

ENGINEERING
TOMORROW



Energy Efficiency workshop – MYHOME Cement, 7th July 2016

Danfoss Drives approach to Hybridization via Energy-storage

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Content

- Advantage to Energy Storage
- Introduction to hybridization via energy storage
- Danfoss Drives offerings and approach to hybridization

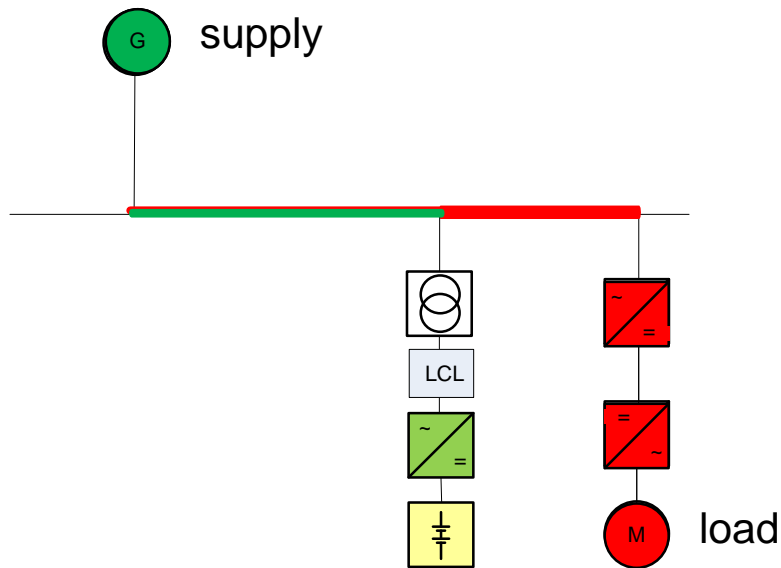
The advantages of energy storage

- Peak shaving
- Performance increase by avoiding over/underload situations
- Backup power

- Hybridization should not be only considered in relation to energy generation
- Hybridization of processes and machines which are equipped with energy storage can upgrade the performance and/or efficiency

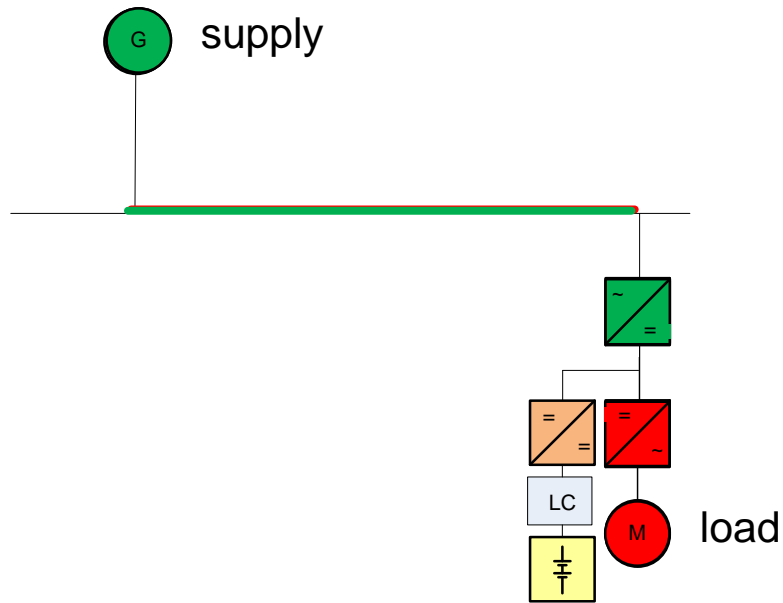
Introduction to hybridization via energy storage

- Energy storage in AC-grid



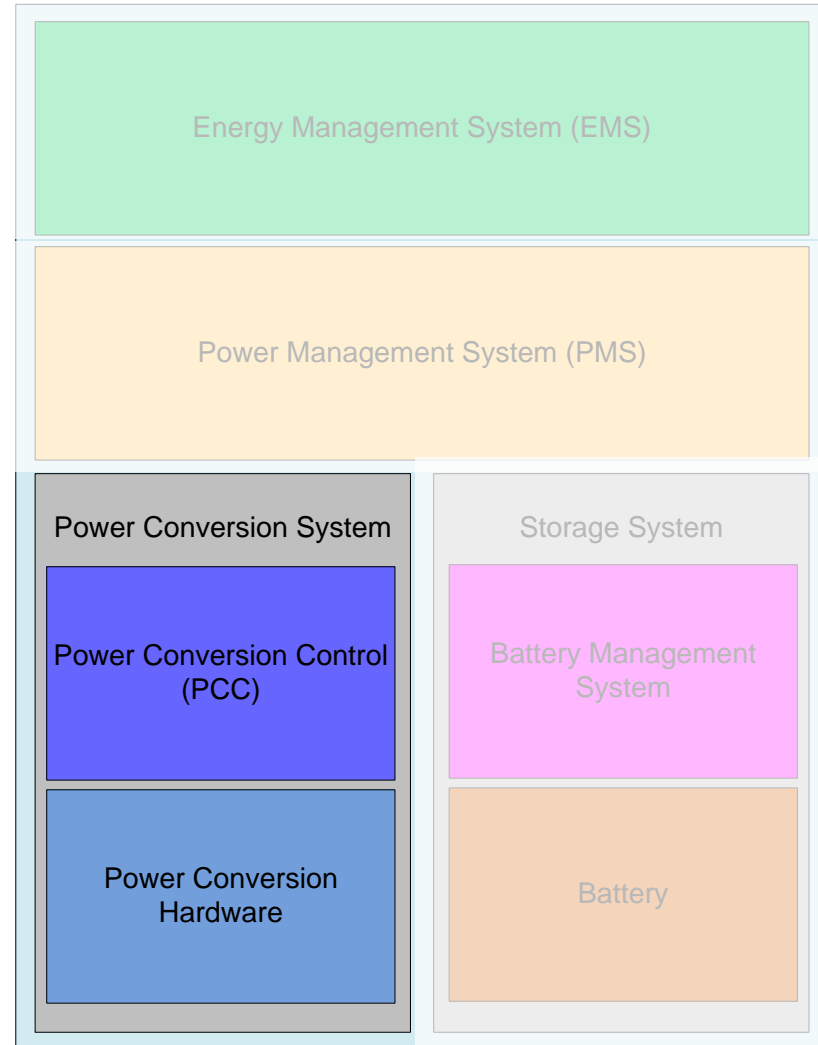
Introduction to hybridization via energy storage

- Energy storage in electric drive equipment



Danfoss Drives approach to hybridization

- The same familiar products from VACON® product family, equipped with functions to support energy storage integration
- We do not compete with our customers at system level!
 - We are storage technology independent



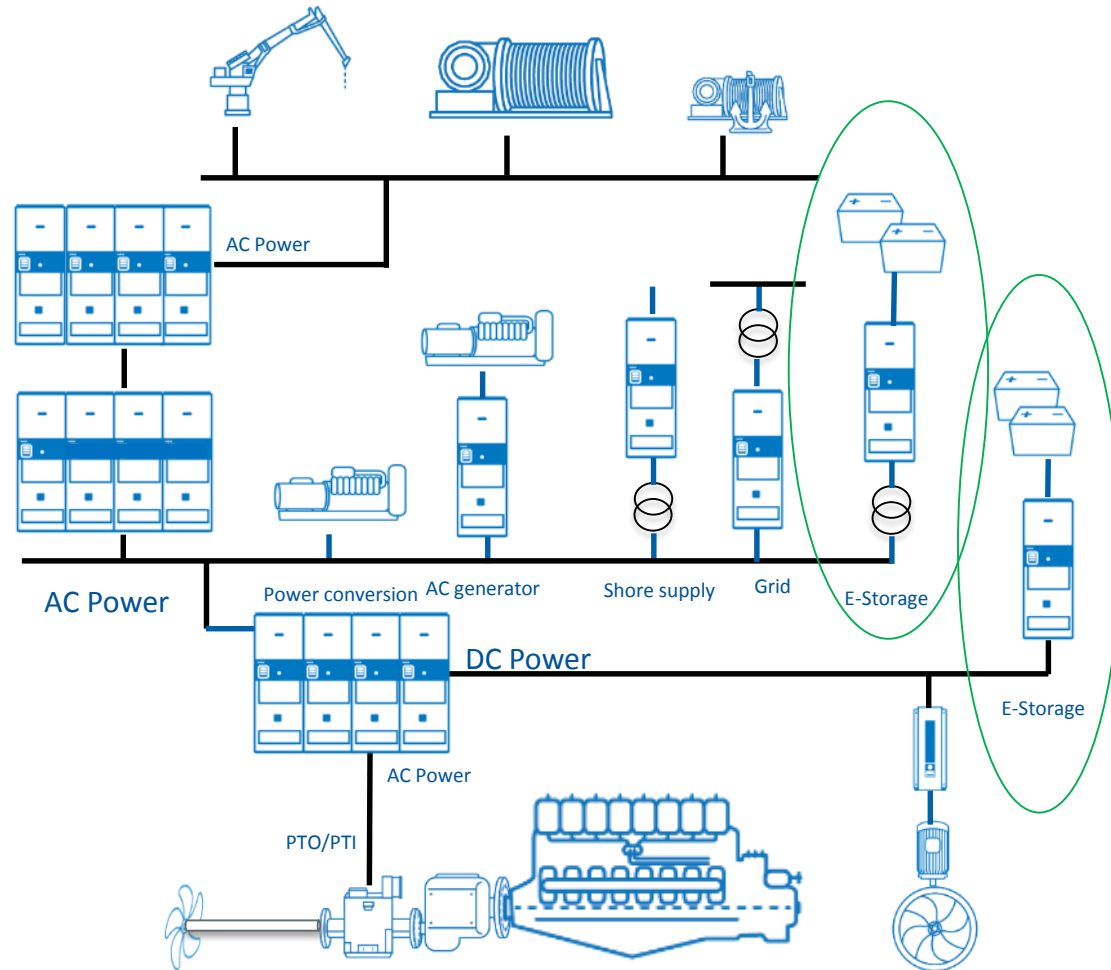
Danfoss Drives offering

Grid Converter-based solutions

- Both 500Vac and 690Vac voltages with existing current ratings
- Liquid and Air-cooling
- Standard AFE

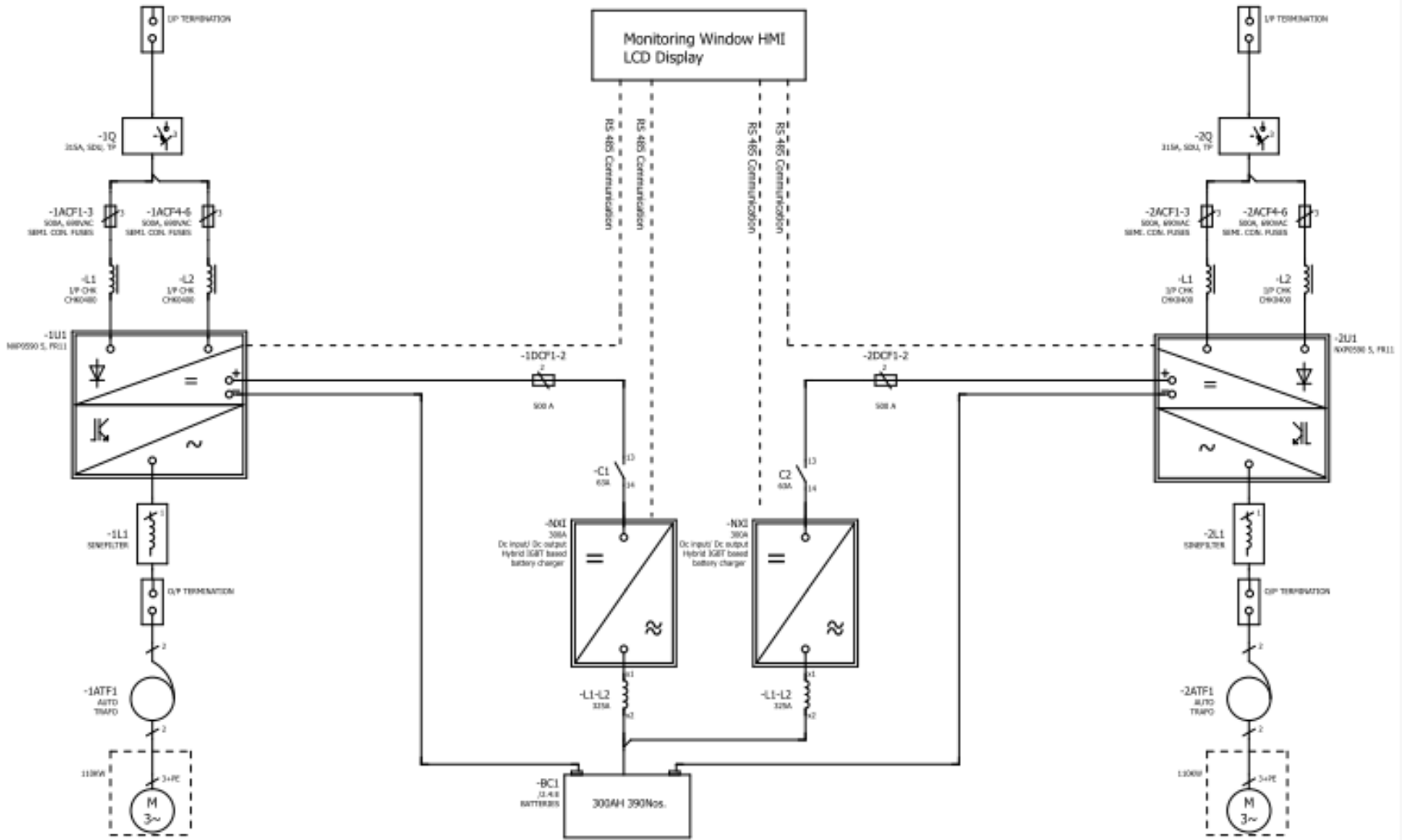
DC/DC-based solutions

- Wide range of current ratings in both 500Vac and 690Vac units
- Liquid and Air-cooling
- Control software adopted to DC/DC control



Reference : Tata Steel

Our configuration



SCOPE IN BREIF

- VACON NXP 0590 5 AC/DC in put , AC VFD with special Application 2 nos
 - VACON NXI 0300 5 DC input ,DC output Hybrid IGBT based Battery charger 2nos.
 - HMI with communication Hardware 1 nos(approved make)
 - Battery Ni Cad 300AH (1.1vx 390 nos).
 - Interconnections.
 - Testing and Commissioning.
-
- Note: Optional Battery charger can also be provided which shall be with SMPS configuration and analog type which provides only LED indication

Operation Philosophy

- Normal Condition drive switched on with 3Ph IP supply
- Drive shall be switch on through Incommer SDU.
- Battery shall charged through drive DC bus.
- NXI drive loaded with hybrid battery charger software converts DC Input to DC Output and charges the battery.

3phase Input supply failure while drive running condition

- Drive DC dropping/ Drive trip signal feedback enable discharge mode of hybrid battery charger
- Battery source full charge condition shall be ($1.4 \times 390 \text{Nos} = 546\text{V}$) shall be available and Drive DC terminal. Minimum ($1.14\text{V} \times 390 \text{Nos} = 445\text{V}$)
- In case of power resumes battery source shall be back to charging mode.
- This enables the motor continue to run without any disturbance to the load, i-e the running equipment should not feel the power failure

A better tomorrow is **driven by drives**



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Thanks From
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