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Engine Room Ventilation Control (ERVC)

A cooperation between

gothenburg · sweden

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- SEAB Marine is specialized in the field of shipboard automation and electrical systems and has +30 years of experience and..
- we are located in **Gothenburg, Sweden**, the center of the Nordic Marine business.

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What is Engine Room Ventilation Control (ERVC) all about?

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- **Most ships** still operate without temperature and pressure control for the ventilation of the engine rooms.
- We supply pre-programmed, fully standardized kits with all necessary equipment, in order to reduce the energy consumption from the ventilation fans.

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- Investing in our ERVC system, the ship will make this one of the best investments ever!
- Savings up to 40% of the energy for the ventilation has been achieved on projects with:
- Stena Saga; 33 967 GT
- Carnival Miracle; 88 500 GT

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- Power requirement varies as the cube of the speed, so the slower the fan speed - the less energy required.
- A fan running at 80% speed will consume only 50% of the power of a fan running at full speed. At 50% fan speed, power consumption is only 16%.

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Energy conservation

- If you do not have demand control of the ventilation rate, the ship's crew will regulate the amount of air drawn into the engine room by selecting to **start or stop** fans serving this area.
- Less energy is used to transport a certain air-quantity via **all** the available supply ducts rather than fewer.

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Example:

The ship has 4 supply fans, 30kW each and natural exhaust up via the funnel. The ship is 10% of its time in port, 50% of its time in low load, 40% of its time in high load.

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Example 1: *No demand control.*

- Port: 1 fan running (Total 30kW)
- Low load: 2 fans running, 2 fans stopped. (Total 60kW)
- High load: 4 fans running (Total 120kW)
- Annual consumption: (30kW * 10%) + (60kW * 50%) + (120kW * 40%) * 24h * 365days = 709560 kWh

Example 2: *With demand control.*

- Port: 4 fans running at 25% (Total 2kW)
- Low load: 4 fans running at 50% (Total 15kW)
- High load: 4 fans running at 100% (Total 120kW)
- Annual consumption: (2kW * 10%) + (15kW * 50%) + (120kW * 40%) * 24h * 365days = 487932 kWh. However, we must add 2% for losses in the VFD, so 497700 kWh is fairer.

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- The above illustration shows the relation in energy usage in the different modes over the year.

- At a production cost of 18 cents / kWh the above example will reduce the fuel oil cost by 39900 USD yearly for fan energy only.

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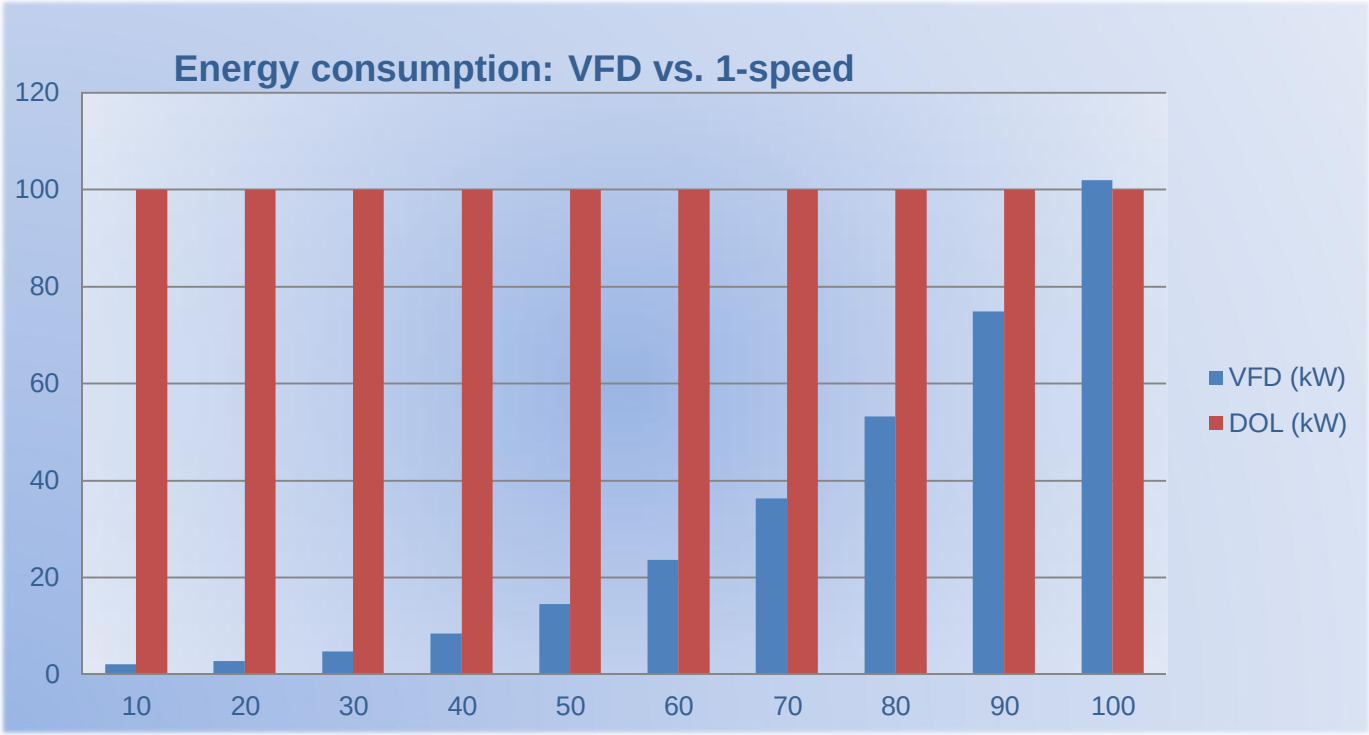
Energy consumption: Variable Frequency Drive vs. 1-speed fan.



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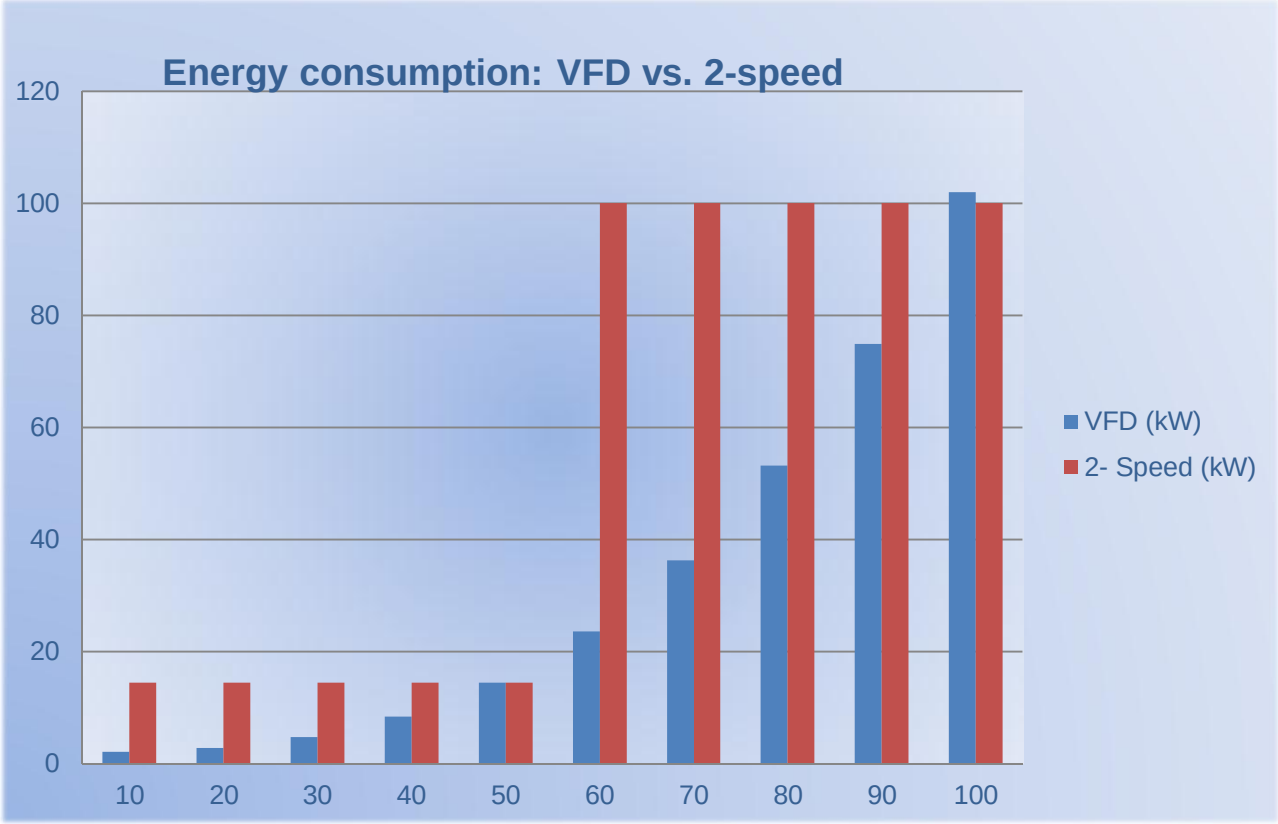
Energy consumption: Variable Frequency Drive vs. 2-speed fan.



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The amount of air circulated is the same in both examples, so no negative impact on crew comfort can be noticed by use of demand control.

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What does an ERVC concist of?

SEAB Marine’s ERV is built on following components:

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- VFD (Variable Frequency Drives) units, one for each fan
- Pressure sensor
- Temperature sensor/s
- Cabinets and cable
- Optional is a touch screen to be placed in the engine control room, providing the ship's crew with a user friendly graphical interface with alarms and settings.

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By upgrading the vessel, investing in ERVC, the ship will:

- **save money and**
- **contribute to a better environment**

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But it is more than that.....

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- The International Maritime Organization, IMO, has adopted guidelines (Resolution MEPC.213(63)), 2012 Guidelines for the development of a **SHIP ENERGY EFFICIENCY MANAGEMENT PLAN (SEEMP).**
- SEEMP has a mandatory implementation period from January 1st, 2013 and our ERV can be one part of your plans.

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Keeping ahead through technology!