



OZ6HR

EMC

Electro Magnetic Compatibility

29. marts 2007

OZ2JN



EMC

Detaljer for aktiviteten

Aktivitet: **Foredrag: Problemer med EMC**
Dato: **29-03-2007**
Ansvarlig: **OZ6HR**

OZ2JN John fortæller om EMC. Læs mere i klubbladet.

Oprindeligt denne aften:

Besøg på Vestas

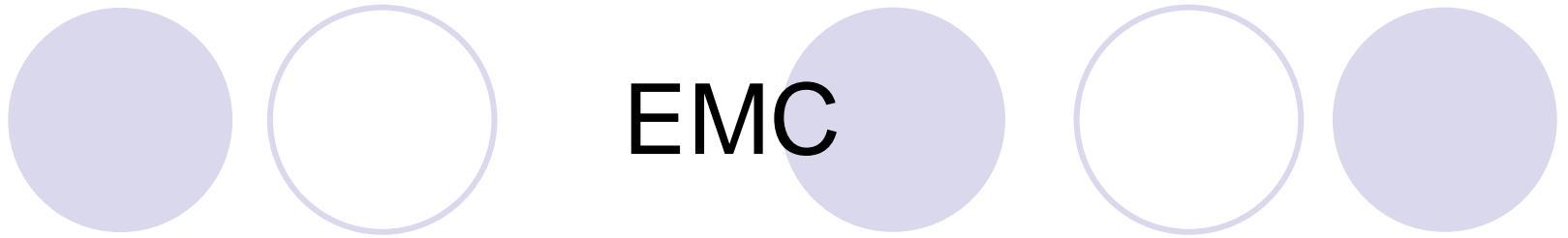
Klubben besøger verdens største vindmølleproducent Vestas. Vi fokuserer på deres EMC-afdeling, som ligger i Århus.

Tilmelding påkrævet senest 22. marts. Maksimum 15 personer, så det er efter "først til mølle"-princippet.

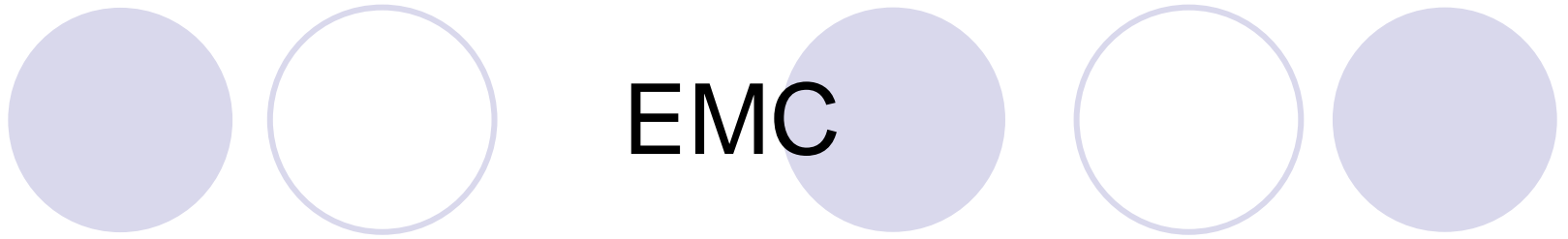
Vi kører samlet fra klubben kl. 18.00 og mødes i Århus kl. 19.00 (på Paludan-Müllers Vej 82, 8200 Århus N).

Aktiviteten er markeret som vigtig.

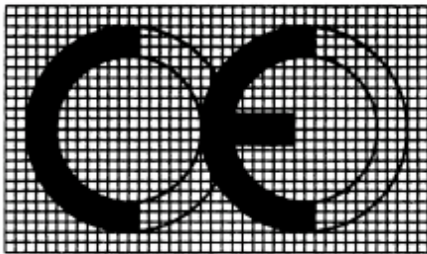
Dette er en kommende aktivitet **uden** krav om tilmelding.

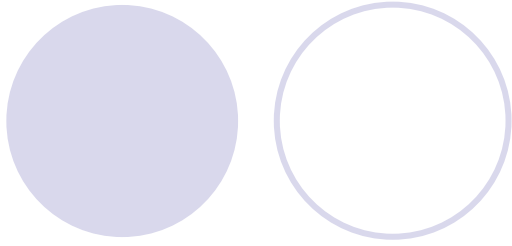


- **Bemærkning:** Gerne diskussioner under præsentation og erfaring + vidensdeling
- Præsentationen er kun en "rød tråd". Yderlige information bliver givet under foredraget.
- [Standards](#)
- EMC Directiv 89/336/EEC
- Nyt EMC Directiv 2004/108/EC

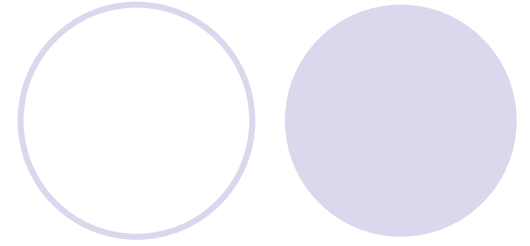


For apparatus under the EMC Directive, the CE marking is the only marking having regulatory effect regarding EMC within the European Community.

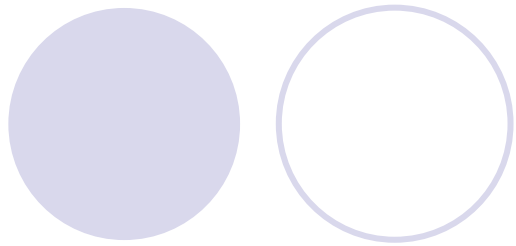




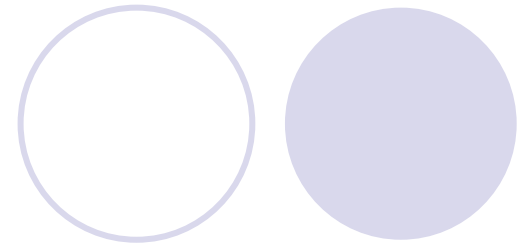
EMC



- Emission
- Immunitet

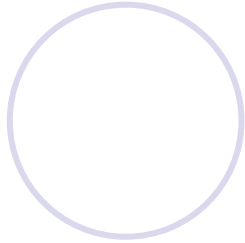
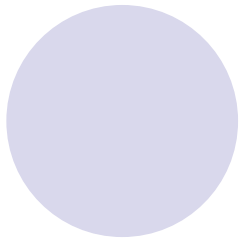


EMC

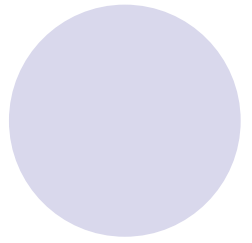
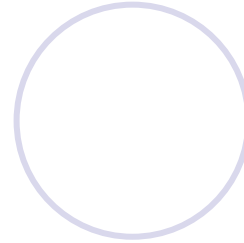
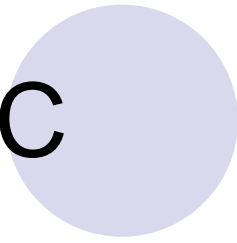


- Emission
- Immunitet

- Bolig / let industri krav
- Industri krav



EMC

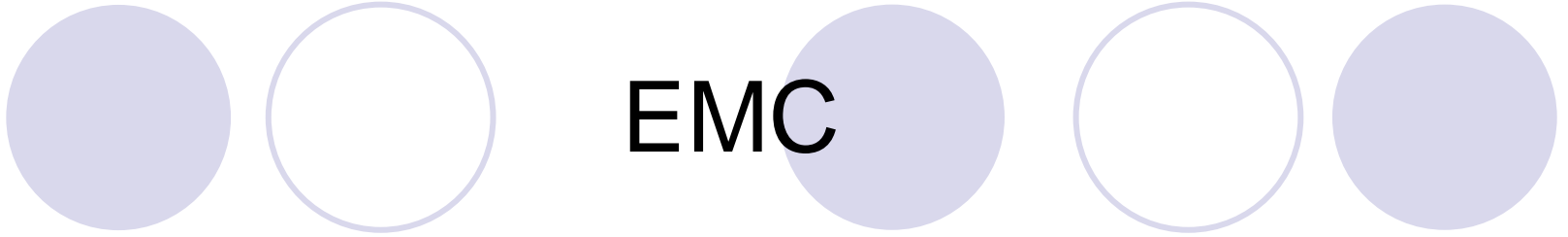


● Bolig / let industri krav

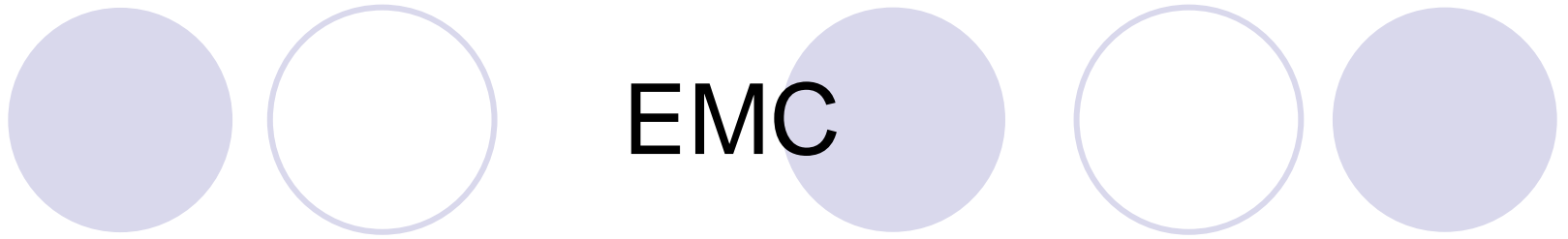
- **DS/EN 61000-6-3**
- Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
- **DS/EN 61000-6-1**
- Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments

● Industri krav

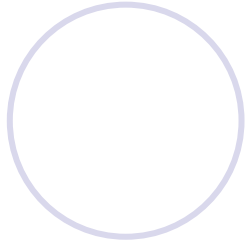
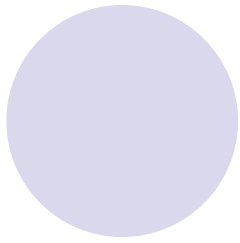
- **DS/EN 61000-6-4**
- Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments
- **DS/EN 61000-6-2**
- Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments



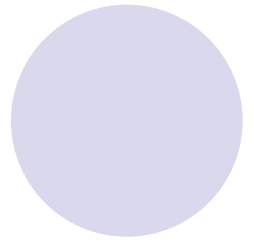
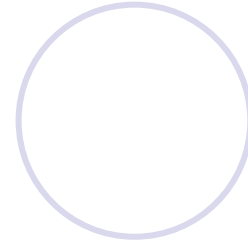
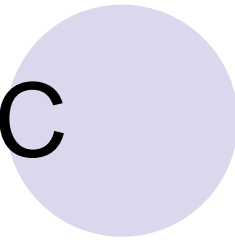
- **Test metoder.**
- Standardiseret og fastlagt i standarder.
- Eksampler af indeholdt vises kun under præsentation.
- Alt elektronik skal overholde EMC direktivet. (Forklaring implementering EU + DK)
- Produktstandarder.
- Produktfamilie standarder.
- Basis standarder.



- EMC
- Elektromagnetisme?
- Frekvensområde: DC → 400 GHz
-
- Princip: "at have nok signalafstand" (forklaring)

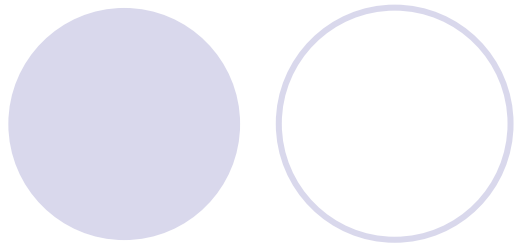


EMC

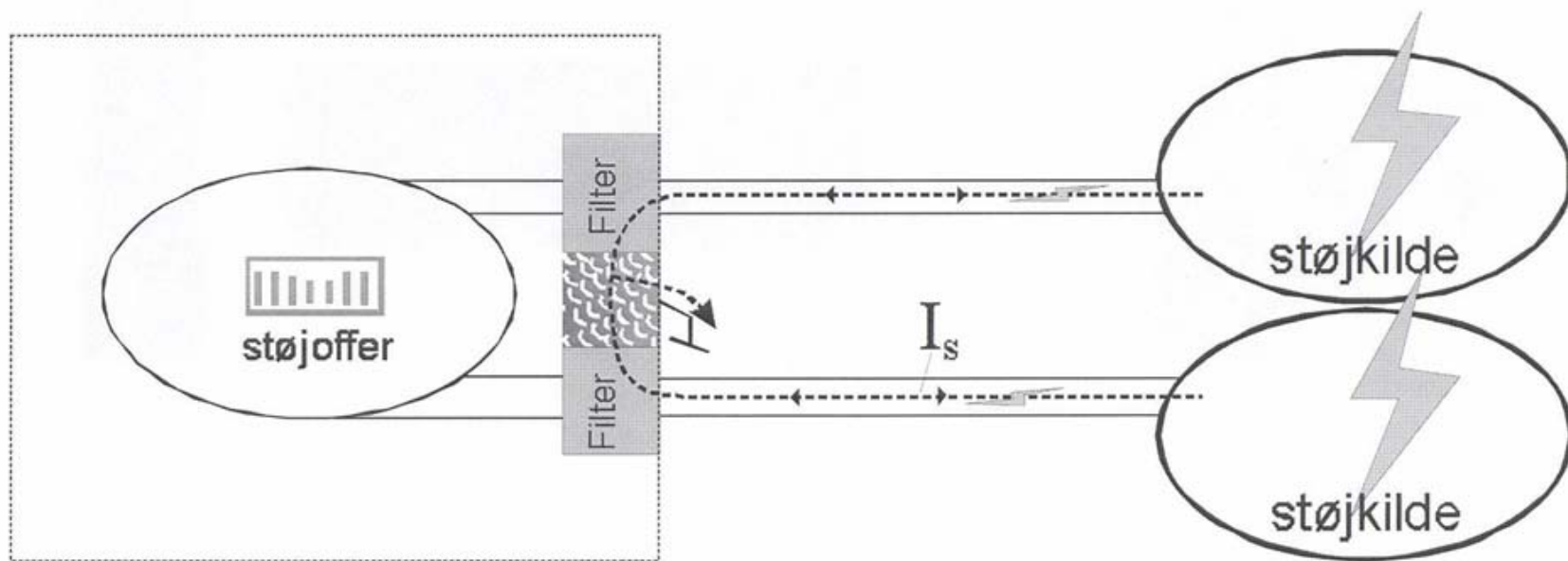
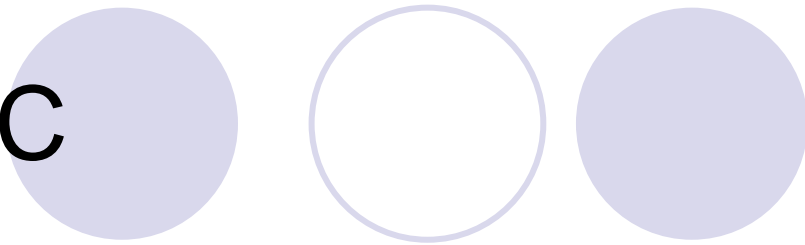


Fænomener:

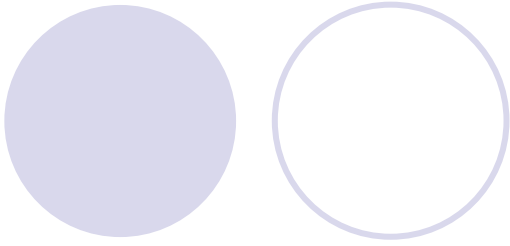
- Lyn
- Kontaktstøj
- Ledningsbåren støj
- Luftbåren støj
- Magnetisme
- 50Hz Magnetfelt



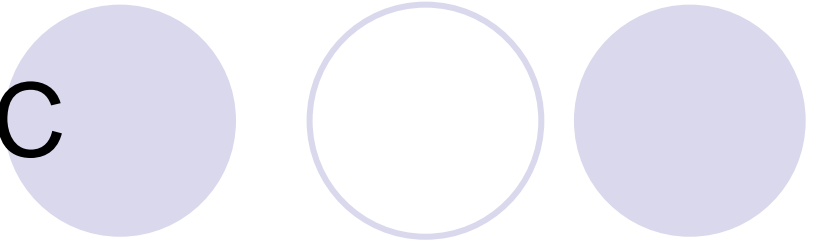
EMC



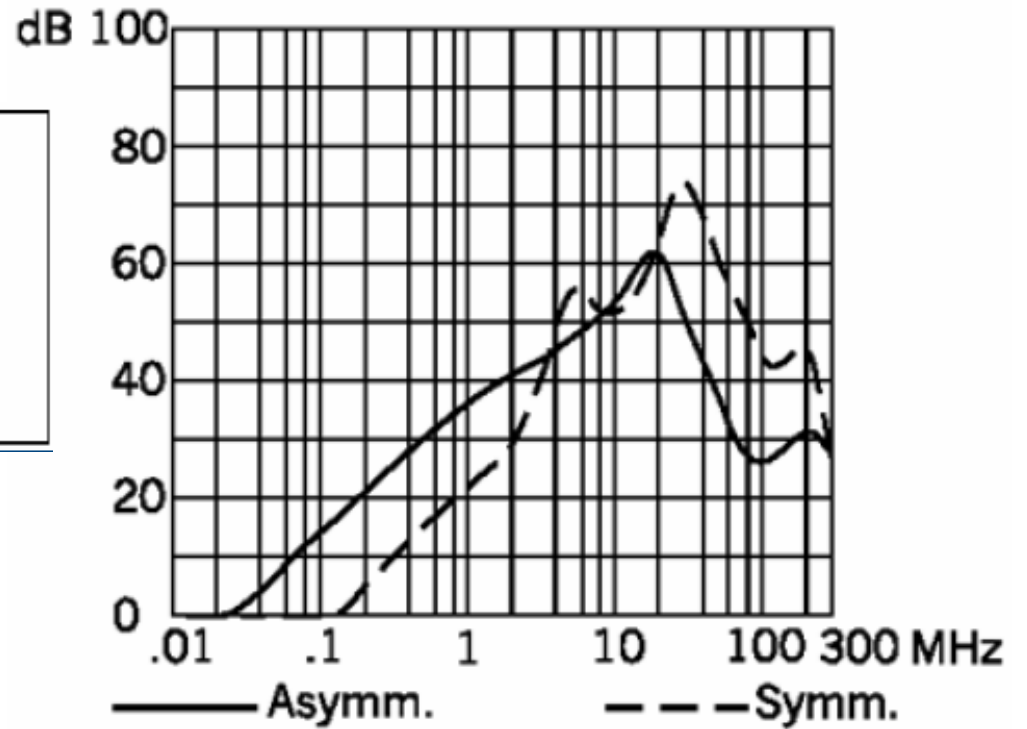
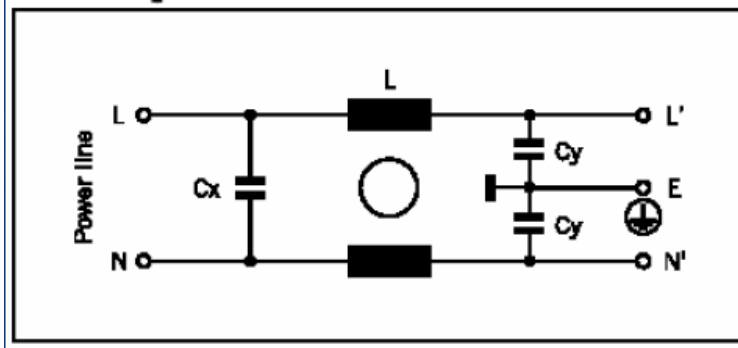
Støj : Kilde \leftrightarrow Offer relation



EMC

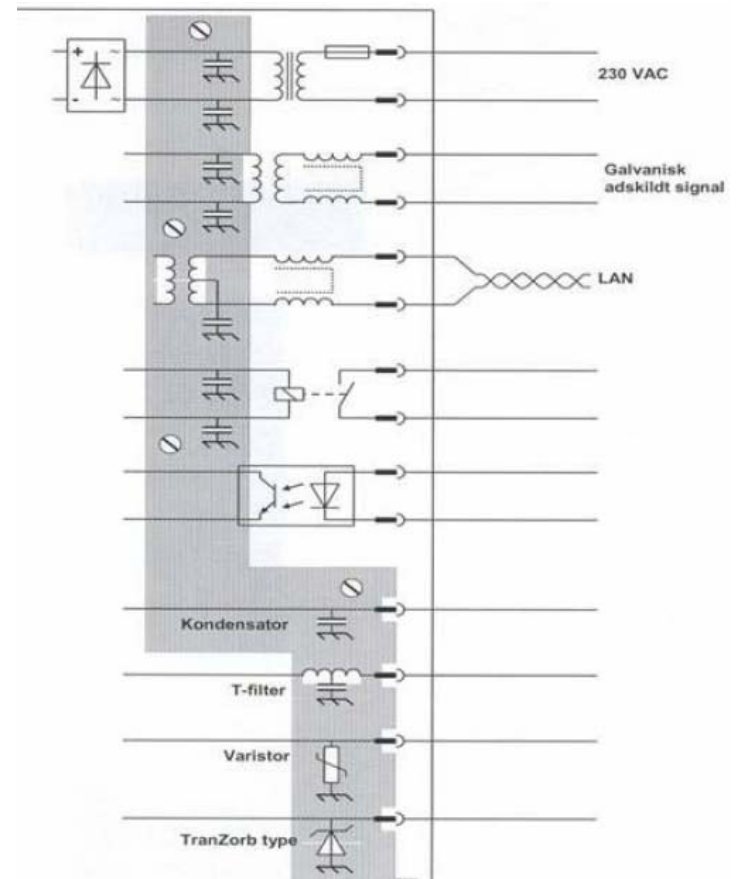
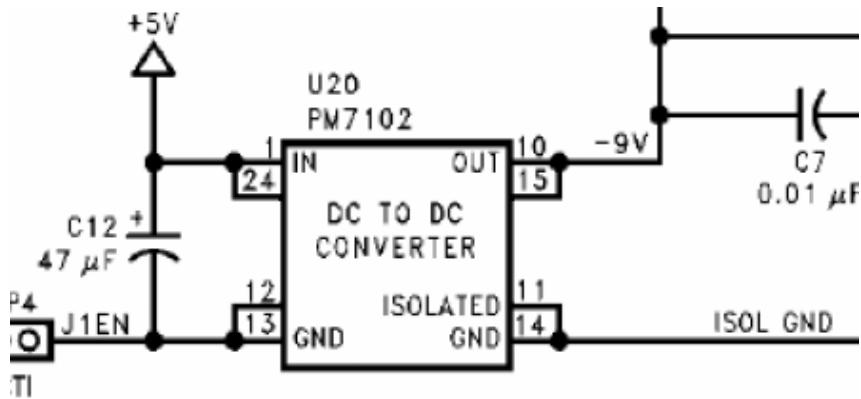
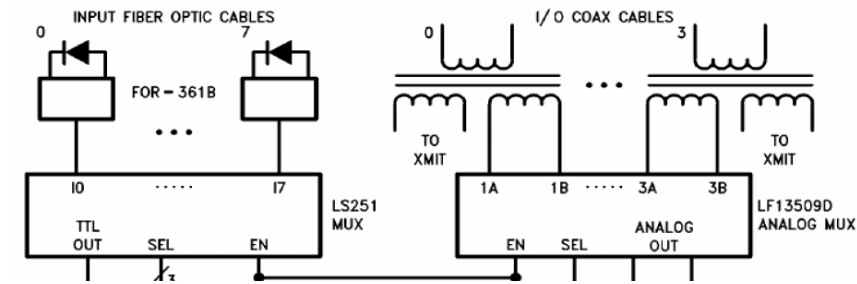


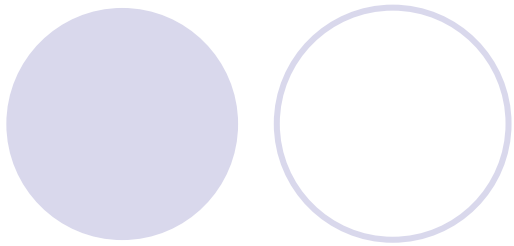
Netfilter :



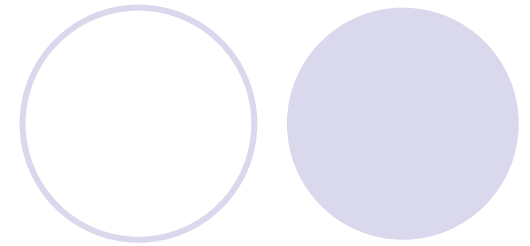
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Galvanisk adskillelse





EMC



- Båndbredde-begrænsning

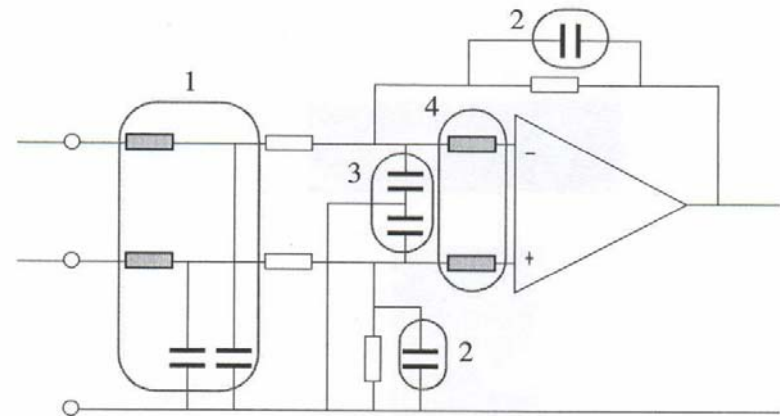
- Simple løsninger:

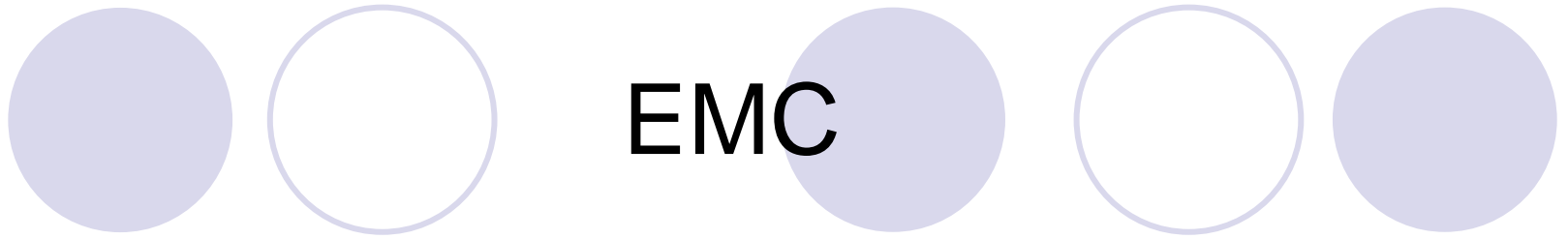
- Modstand

- Kondensator

- Ferrit

- Kombinationer af ovenstående

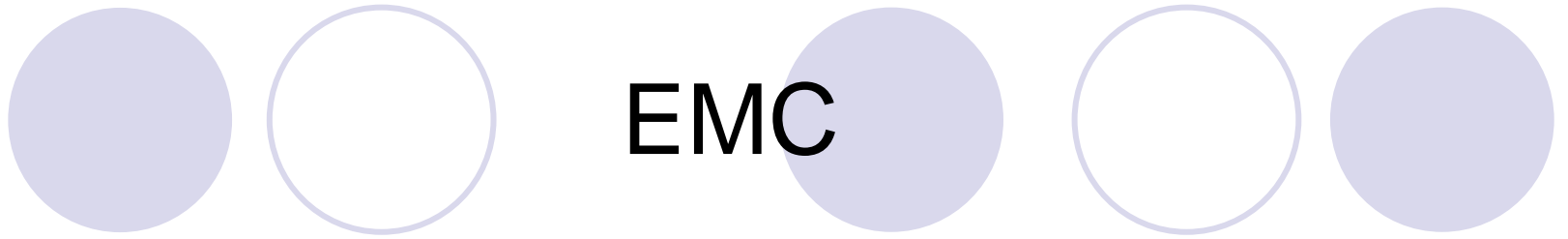




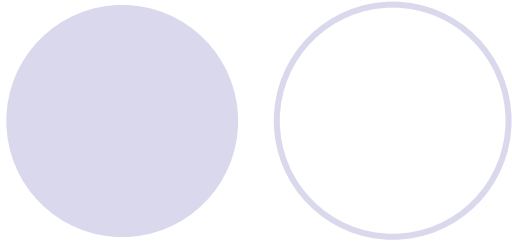
Problemer:

- Kend din støjvej.
- Afprøv koblingsveje.
- Tænk på impedanser, impedanser og atter impedanser.....
- Demodulation af HF (forklaring tegnes)
- Impedanstillpasning / mis-tilpasning.
- Afstand! Problemer aftager med kvadrat af afstanden. 😊
- Afskærmning. Faraday bur.

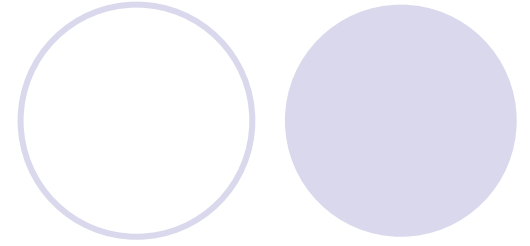
- 70 MHz (Jørn) beskrivelse af et praktisk problem.
 - * Støj i mikrofon og højttaler.
- Herstal touch-lamper. Problemer + løsning.



- Diskussioner ??
- Bemærkninger ??



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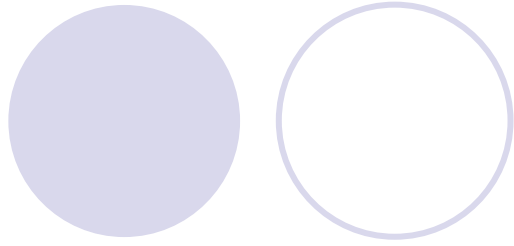


Besøg hos Vestas.

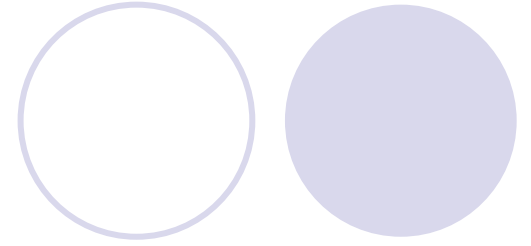
Test metoder i EMC Lab. I praksis.

Relateret til Radio amatørøkonomer ved brug af sendere.

- Feldtbåren Immunitet + Emission
- Ledningsbåren Immunitet + Emission
- Begrænset antal besøgere ("først til mølle"-princip)



EMC



- Tak for i dag.