



Twinning Project IL/11

Implementation and Strengthening the Environmental Framework for
IPPC, Resource Efficiency and Eco-Management in Israel



Energy Management Beverage Sector

Workshop Manufacturer Association Israel
Tel Aviv, March 14, 2017

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Workshop Energy Management in Beverage Industry

Contribution to the Agenda ,Beverage Industry‘ (MAI)

10:00 Osnat Avital (MAI)

10:05 Horizontal Energy Management Guidance (‘mini’ EnMS)

10:20 EnMS - Implementation Tool

**10:35 EnMS – Self Assessment Tool as internal Audit
(Save costs and external administrative efforts)**

10:35 Discussion

10:50 Break

11:10 Vertical Guidance on Beverage Industry (Practical Example)

11:30 Interactive Application on Beverage Industry and Discussion

11:50 Final Discussion and Conclusion

12:00 Finish of contribution to the MAI Workshop



Interactive Application on Beverage Industry and Discussion

Identify Energy Saving Potential

Energy consumption through installed Pumps is considerable:

- Energy Consumption in kWh_{el/a} : 274.380
(second position/units and third position/category)

Energy Saving potential shows:

- The most powerful pumps have no demand dependent control, running permanently, only control by switch:on/off
- There is no load dependent control; significant portion of idling process
- Few pumps are overdimensioned and run at low load condition

Assessment:

- Exchange of several pumps to right dimension and with high- efficiency motors
- Automatic and demand control to be installed





Interactive Application on Beverage Industry and Discussion

Assessment (continue):

- All five main types of pumps:

Cooling tower pump

Boiler water Feed-in

Well water pump

Filterpump (Processing Water)

Production water (cold)

were checked and the improvement potential could achieve:

43% Energy savings

- **We will investigate the variations in usage/load/ control and by technology change what would be the impact for Energy saving**
- **This will be facilitated by the application of the Excel Implementation toolbox**





Interactive Application on Beverage Industry and Discussion

Modifying:

- Usage time
- Type of pumps and controls
- Network and system control





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Interactive Application on Beverage Industry and Discussion

Unit/Area	Category	TYPE	Year	No:	Nominal Power kW	Usage
Offices	Offices	Equipment,PC,Printer.	2006	70	0,20 kW	20%
Offices	Computers	Desktop	2015	130	0,20 kW	75%
Brewhouse	Processing	Lubricator Dust bag	2015	3	0,05 kW	75%
Offices	Offices	Elevator	2015	130	0,70 kW	20%
Offices	Lighting	Lighting	2015	200	0,04 kW	75%
Storage	Energy Supply	Chillers	2006	10	8,00 kW	75%
Pumps	Pumps	Pumps	2004	14	2,00 kW	100%
Pumps	Pumps	Pumps	2004	12	3,00 kW	100%
Brewhouse	Processing	Pasteurizer	2006	5	2,00 kW	100%
Processing	Processing	Grinding	2006	6	2,00 kW	100%
Energy Supply	Energy Supply	Chillers	2006	15	4,00 kW	100%
Pumps	Pumps	Pumps	2004	15	3,00 kW	100%
Pumps	Pumps	Pumps	2004	20	4,00 kW	100%

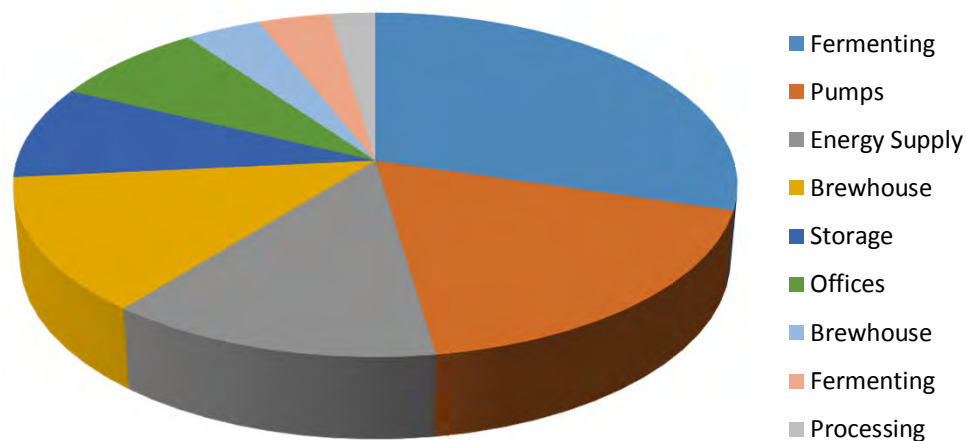




Interactive Application on Beverage Industry and Discussion

Energy use by units		
Power User		
	Energy Use in kWh_el/a	Installed Nominal Power kW_el
Fermenting	311.695	188
Pumps	190.740	189
Energy Supply	137.700	60
Brewhouse	133.954	63
Storage	91.800	80
Offices	83.589	139
Brewhouse	40.574	26
Fermenting	39.095	30
Processing	24.480	12
Gesamtergebnis	1.053.627	786

Energy Use in kWh_el/a





Interactive Application on Beverage Industry and Discussion

Further Variation in Load control:

- **Few pumps per fixed load conditions**
- **Few pumps in appropriate processes by variable speed control**





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Unit/Area	Category	TYPE	Year	No:	Nominal Power kW	Usage	Load
Offices	Offices	Equipment,PC,Printer.	2006	70	0,20 kW	20%	60%
Offices	Computers	Desktop	2015	130	0,20 kW	75%	60%
Brewhouse	Processing	Lubricator Dust bag	2015	3	0,05 kW	75%	60%
Offices	Offices	Elevator	2015	130	0,70 kW	20%	100%
Offices	Lighting	Lighting	2015	200	0,04 kW	75%	20%
Storage	Energy Supply	Chillers	2006	10	8,00 kW	75%	60%
Pumps	Pumps	Pumps	2004	14	2,00 kW	100%	90%
Pumps	Pumps	Pumps	2004	12	3,00 kW	52%	90%
Brewhouse	Processing	Pasteurizer	2006	5	2,00 kW	100%	100%
Processing	Processing	Grinding	2006	6	2,00 kW	100%	80%
Energy Supply	Energy Supply	Chillers	2006	15	4,00 kW	100%	90%
Pumps	Pumps	Pumps	2004	15	3,00 kW	93%	40%
Pumps	Pumps	Pumps	2004	20	4,00 kW	10%	30%





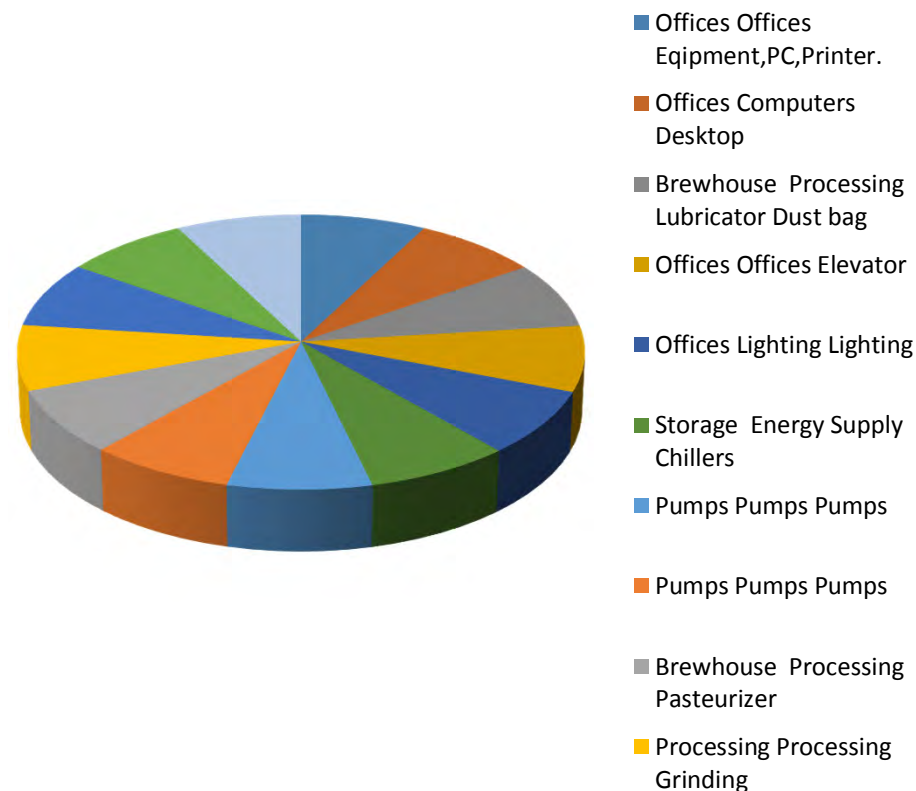
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Interactive Application on Beverage Industry and Discussion

Unit/Area	Category	TYPE	Year	No:	Nominal Power kW	Usage	Load
Offices	Offices	Equipment, PC, Printer.	2006		700,20 kW	20%	60%
Offices	Computers	Desktop	2015		1300,20 kW	75%	60%
Brewhouse	Processing	Lubricator Dust bag	2015		30,05 kW	75%	60%
Offices	Offices	Elevator	2015		1300,70 kW	20%	100%
Offices	Lighting	Lighting	2015		2000,04 kW	75%	20%
Storage	Energy Supply	Chillers	2006		108,00 kW	75%	60%
Pumps	Pumps	Pumps	2004		142,00 kW	100%	90%
Pumps	Pumps	Pumps	2004		123,00 kW	52%	90%
Brewhouse	Processing	Pasteurizer	2006		52,00 kW	100%	100%
Processing	Processing	Grinding	2006		62,00 kW	100%	80%
Energy Supply	Energy Supply	Chillers	2006		154,00 kW	100%	90%
Pumps	Pumps	Pumps	2004		153,00 kW	93%	40%
Pumps	Pumps	Pumps	2004		204,00 kW	10%	30%

Year

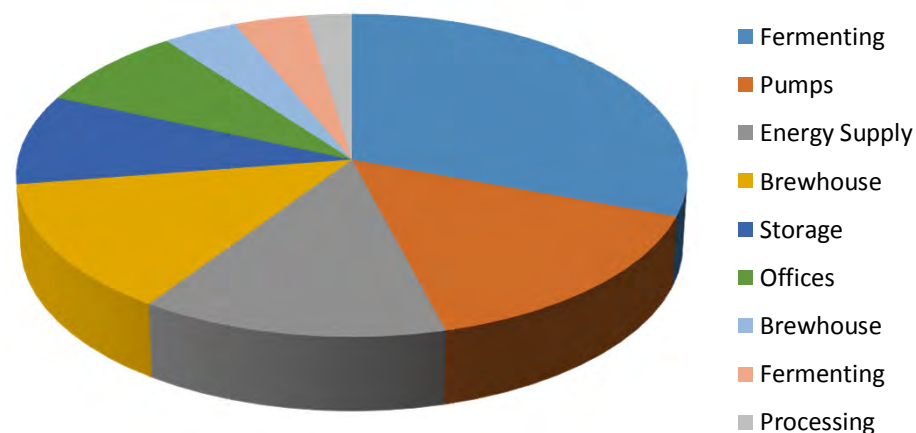




Interactive Application on Beverage Industry and Discussion

Energy use by units		
Power User	Energy Use in kWh_el/a	Installed Nominal Power kW_el
Fermenting	311.695	188
Pumps	156.029	189
Energy Supply	137.700	60
Brewhouse	133.954	63
Storage	91.800	80
Offices	83.589	139
Brewhouse	40.574	26
Fermenting	39.095	30
Processing	24.480	12
Total Result	1.018.916	786

Energieverbrauch in kWh_el/a





Interactive Application on Beverage Industry and Discussion

Savings achieved:

Pumpsystems	Actual consumption in kWh/year	Saving in kWh/year	Saving in €/ year	Investment in €
Cooling tower pump	62.577	47.439		
Boiler water Feed-in	59.229	46.842		
Well water pump	17.270	11.257		
Filterpump (Processing Water)	11.897	8.400		
Production water (cold)	5.287	4.179		
All pump systems –before: 274.380 KWh Energy Consumption	156.029 Actual	118.351 Energy Saving	18.911	60.978

Payback Time: 3 ¼ year

Return on Investment (ROI): 31 %

