrogen   | [Green bar]   | 2.08       |
| CO <sub>2</sub>             | [Green bar]   | 0.35       |
| C <sub>1</sub> - Metan      | [Green bar]   | 64.13      |
| C <sub>2</sub> - Etan       | [Green bar]   | 15.9       |
| C <sub>3</sub> - Propan     | [Green bar]   | 13.07      |
| iC <sub>4</sub> - i-butanol | [Green bar]   | 1.52       |
| nC <sub>4</sub> - n-butanol | [Green bar]   | 2.31       |
| iC <sub>5</sub> - i-pentan  | [Green bar]   | 0.3        |
| nC <sub>5</sub> - n-pentan  | [Green bar]   | 0.26       |
| C <sub>6</sub> +            | [Green bar]   | 0.09       |

# Visualisering av pre-alarmer



# Redusere alarmstøy

MÅLESTASJONER

| Navn                                            | Handlinger            | Mengde             | Analyse                              |   |                                      |   |   |   |
|-------------------------------------------------|-----------------------|--------------------|--------------------------------------|---|--------------------------------------|---|---|---|
| All mÅlestasjoner                               |                       |                    | <span style="color:red;">█</span>    | 0 | <span style="color:yellow;">█</span> | 8 | 1 | 1 |
| <a href="#">Brenngass</a>                       |                       |                    | <span style="color:yellow;">█</span> | 0 | <span style="color:yellow;">█</span> | 0 | 1 | 0 |
| <a href="#">Gasseksport</a>                     |                       |                    | <span style="color:yellow;">█</span> | 0 | <span style="color:yellow;">█</span> | 0 | 0 | 1 |
| <a href="#">Gassinjeksjon R-101</a>             | Deaktivér mÅlestasjon |                    | <span style="color:red;">█</span>    | 0 | <span style="color:yellow;">█</span> | 0 | 0 | 0 |
| <a href="#">HP fakling</a>                      |                       |                    | <span style="color:yellow;">█</span> | 0 | <span style="color:yellow;">█</span> | 0 | 0 | 0 |
| <a href="#">Innløpsseparator A</a>              |                       |                    | <span style="color:yellow;">█</span> | 0 | <span style="color:yellow;">█</span> | 6 | 0 | 0 |
| <a href="#">LP fakling</a>                      |                       |                    | <span style="color:yellow;">█</span> | 0 | <span style="color:yellow;">█</span> | 0 | 0 | 0 |
| <a href="#">Olje til lagring</a>                |                       |                    | <span style="color:yellow;">█</span> | 0 | <span style="color:yellow;">█</span> | 0 | 0 | 0 |
| <a href="#">Oljeeksport</a>                     |                       |                    | <span style="color:yellow;">█</span> | 0 | <span style="color:yellow;">█</span> | 0 | 0 | 0 |
| <a href="#">System</a>                          |                       |                    | <span style="color:yellow;">█</span> | 0 | <span style="color:yellow;">█</span> | 0 | 0 | 0 |
| <a href="#">Trestakk</a>                        |                       | 3182.04 l          | <span style="color:yellow;">█</span> | 0 | <span style="color:yellow;">█</span> | 2 | 0 | 0 |
| <a href="#">Gassinjeksjon - Trestakk Subsea</a> |                       | 0 kSm <sup>3</sup> | <span style="color:yellow;">█</span> | — | <span style="color:yellow;">█</span> | — | 0 | 0 |

**Gassinjeksjon R-101**

Deaktivér

Deaktivér på ubestemt tid

Fra  
27.03.2022

Til  
04.04.2022

Kommentar  
Ikke i drift! Maks 40 tegn

**Deaktivér**

# Redusere alarmstøy

**ALARMER**

## OSA - Oljeeksport

QA-sjekker: Alle

|  | Handler | QA-sjekk | Deaktivert | Beskrivelse |
|--|---------|----------|------------|-------------|
|  |         |          |            |             |
|  |         |          |            |             |
|  |         |          |            |             |
|  |         |          |            |             |
|  |         |          |            |             |

**Grenseverdier**

Tetthet: Min 800 kg/m<sup>3</sup>, Max 850 kg/m<sup>3</sup>

Lukk

**VISUALISERING**

## Rimelig tetthet

Målt verdi: 830.490 kg/m<sup>3</sup>

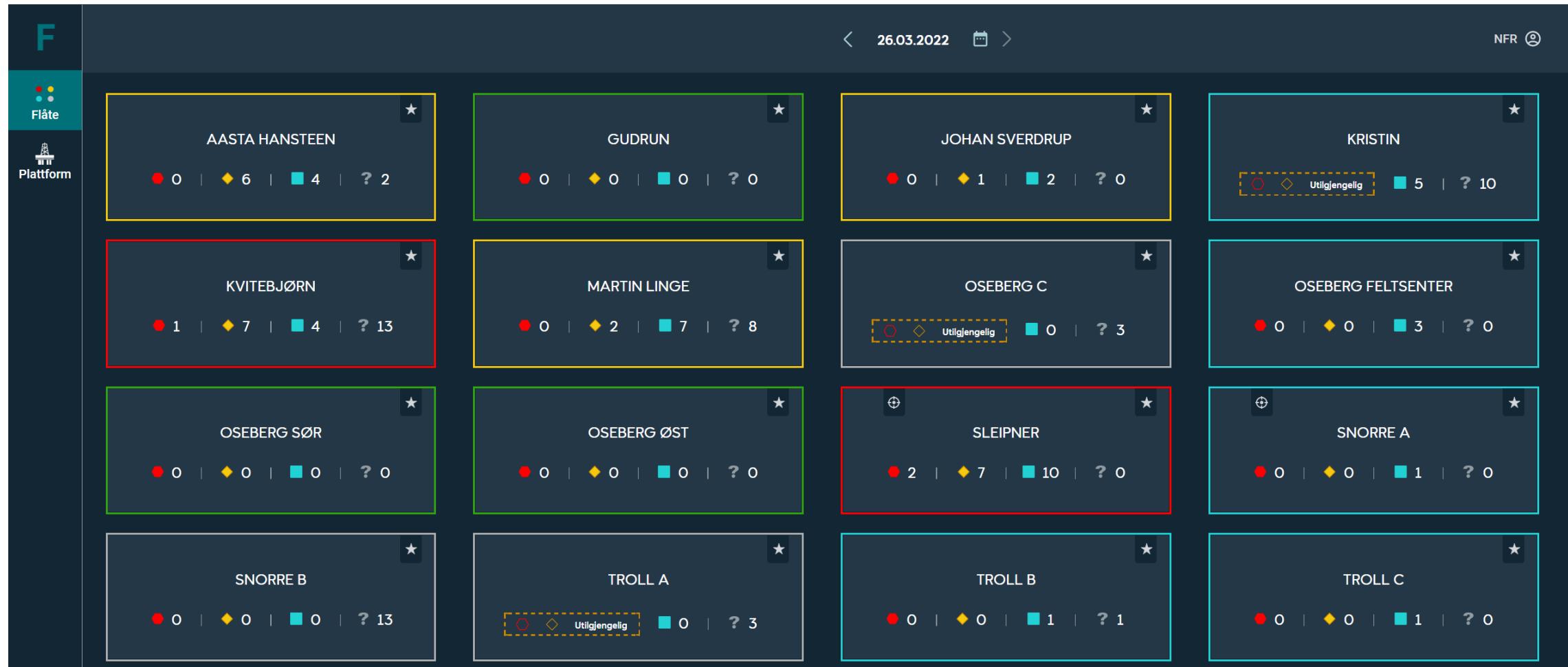
Tillatt min: 800.000 kg/m<sup>3</sup>

Tillatt maks: 850.000 kg/m<sup>3</sup>

Tetthet: 27.03

800 kg/m<sup>3</sup>      850 kg/m<sup>3</sup>

Takk for meg!





# FiscalQA

Nikolai Frøvik, Senior Metering Engineer

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