

Vagabonderende strømme

9. Juli 2020

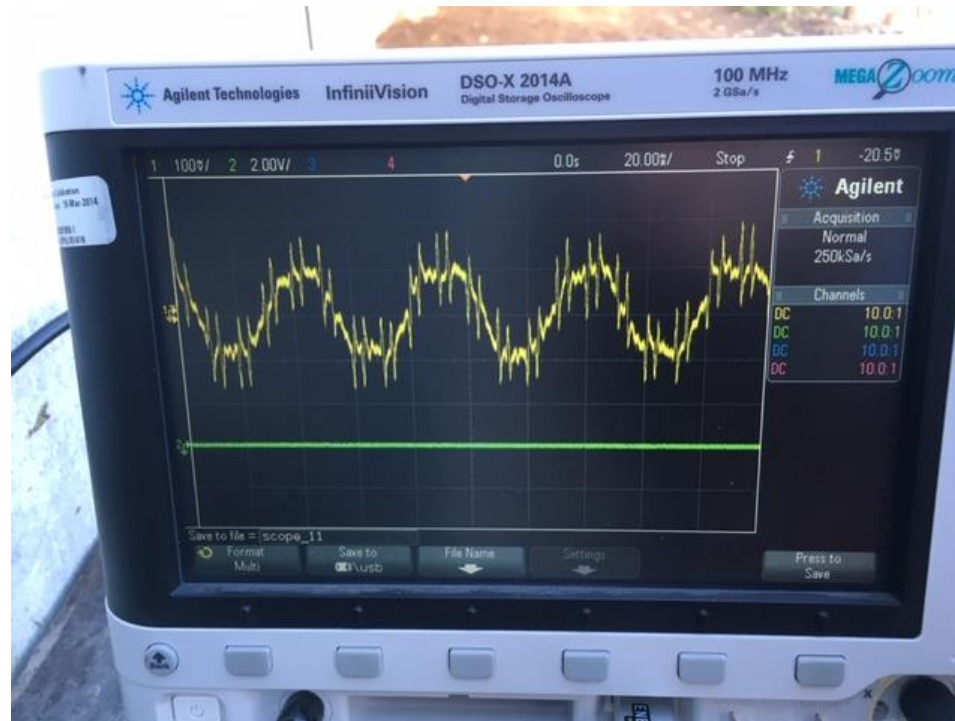
Møde m. Energistyrelsen og Sikkerhedsstyrelsen
Landbrug & Fødevarer F.m.b.A. SEGES

Dagsorden

1. Velkomst og mål med mødet
2. Præsentation af mødedeltagere
3. Status på udfordringer med ”vagabonderende strøm”
 - Jording
 - Potentialeudligning
 - ”Restpåvirkning”, eks
4. Vurdering af situationen ud fra Energistyrelsens perspektiv
5. Vurdering af situationen ud for Sikkerhedsstyrelsens perspektiv
6. Samlet drøftelse og afklaring mht. indsats for at eliminere generne fra vagabonderende strøm
7. Eventuelt

Strøm i Stald

- Generel gennemgang af elektrisk anlæg
- Potentialeudligning
- Jordingsystem



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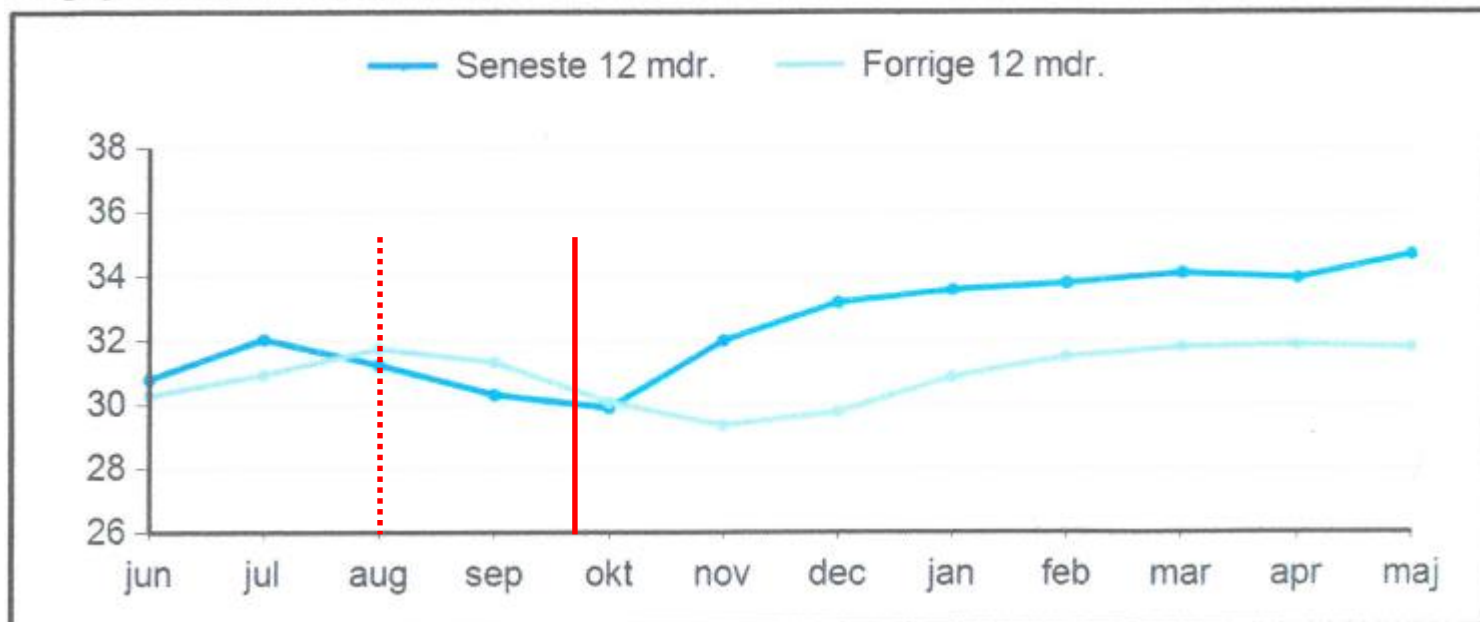
Potentialeudligning kan i mange tilfælde være tilstrækkeligt

Løsning

- Alternative løsninger forsøgt i aug. 2018
- Jesper Sørensen, Nørager el i sep. 2018
- Gennemgik anlæg – lækstømme fjernet fra bla. AMS, kobørster osv.
- Jording – specielt til AMS (25 kv. t.)
- Fladjern i hele staldens længde
- Drikkekar forsynet med udligning



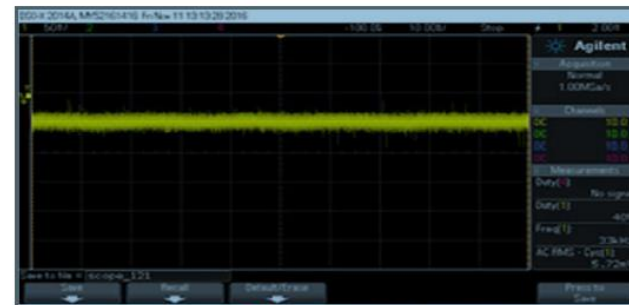
Dagsydelse pr. ko (kg EKM)



Strøm i vand



Spændingssignal for ejedommens vandrør og Byvandsrør



Stald

Indgang vandforsyning



7 DTU Elektro, Danmarks Tekniske

2018.03.02



Esben Larsen DTU; Finder op til 10 v. på vandforsyningen

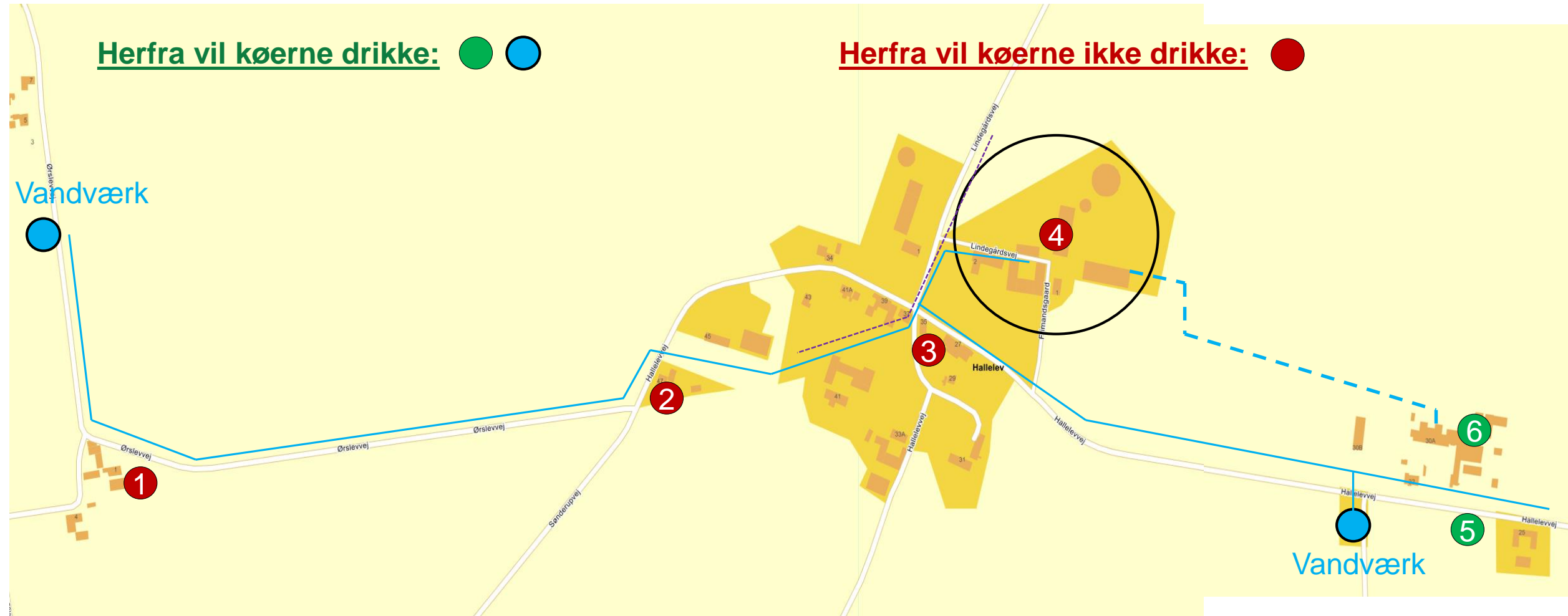


Jesper Sørensen, Nørgager el, måler her på vandindgang og finder en konstant frekvens på 31 MHz, og peak's på op til 4 v.

Strøm i vand - Vandprøver

Herfra vil køerne drikke: ● ●

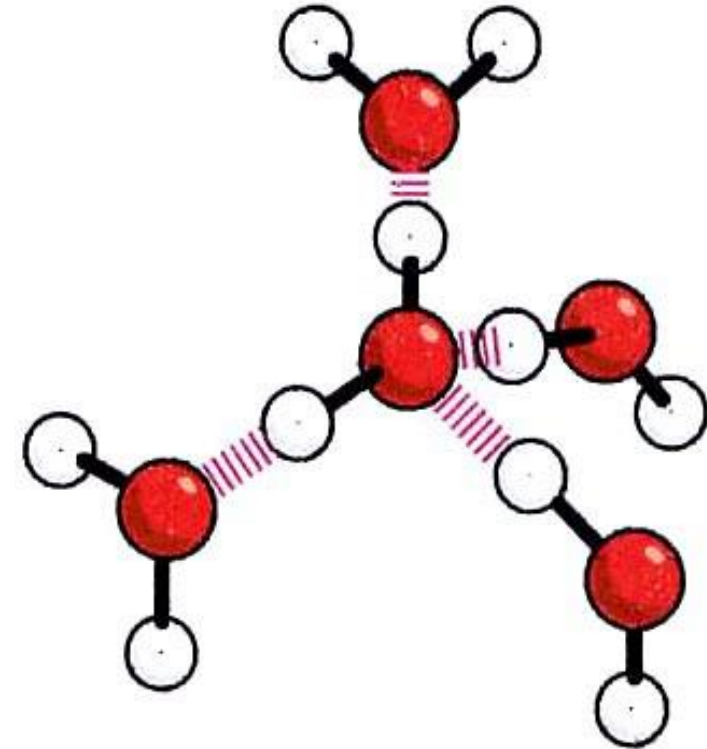
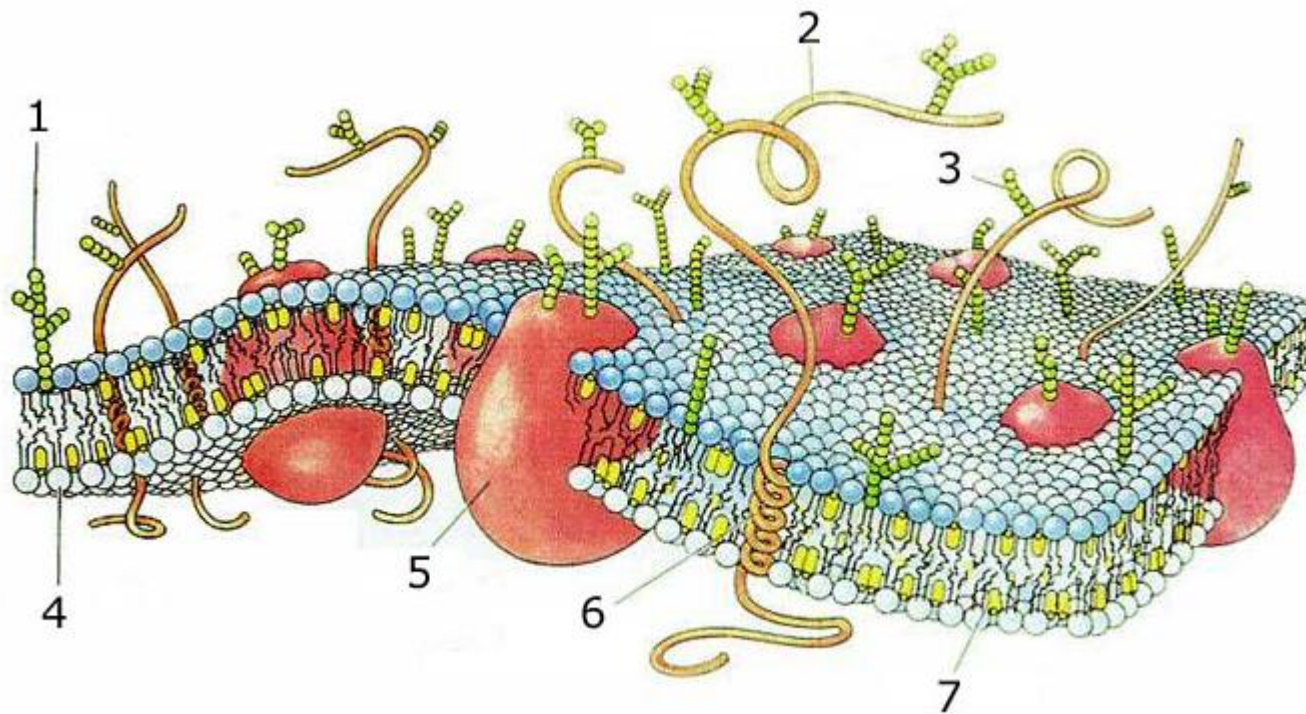
Herfra vil køerne ikke drikke: ●



Strøm i vand

Vand på molekyle-niveau

- Vinkel
- Struktur
- Højre- venstre drejet



Strøm i vand

INGENIØREN

Nov. 2019; Japanske forskere:
Vand har to forskellige strukturer



Illustration: Institute of Industrial Science, University of Tokyo

New Scientist
WEEKLY 2 June 2018

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Strøm i jord

- Strømsstriber i jord – observeres kun med kobber og pendul
- Store gener for både dyr og mennesker
- Tidligere opsat potentialeudligning og jording er fjernet



Undersøgelser

Kim Horsevad

1. "Strømstriberne" er verificerede. Vi har både måleprocedure og forklaringsmodel understøttet af målinger af jordens konduktivitet.
2. Det er verificeret at vandet ændrer sig når det løber langs jordbåren vagabonderende strøm.
3. Resultater fra anden forskning dokumenterer at potentialudligning ikke er en egnet mitigeringsstrategi for vagabonderede strøm dannet uden for egen installation.

International Journal of Science and Research (IJSR)

ISSN: 2319-7064

ResearchGate Impact Factor (2018): 0.28 | SJIF (2018): 7.426

Analysis of Stray Current, its Aetiology, Propagation, Relevant Measurement Protocols and Mitigative Efforts at a Pig Farm in Northern Denmark

Kim Horsevad

¹Horsevad Independent Technical Research & Analysis, Tryvej 96, DK-9750 Denmark

Abstract: As the occurrence of stray-current affected farms in Denmark are sharply rising, further research efforts are required to fully understand the phenomenon and develop relevant mitigative strategies. Results from a two-year research campaign at a stray current affected farm are presented.

Keywords:

1. Introduction

Stray current is a well-known phenomenon in power systems. It is caused by unbalanced currents in the system, which can lead to various problems, such as corrosion, heating, and interference with other electrical equipment. This paper explores the aetiology, propagation, and measurement protocols for stray current at a pig farm in Northern Denmark.

Levels of stray current are measured at the pig farm, and the results are compared with those from a nearby power line. The results show that the stray current levels at the pig farm are significantly higher than those at the power line, and that the stray current is caused by unbalanced currents in the system.

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Pilot Study Indicating Possible Effects on Water Impedance Characteristics from Stray Current

Kim Horsevad

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Abstract: Water subjected to stray current exhibit altered impedance characteristics in the frequency span between 10MHz and 4GHz, viewed in comparison with unexposed water from same source.

Keywords: Water, Stray Current, Impedance, Vector Network Analyzer

1. Introduction

During an ongoing investigation of stray currents at a pig farm in the northern part of Denmark it was observed that the pigs reacted differently to water from different sources.

A more detailed analysis, based on computer simulations, involving a greater number of parameters was published in 2004 [2], demonstrating that relatively weak DC fields decreased re-oriental and structural relaxation times significantly.

"Alternativer"



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