

# Services for Thermosiphon

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EN/CV/DC

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# Index

- Introduction
- Electrical supply (standard, diesel, UPS)
  - Configuration A
  - Configuration B
  - Thermosiphon circuit
  - Commissioning
- Primary water
- Other services
- Conclusions

# Introduction

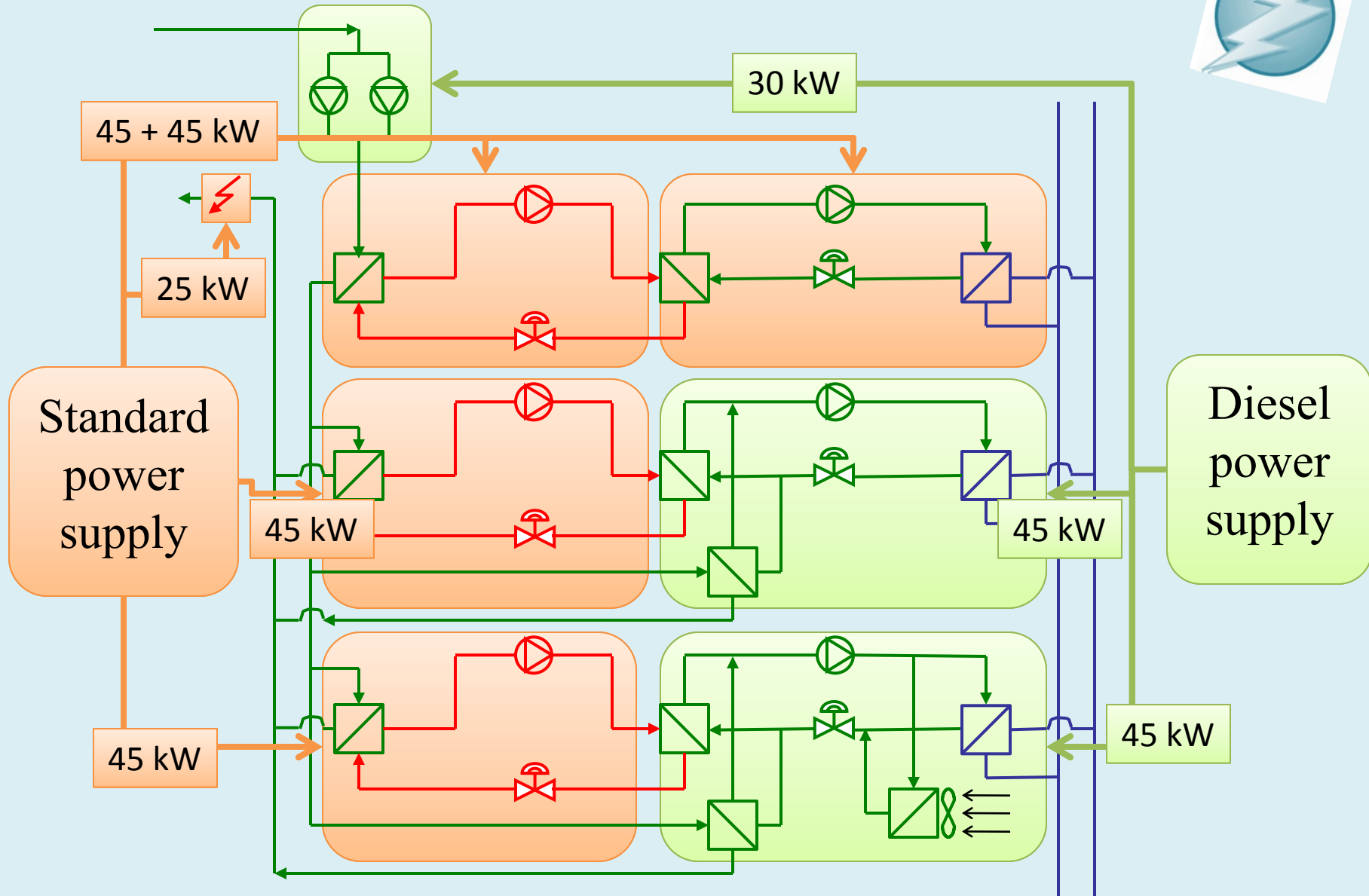
- The Thermosiphon project will require the upgrade of some of the services at Point 1.
- The main upgrade will be for the electrical supply
- A new connection to the primary water system will be done.
- Other systems cannot be forgotten.

# Electrical supply

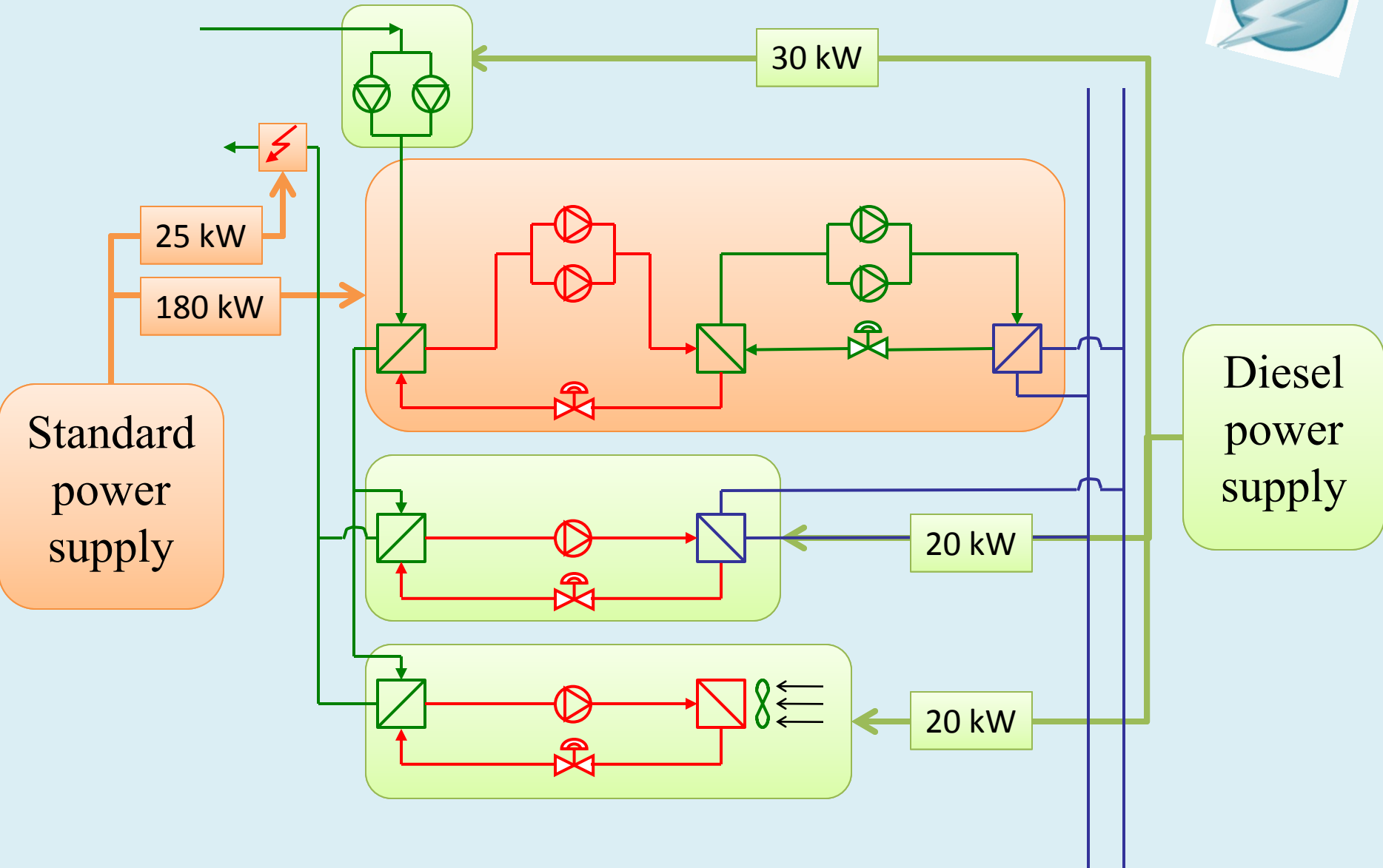


- Kind of supply required
  - Standard, most of the equipment.
  - Diesel, for equipment which must stay operational during power cut.
  - UPS, for control cabinets.
- Location: the requirements will be divided between
  - Surface, chiller system, depending on the configuration.
  - Underground, electrical heaters and dummy load.
- Contact person : Wieslaw Iwanski (PH/ESE)

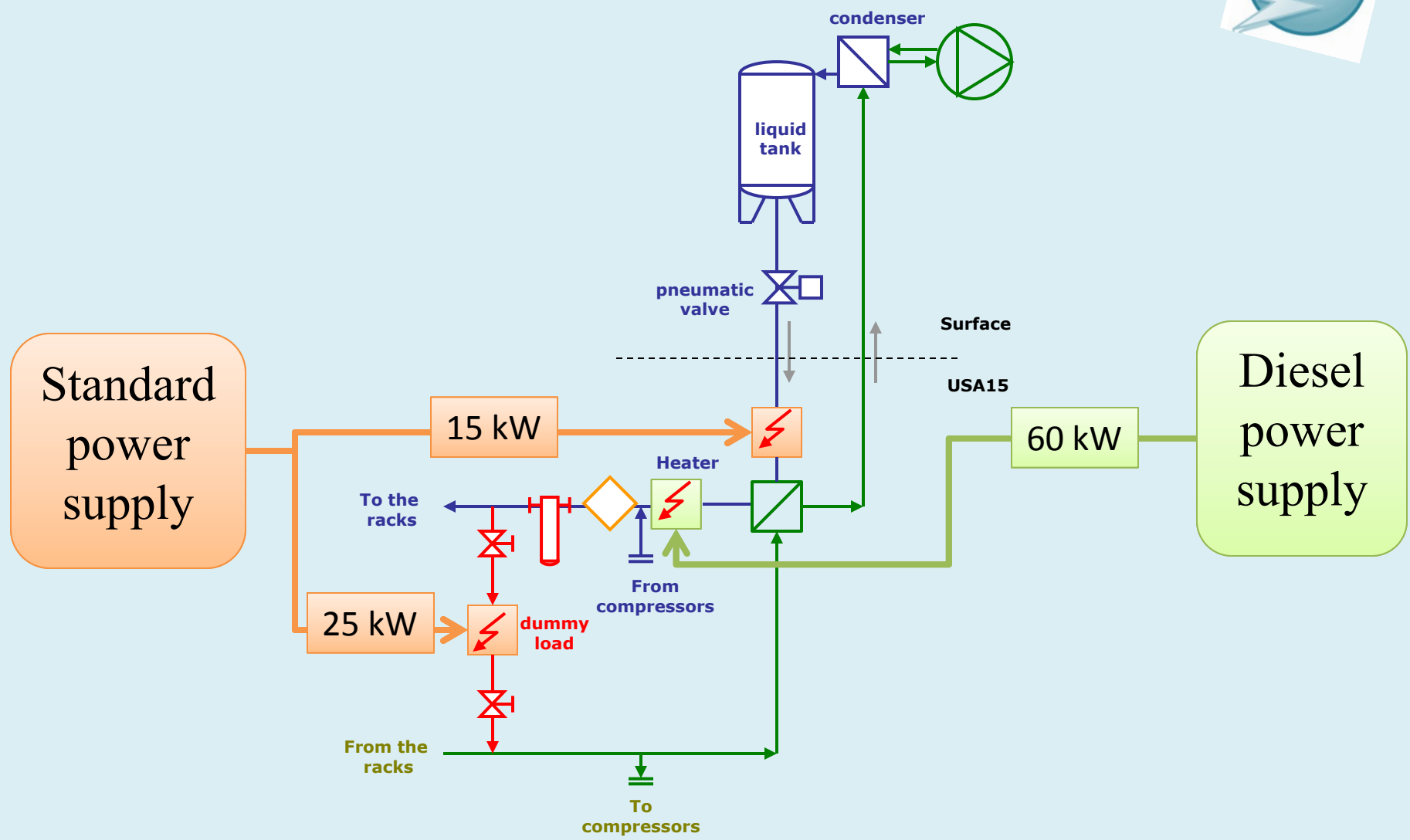
# Chiller configuration A



# Chiller configuration B



# Thermosiphon station



# Commissioning



- The thermosiphon and the chiller will be tested before the connection to the evaporative system.
- A dummy load with an electrical heater will be used for this purpose.
- An extra 107 kW will be needed temporally, during the commissioning phase, for this element.



# Electrical supply - Summary



Location	Standard power supply	Diesel power supply	UPS power supply
Chillers	90 + 45 // 180	45 // 20	-
Control	-	-	5
Pumps	-	30	-
Heater	25	-	-
<b>Total surface</b>	<b>160 // 205</b>	<b>75 // 50</b>	<b>5</b>
Heater 1	15	-	-
Heater 2	-	60	-
Dummy Load	25	-	-
<b>Total in USA15</b>	<b>40</b>	<b>60</b>	<b>-</b>

*+ 107 kW for commissioning*

# Primary water



Used for the chillers cooling

- Why ?
  - Reliability, no intermediate systems.
  - Tap water for maintenance period of the towers
  - Air cooled for emergency situation



- Technical characteristics
  - Temperature =  $27^{\circ}\text{C} \div 37^{\circ}\text{C}$
  - Maximum temperature rise =  $10^{\circ}\text{C}$
  - Pressure supply = 2.8 bar
  - Pressure drop = 1.6 bar

# Primary water



- Requests

Chillers cooling power	180 kW
Water estimated power	380 kW
Estimated water flow	18 kg/s $\approx$ 65 m <sup>3</sup> /h
Preliminary pipe size	DN100

- Works / installation

- The connection can be done in bdg SH1
- For the works the circuit shall be empty

 16<sup>th</sup> December 2010

- Size of the branch DN200



# Other

- Compress air
  - The requirements of compress air are not yet defined
- Ethernet connections
  - At least 4 Ethernet connections will be needed for the control of the Thermosiphon.

# Conclusions

- Services upgrade will be necessary for the thermosiphon project.
- An important upgrade has to be previewed for the electrical power supply in Point 1
  - EN/EL has already been contacted
- Primary water connection is being arranged to profit of the opportunity on December 16<sup>th</sup> .

# Thank you for your attention

*Any  
questions ?*

