Future on Paper

Energy efficiency

MD visit 12.06.2014

Norske Skog

Energy Saugbrugs 2012

Electricity

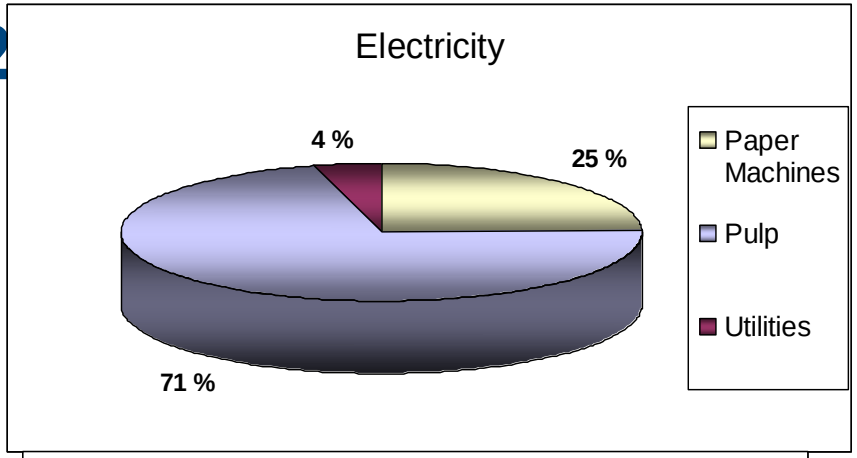
- Consumption 1195 GWh
- Mainly for Pulp production

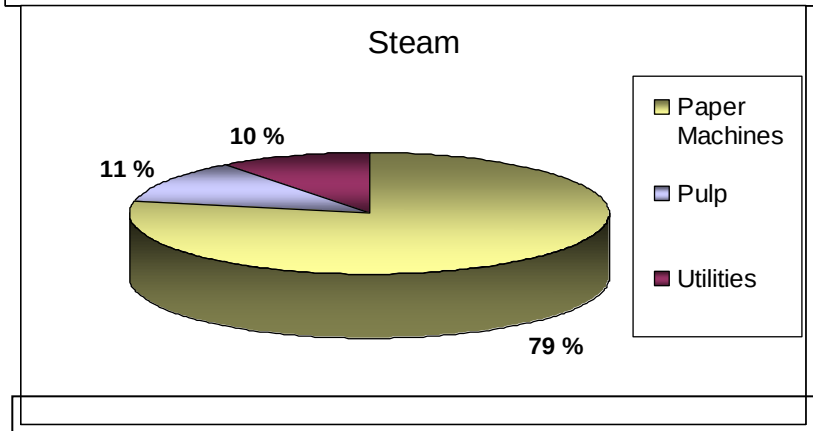
Steam

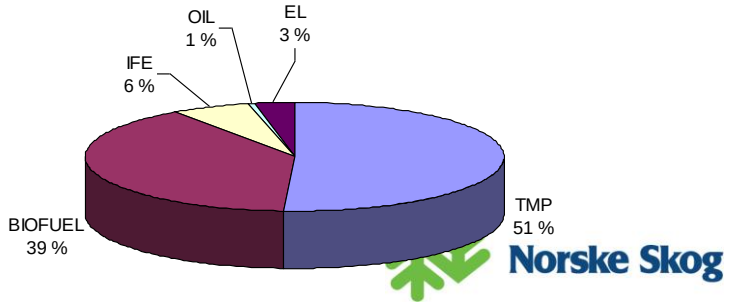
- Consumption 764 GWh
- Mainly for paper drying

Fuel mix

- 51 % from steam recovery
- 39 % from Biofuel
- 4% from marginal fuel (oil/el)
- 6% imported steam







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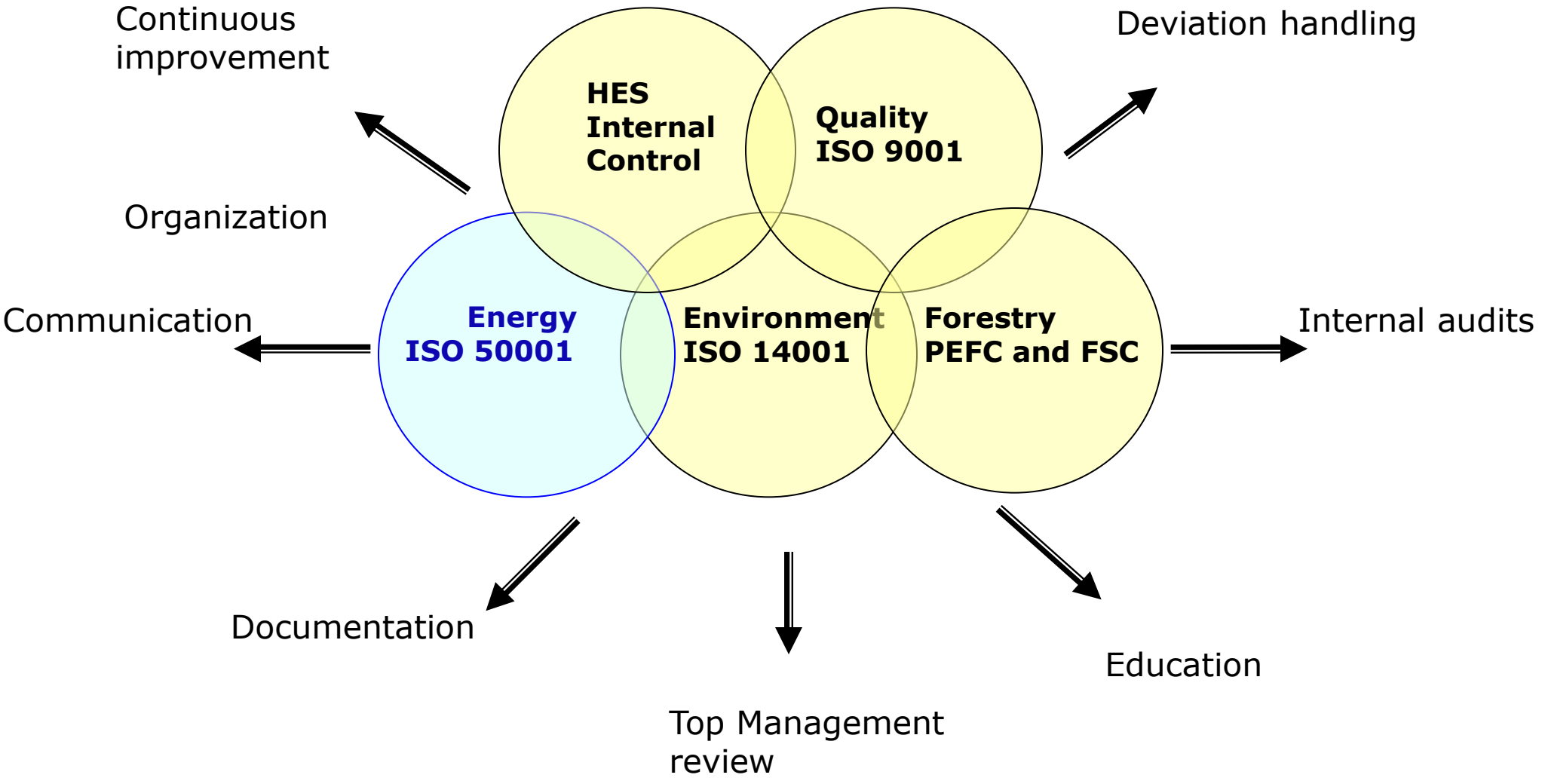
Saugbrugs Management systems



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Energy Management at Saugbrugs

DNV BUSINESS ASSURANCE

MANAGEMENT SYSTEM CERTIFICATE

Sertifikat nr.: 2006-SKM-AEN-046

Med dette bekreftes at energiledelsessystemet ved:

Norske Skog Saugbrugs AS

Halden, Norge

oppfyller kravene i:

ISO 50001:2011

Dette sertifikatet er gyldig for følgende områder / tjenester:

Utvikling, produksjon og salg av magasinpapir.

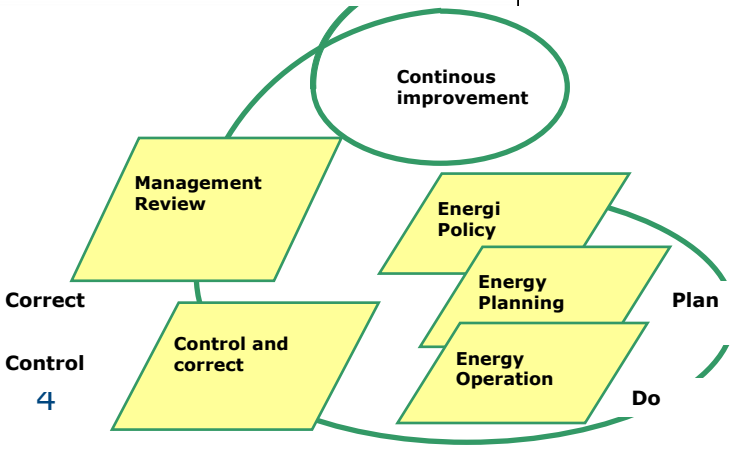
Første sertifikat gyldig fra: 14. september 2006
Sertifikatet er gyldig til: 30. september 2015

Ansvarlig for revisjonen
Astrid Broch-Due
Revisjonsleder

MGMT.SYS. RvA C 024

Sted og dato: Barendrecht, 4. oktober 2012
For akkreditert enhet: DET NORSKE VERITAS CERTIFICATION B.V., NETHERLAND
A.E. van der Kruk-Visser
Ledelsens representant

Bruddpå forutsetningene for sertifikatet, slik det fremgår av vedlegget, kan gjøre sertifikatet ugyldig.



- Norske Skog Saugbrugs first Norwegian Mill certified according to a standardized Energy Management System
- Approval September 2006
- Swedish Standard SS 627750
- European standard implemented in 2009 (EN 16001)
- ISO 50001 approved oct 2012
- DNV external auditor

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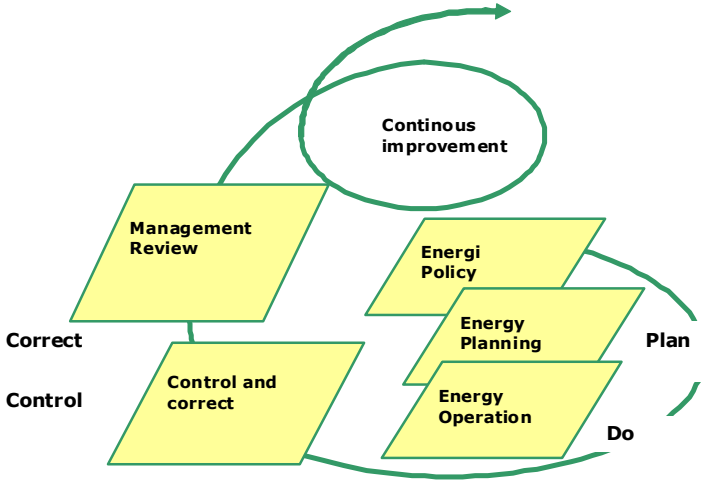
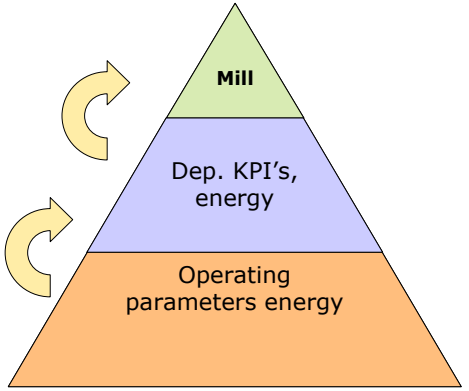
Energy efficiency Saugbrugs

- Energy planning
  - Periodic Energy surveys
  - Energy budgeting
  - Purchase of Energy
    - Equipment and goods (LCA)
  - Annual energy program
    - Electricity efficiency initiatives
    - Heat efficiency initiatives
    - Energy projects
  - Annual Management System review



- Energy operation
  - Mill KPI's
  - Department KPI's
  - Operating parameters, Energy



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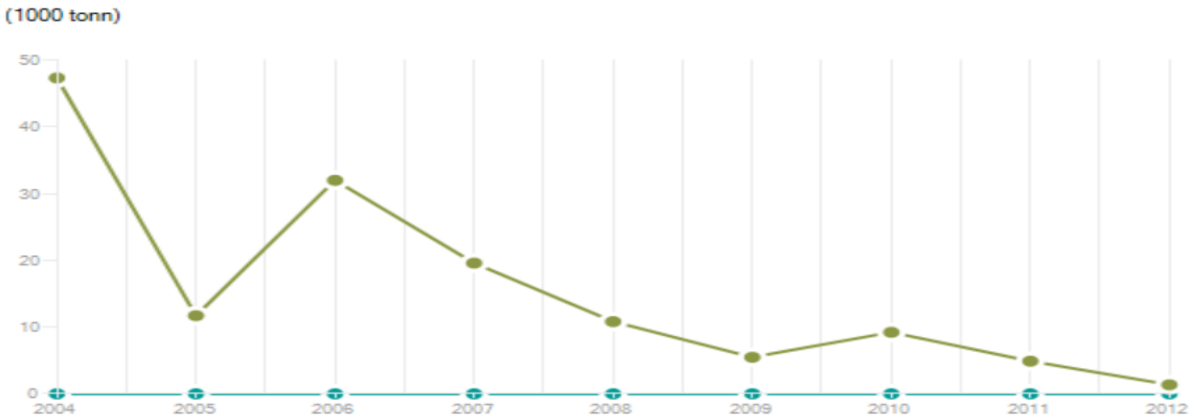
CO_2 – emissions from fossil fuel

Utslipp av Karbondioksid fossilt (CO2 (F)) (i 1000 tonn per år)

Norske Skogindustrier ASA, Saugbrugs



Norske Skogindustrier ASA, Saugbrugs : Utslipp av Karbondioksid fossilt (CO2 (F)) (i 1000 tonn per år)

År	Til luft	Til vann
2004	47,34	(I.R.)
2005	11,70	(I.R.)
2006	32,00	(I.R.)
2007	19,59	(I.R.)
2008	10,82	(I.R.)
2009	5,48	(I.R.)
2010	9,22	(I.R.)
2011	4,89	(I.R.)
2012	1,35	(I.R.)

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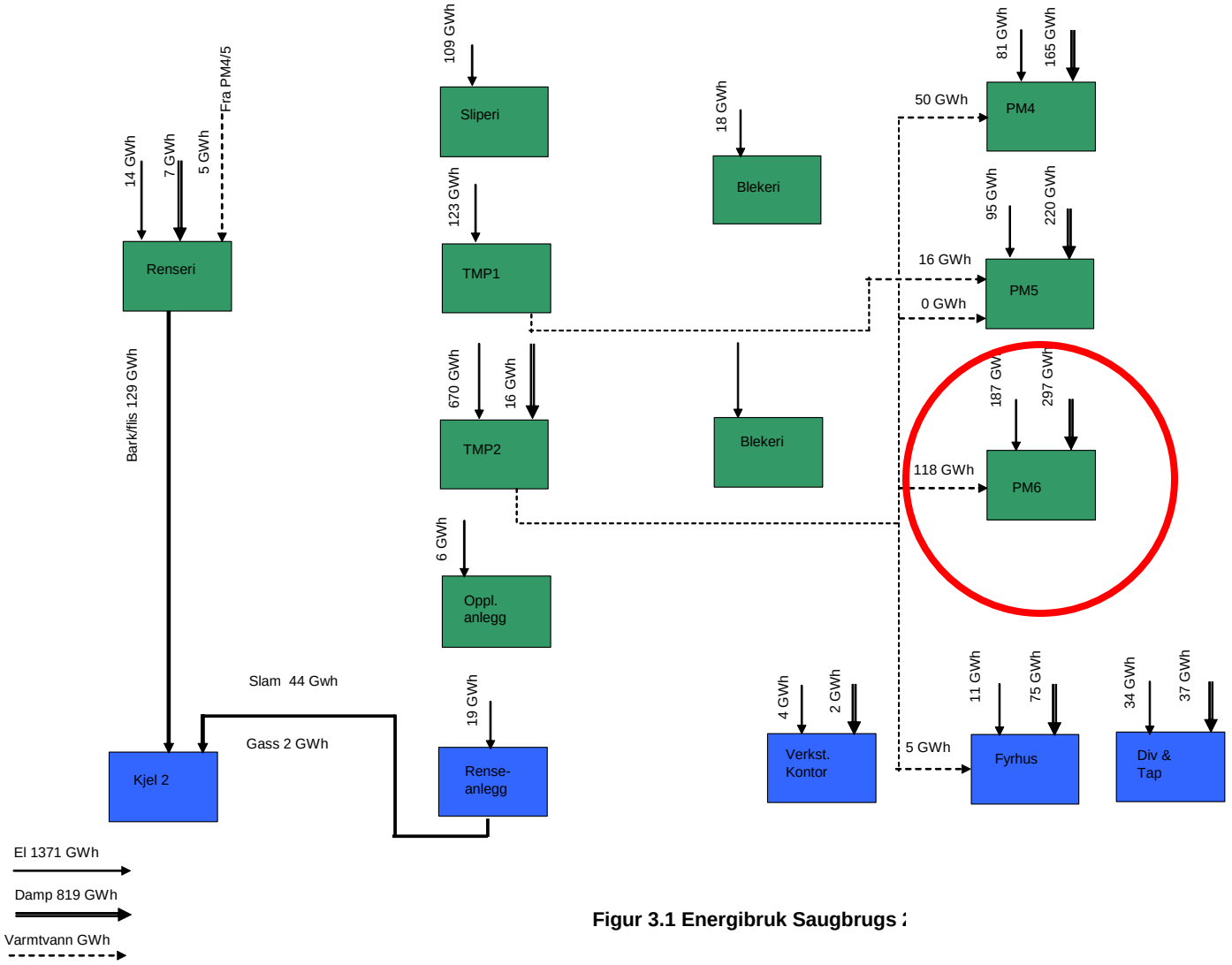
Survey, Mill total (1)



Figur 3.1 Energibruk Saugbrugs

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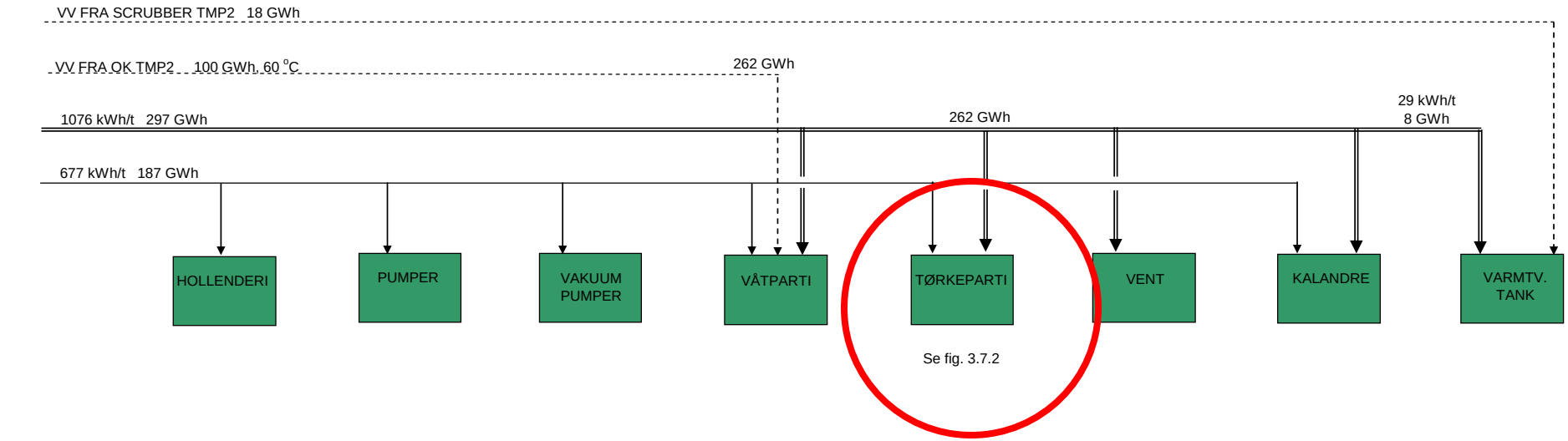
Survey, PM6 (2)



Figur 3.7.1: Oversikt over energi PM6 Saugbrugs
Produksjon 276,1 kt

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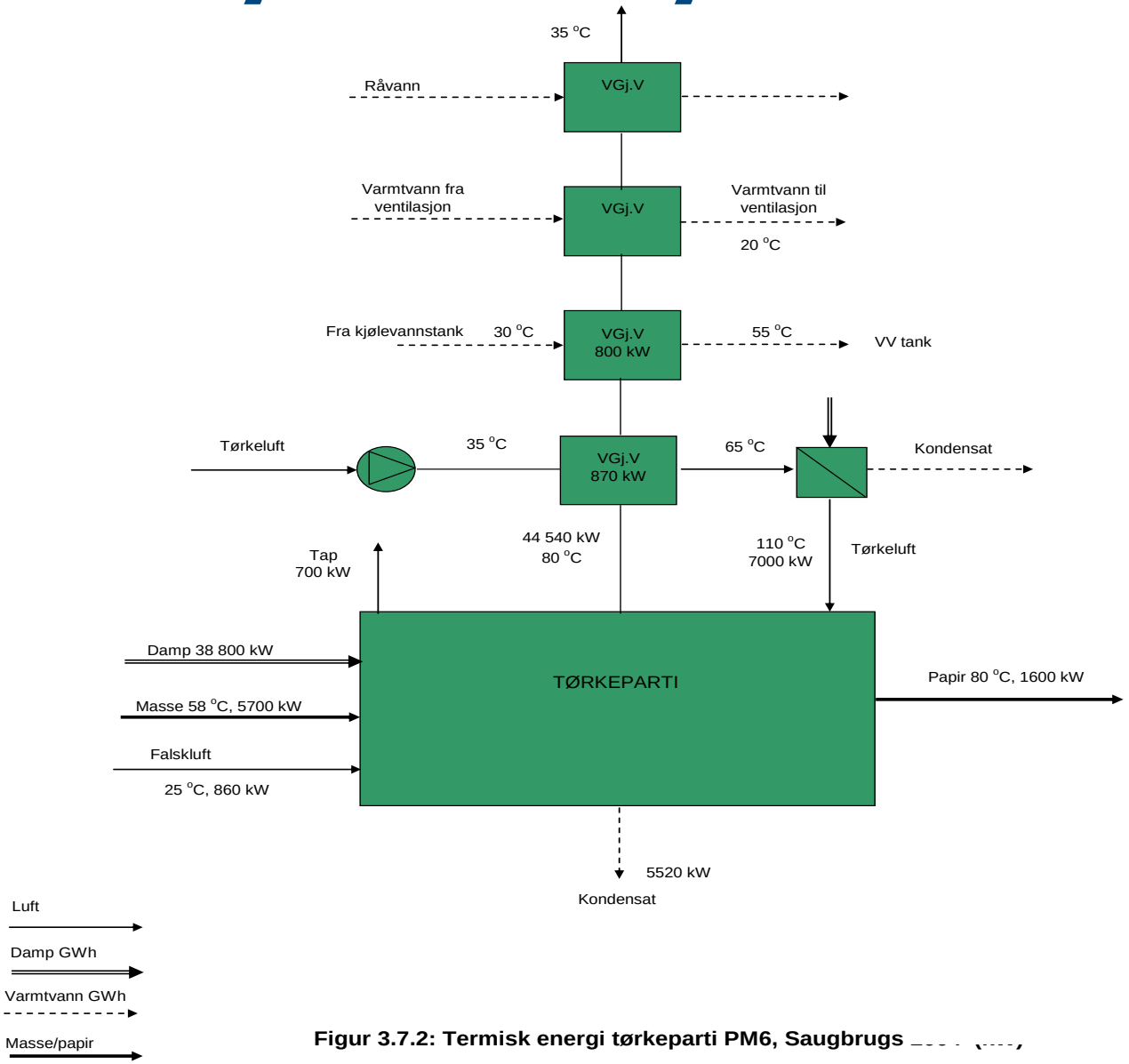
Survey PM6 Dryer section(3),



Figur 3.7.2: Termisk energi tørkeparti PM6, Saugbrugs

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