



# FROM SEWAGE TREATMENT PLANT TO BIOREFINERY

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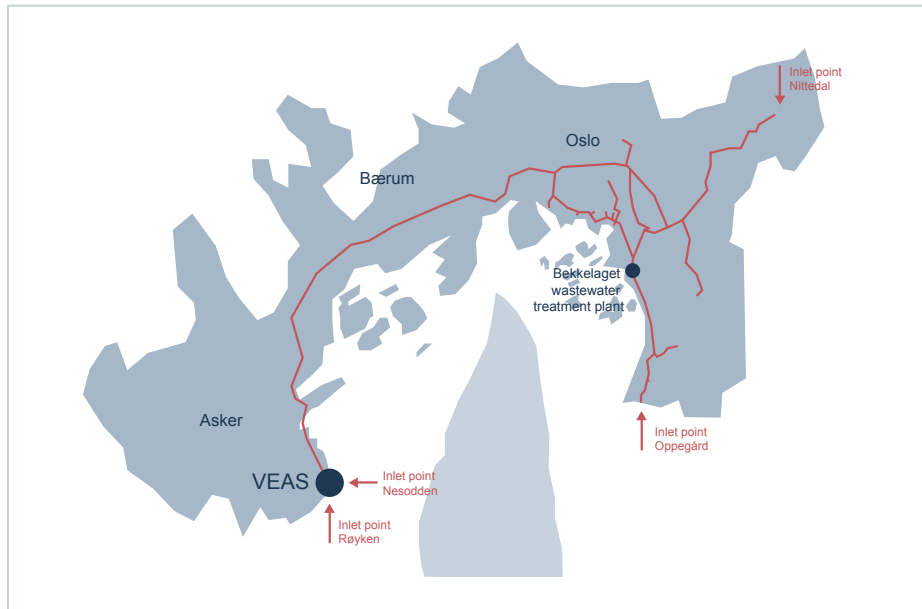
## VEAS IN BRIEF

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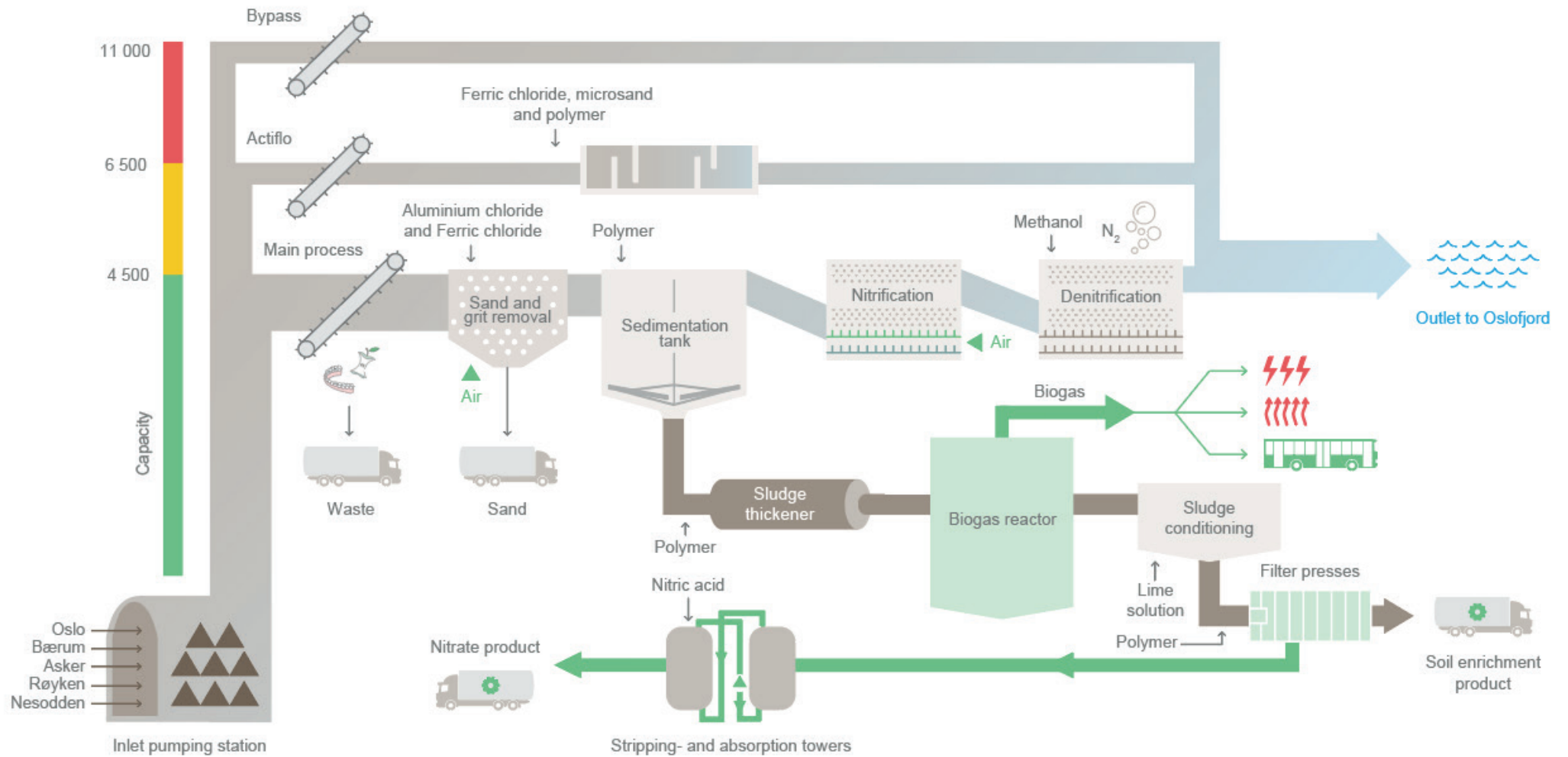
VEAS (Vestfjorden Wastewater Company) is Norway's largest wastewater treatment plant and is owned by the municipalities of Oslo, Bærum and Asker. Wastewater from the owner municipalities, equivalent to 750,000 persons, is transported via the VEAS tunnel to the treatment plant at Bjerkås in Asker. VEAS also cleans wastewater from Røyken and Nesodden municipalities.

The plant is located in the mountain and operates around the clock, all year round. In addition to effective water treatment, VEAS contributes to nutrients being brought back into circulation through the production of stabilized, sanitised and sewage sludge (VEAS soil) with added calcium and a nitrogen solution used in agriculture. Raw gas formed from the sewage sludge is used today to produce electricity and heat used in the plant, but in June 2020 the new manufacturing plant for liquefied biogas is starting up.

At full operation, VEAS will be able to produce biogas equivalent to approximately sixmillion litres of diesel, while reducing climate emissions by more than 15,000 tonnes of CO<sub>2</sub> equivalents per year.



# VEAS WATER TREATMENT PROCESS



VEAS' main plant and rain-water treatment plant, with maximum treatment capacity.

# KEY FIGURES 2019



## FINANCES

**22.6**

Revenue from sales of products and services (NOK million)

**234.6**

Transfer from the owners to operations (NOK million)

**66**

Transfer from the owners to financing (NOK million)

**245.7**

Operating costs excluding depreciation (NOK million)

**16.9**

Result (NOK million)

**165.8**

Investment for the year (NOK million)



## PRODUCTION

**105.7 mill. m<sup>3</sup>**

Purified wastewater

**39,465**

VEAS soil, tonnes

**4,802**

Nitrogen solution, tonnes

**10.7 mill. Nm<sup>3</sup>**  
(amount)

**69.4 GWh**  
(energy content)  
Biogas

**16.3**

Electricity from biogas, GWh

**20.4**

Heat from biogas, GWh

**105.7**

Delivered to district heating, GWh



## RESOURCE CONSUMPTION

**37.5**

Electrical power, GWh

**42,648**

Fuel oil, litres

**13,668**

Drinking water, litres

**21,634**

Chemicals, tonnes



## RESIDUAL PRODUCTS

**925**

Trash from screens, tonnes

**311**

Sand, tonnes

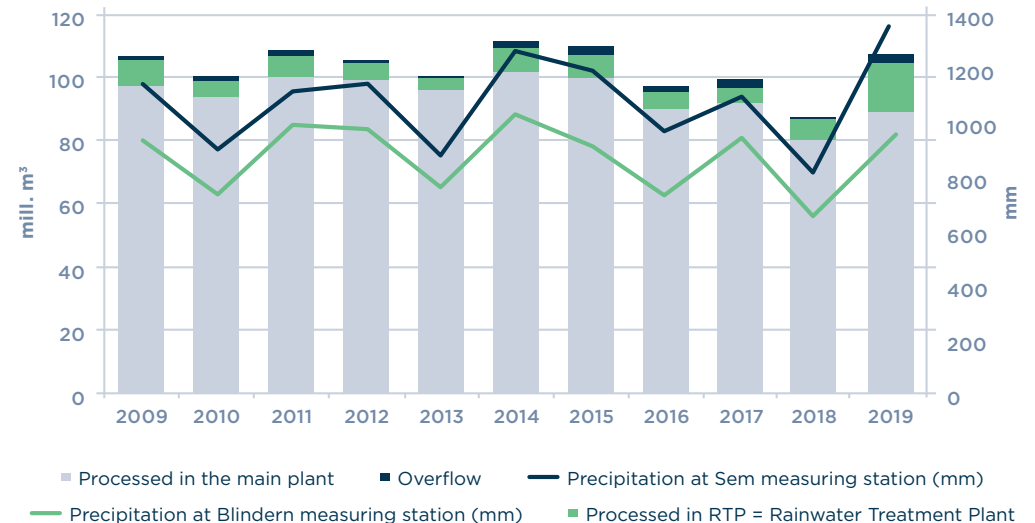
**VEAS' SERVICES COST YOU NOK 1.42 PER DAY.**

## PURIFICATION REQUIREMENTS AND RESULTS 2019

Parameter	Requirement		Result	
	Wastewater Treatment Regulations excluding overflow	Discharge permit including overflow	Excluding overflow	Including overflow
	%	%	%	%
<b>NITROGEN</b>	70	70	68.8	68.6
<b>PHOSPHORUS</b>	90	90	90.6	90.3
<b>COD*</b>	75		83.9	83.6
<b>BOC<sub>5</sub>*</b>	70		89.4	89

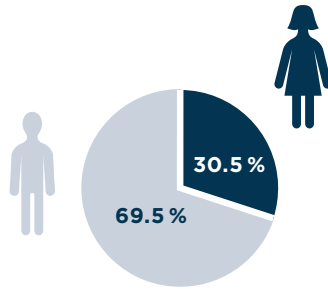
\* Organic substance measured as: COD = Chemical Oxygen Demand and BOC<sub>5</sub> = Biological Oxygen Consumption over 5 days.

## DEVELOPMENT IN AMOUNTS ADDED AND PRECIPITATION 2009-2019

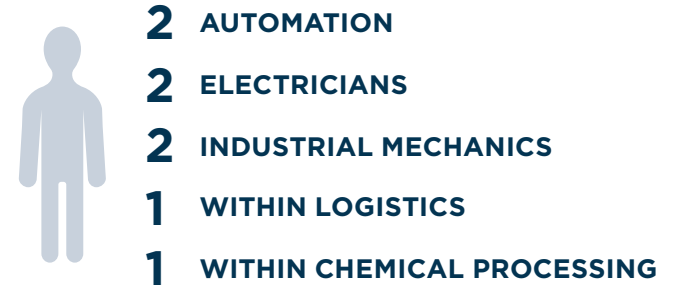




**95 EMPLOYEES**  
66 MEN AND 29 WOMEN



**NUMBER OF APPRENTICES  
ACCORDING TO SPECIALTY:**



**43.4 YEARS**



**AVERAGE AGE OF EMPLOYEES**

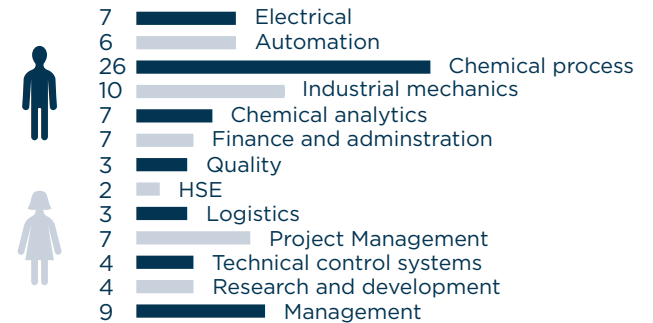
**SICK LEAVE**

**1.2 %**      **2.9 %**

**SELF-  
DECLARED**

**WITH MEDICAL  
CERTIFICATE**

**AREA OF COMPETENCE,  
EMPLOYEES:**





**VEAS**  
En renere Oslofjord

[veas.nu](http://veas.nu)