 Holländargatan 21 A 111 60 Stockholm 08 – 503 872 20 Org. Nr. 556691-9196	Document from the site – Report 5	Made by: Terje Hyldmo (BK)	Date: 2017-12-23
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Documentation from the site

Report 5: progress of the engineering work

1. STATUS OF THE OVERALL BOKRAFT PROJECT IN SKOBN

(...)

Confidential information. Please contact the project manager Dr Francesco Ometto for further information.

The status of the different parts of the project, is as follows:

Basic engineering, 98 % completed
Detail engineering, 99 % completed
Overall construction progress is 85 %.

The completed facility will look as follows (Figure 1):

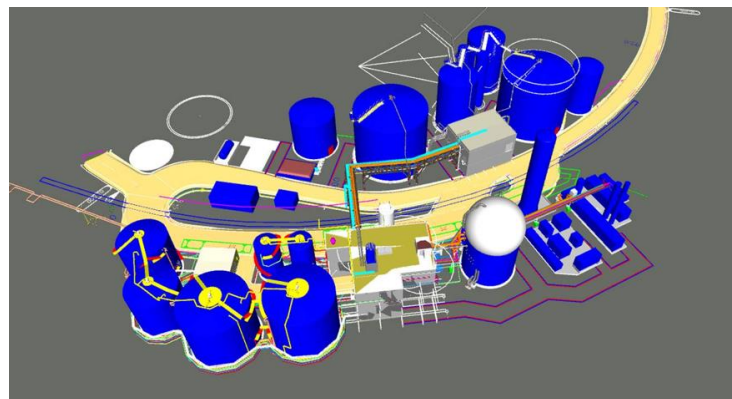


Figure 1 – Overview of biogas plant design

The construction work is divided into 4 physical areas, where Area 1 consists primarily of storage tanks, Area 2 consists of the large machine house and upgrading and liquefaction units, Area 3 consists of raw-gas production and Area 4 consists of electricity transformer, steam production and by-product handling. The supplier reports both overall construction progress and construction progress for the different areas.

Area 1

Construction progress – ca 93 % completed.

(...)

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Figure 2 – Completed storage tanks

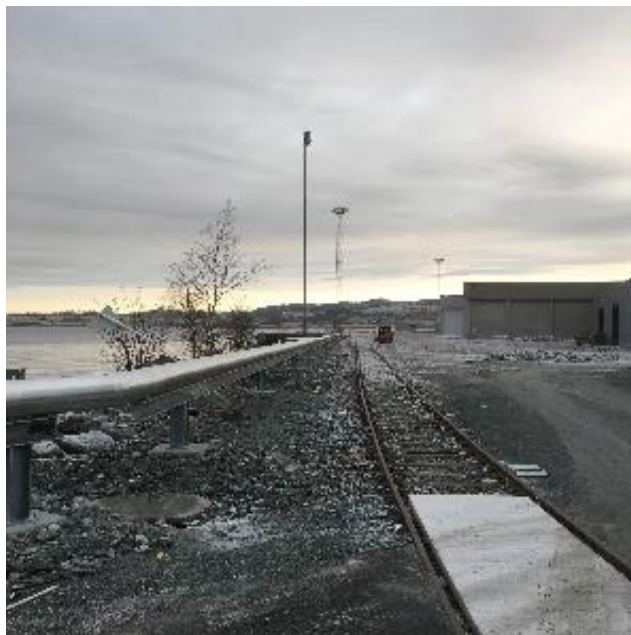


Figure 3 – Pipeline quay (on the left site next to the rail track)

Area 2

Overall construction progress – ca 87% completed.

(...)

Confidential information. Please contact the project manager Dr Francesco Ometto for further information.



Figure 4 – Overview of secondary digester (with white gas holder) and gas upgrading unit (with LBG storage tank).

Area 3

Overall construction progress – ca 82 % completed.

(...)

Confidential information. Please contact the project manager Dr Francesco Ometto for further information.



Figure 5 – Overview of two main CSTR digester (completed) and under construction ECSB units (black tanks).

Area 4

Overall construction progress – ca 80 % completed.

(...)

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Figure 6 – Overview of area 4 under construction

2. STATUS OF THE EFFISLUDGE ACTION INCLUDED IN THE BIOKRAFT PROJECT

EffiSludge for LIFE requires some interface construction/equipment installation works between the Biokraft plant and the Norske Skog waste water treatment plant. Biokraft, SBF and Norske Skog are continuously planning and implementing this interface adjustments. Some of the work requires a waste water treatment plant shutdown, and this will happen in the Christmas vacation (and, if needed, with some adjustment needed during the coming eastern vacation in 2018). Currently ca. 45% of the construction/installation is completed.

Biokraft, the host mill Norske Skog Skogn (NSS) and the Turn-Key supplier Purac are continuously working to plan the operation of the different stages in the EffiSludge for LIFE project.

The first stage includes stabile biogas production and waste-water handling, without any EffiSludge principles in the production (Q1-Q3 2018). After succeeding such stabile production, the parties will start implementing the EffiSludge principles, including increased biosludge as raw-material in the biogas production (Q4/2018 – Q4/2019). Separate start-up plant and operational guidelines are under development.

3. EXPECTED PROGRESS UNTIL THE NEXT REPORT

Report 6 is expected by 28/02/2018.

The updated schedule from the Turn-key supplier, indicates that Mechanical Completion will be the 1st of March (15th of March for the ECSB process). The start-up of operation will start immediately after Mechanical Completion.

Biokraft focus until Mechanical Completion, is to ensure the quality, progress and completion of the construction/installation works. In addition, Biokraft will focus on Commissioning phase 1 (mechanical installation and cold tests).

After Mechanical Completion Biokraft will focus on start of operation and Commissioning phase 2, until the Take Over test are accepted. The Turn-Key supplier are supervising during start of operation and Commissioning phase2, until the Take Over tests are accepted.