

REFRIGERATED CARGO

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1. Refrigerated cargo

1.1. Reasons

1.2. Modes

1.3. Vapor-compression

1.4. Containerized cargo

1.5. Main producers

1.1. Reasons

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- Cargo is refrigerated to slow down development of microorganisms, creation of mould, fungi etc. or to slow down its ageing.
 - In order to maintain reduced temperature in the cargo hold, certain amount of heat has to be removed continuously.
 - Thermal insulation is necessary. Refrigerating system is necessary.
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1.2. Modes

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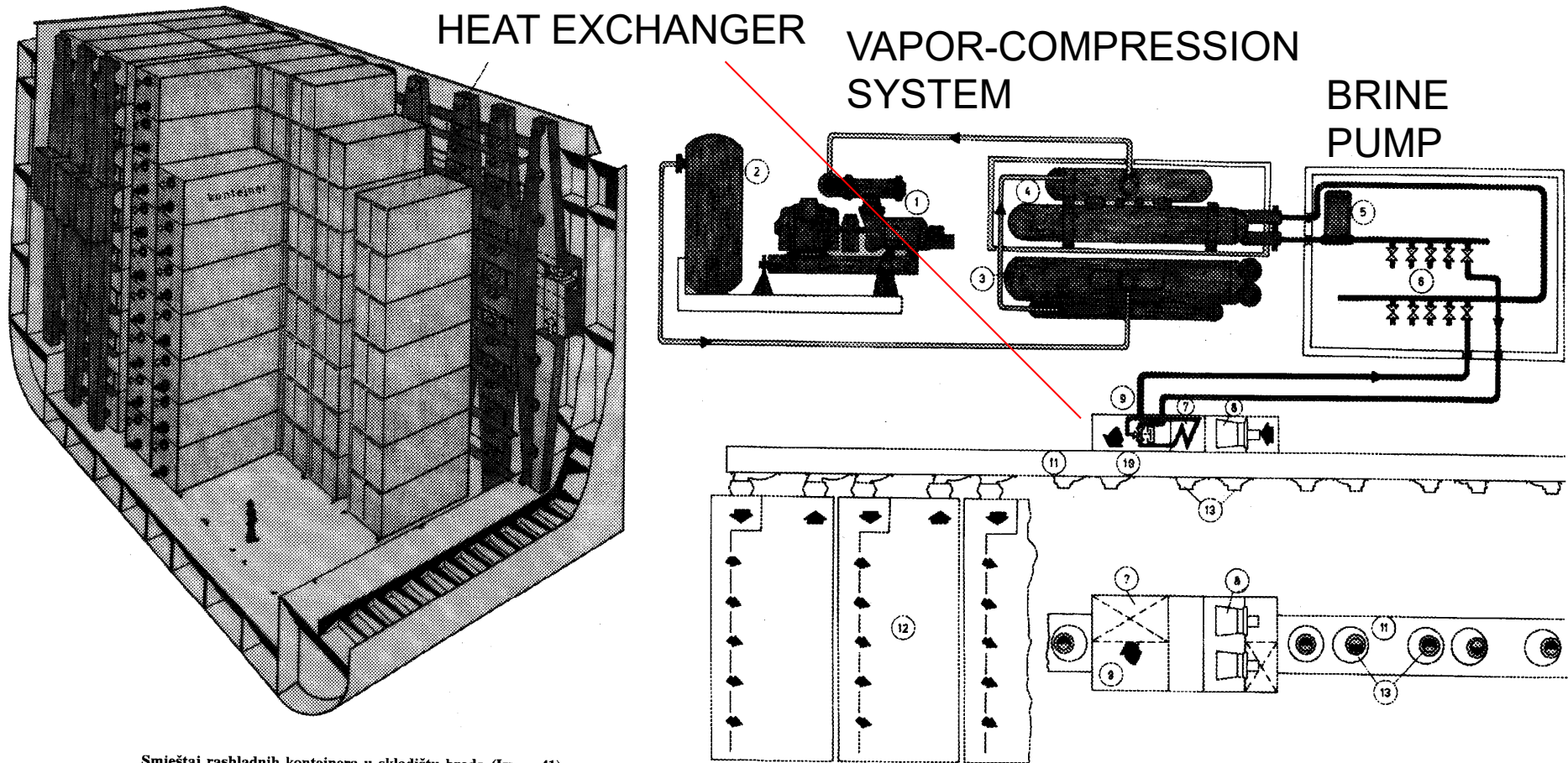
- Cargo hold is thermally insulated, independently of the modes of transport (cargo being containerized or not). The price of insulation falls on the shipowner only. The size of cargo hold is significantly reduced because of the insulation thickness. Complete hold is refrigerated, but not every cargo has to be refrigerated.
 - The cargo hold can be insulated only partially, but the cargo has to be containerized and each container partially insulated too.
 - The hold is not insulated. The insulation is made on the containers only.
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1.3. Vapor-compression

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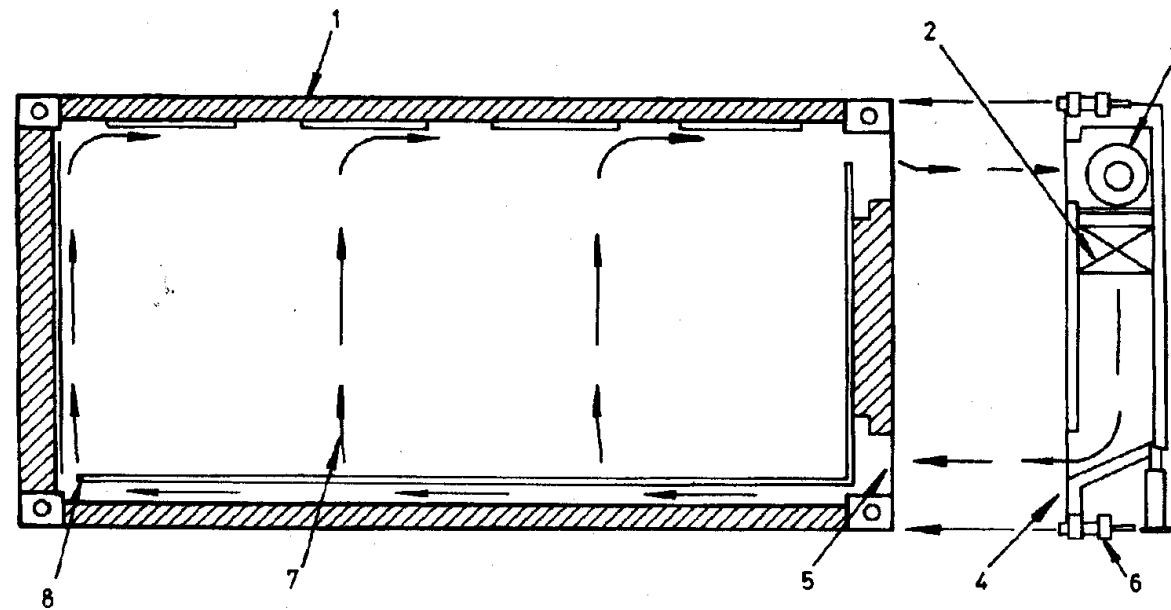
- Vapor-compression system is generally used, although other principles are applied too.
 - The vapor-compression system is used when direct or indirect refrigeration of complete cargo hold is desired or when container has its own refrigerating system.
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1.4. Containerized cargo - some ideas



Smještaj rashladnih kontejnera u skladištu broda (Izvor: 41)

Container with 'clip-on' refrigerating system

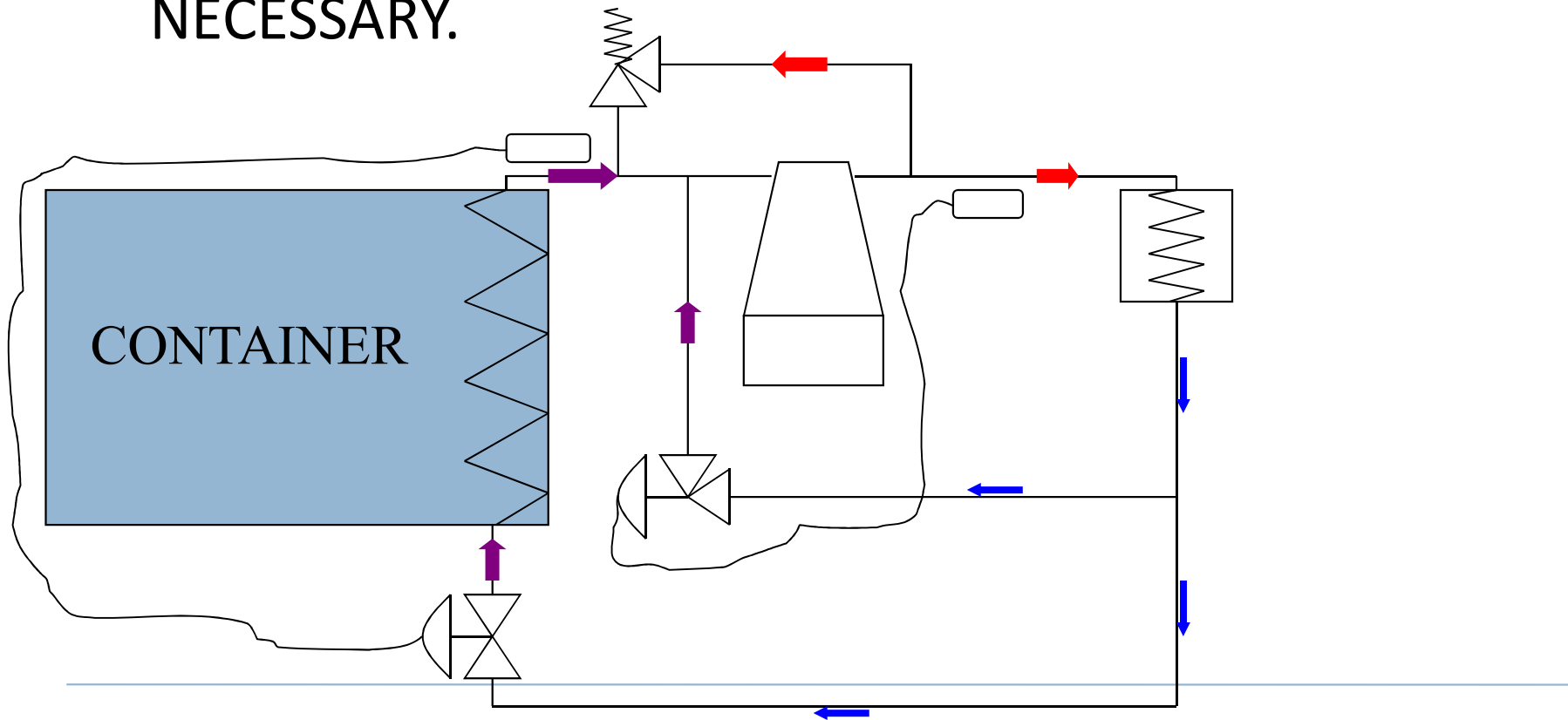


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|-----------------------|-----------------------------------|
| 1 – izolacija, | 5 – dva zračna otvora, |
| 2 – rashladno tijelo, | 6 – zatega na rashladnom uređaju, |
| 3 – ventilator, | 7 – protok zraka, |
| 4 – brtvila, | 8 – otvori za zrak. |

Rashladni kontejner sa skidljivim rashladnim agregatom

Container with installed refr. system

- THE 3-PHASE ELECTRIC ENERGY CONNECTION AND IN SOME CASES SEA WATER CONNECTION IS NECESSARY.



1.5. Main producers

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- Carrier
 - Thermoking
 - Daikin
 - Denso
 - Starcool
 - etc.
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THANK YOU!
