



Process Step	Energy KPI	SEC Unit	Energy Type	Output Basis	Definition/Notes	Period	Energy Input	Output Quantity	Calculated SEC	Target SEC	Variance (%)	Benchmark Source
Pressing	SEC - reception & storage, washing, milling & pressing	kWh/hL	Electricity	hL produced (total)	Conveyors, tables, water pumps, washer, sorter drives, mill motor energy, press, hydraulics	Annual 2024	162,377	559,183	0.29	0.84	-65.43	European Commission (2019)
Blending	SEC - blending & transfers	kWh/hL	Electricity	hL blended	Mixers and transfer pumps	Annual 2024	147,448	682,199	0.22	0.6	-63.98	Briggs UK (2017)
Evaporation	Thermal energy per water removed	kWh_th/L water	Thermal	Litres of water removed	Boiler/steam to evaporator	Annual 2024	1,468,800	2,342,791	0.63	0.75	-15.97	AIChE (2018)
Filtration & Clarification	SEC - filtration	kWh/hL	Electricity	hL filtered	Filter skid and pumps	Annual 2024	397,469	329,536	1.21	0.13	827.81	Schroën, K. et al. (2020)
Bottling Lines	Line energy intensity	kWh/L	Electricity	Litres produced	Filler, conveyors, labeller, pasteuriser electrics	Annual 2024	568,809	30,402,577	0.02	0.04	-53.23	Osterroth & Voigt (2021)
	Thermal energy - pasteuriser	kWh/hL	Thermal	hL produced (bottles)	Heat to tunnel/flash pasteuriser	Annual 2024	1,747,810.37	304,026	5.75	13.34	-56.89	European Commission (2019)
Bottling + Canning	Compressed air production	kWh/Nm3.year	Electricity	Nm3 of compressed air produced	Allocated compressor kWh	Annual 2024	346,713	2,568,800	0.13	0.12	15.36	European Commission (2016)
Kegging Line	Line energy intensity	kWh/1,000 kegs	Electricity	1,000 kegs	Filler, conveyors	Annual 2024	137,557	371,112	0.37	0.6	-38.22	Carbon Architecture (2023)
	Compressed air use production	kWh/Nm3.year	Electricity	Nm3 of compressed air produced	Allocated compressor kWh	Annual 2024	280,228	2,156,000	0.13	0.12	11.09	European Commission (2016)
Canning Line	Line energy intensity	kWh/1,000 cans	Electricity	1,000 cans	Depalletiser, filler, seamer, conveyors pasteuriser electrics	Annual 2024	183,678	17,038	10.78	11.5	-6.26	Osterroth (2023)
	Thermal energy - pasteuriser	kWh_th/1,000 cans	Thermal	1,000 cans	Heat to can pasteuriser	Annual 2024	523,636	17,038	30.73	13.34	130.47	European Commission (2019)
Dolium (One-way PET keg) & BiB Lines	Line energy intensity	kWh/hL	Electricity	hL produced (total)	Filler drives, washer, conveyors, coder, palletiser	Annual 2024	212,248	8,853,439	0.02	0.6	-96.00	Carbon Architecture (2023)
CIP & Hot Water	CIP cycle energy	kWh_th/cycle	Thermal	CIP cycles	Heat added to CIP solution	Annual 2024	70,146	60	1169.10	752	55.47	Laing et al. (2021)
Offices	Building intensity	kWh/m2	Electricity	m2	Office meter per area	Annual 2024	134,344	1,236	108.71	95	14.43	CIBSE Benchmarking Tool
	Thermal energy intensity	kWh_th/m2	Thermal (kerosene)	m2	Kerosene use for heating	Annual 2024	454,290	1,236	367.59	120	206.33	CIBSE Benchmarking Tool
Scrumpy House	SEC - restaurant	kWh/m2	Electricity	m2	Cooking, refrigeration, HVAC (electrical loads)	Annual 2024	37,374	117	319.44	90	254.93	CIBSE Benchmarking Tool
Garage	SEC - garage (workshop)	kWh/m2	Electricity	m2	Building/lighting, small tools, vehicle lifts	Annual 2024	6,392	204	31.33	35	-10.48	CIBSE Benchmarking Tool
Shop	SEC - non-food shop (warehouse)	kWh/m2	Electricity	m2	Heating, lighting, cooling, some office appliances	Annual 2024	27,058	257	105.41	70	50.58	CIBSE Benchmarking Tool

Wastewater Plant	SEC - wastewater treatment	kWh/m3 effluent	Electricity	m3 treated	MBR + DAF (motors and control panel) + pumps	Annual 2024	62,409	65,440	0.95	1	-4.63	S Kitanou et al. (2021)
Fermentation + Tank Farms	Fermentation: Compressed air production in CIP only / Tank Farms: Air saturator + valves	kWh/Nm3.year	Electricity	Nm3 of compressed air produced	Allocated compressor kWh	Annual 2024	55	569	0.10	0.12	-17.41	European Commission (2016)
Transport & Distribution	Route efficiency	kWh/km	Fuel (diesel)	km driven	Fuel energy per kilometres driven	Annual 2024	8,184,476	2,863,320	2.86	3.6	-20.60	AECOM (2016)
Boiler House	SEC - boiler-house fuel energy per hectolitre of product	kWh/hL	Fuel (furnace flame)	hL produced	Fuel energy to the boiler house per hectolitre of product	Annual 2024	8,397,930	559,183	15.02	24.00	-37.42	European Commission (2025)
Solar Energy Generation	Specific PV yield (nstalled capacity)	kWh/kWp.year	Electricity (renewable)	kWp installed	Inverter AC output (self-consumed + exported). Read from PV generation meter; exclude battery round-trip losses.	Annual 2024	54,356	126	431.40	903.77	52.27	Expected system performance based on contractor's specifications (2023)

Energy Balance 2024				
Description		Consumption (kWh)	Consumption (MWh)	Error margin (%)
Total heat demand at the point of use / Thermal energy consumed by processes	Evaporation (steam), Bottling Lines - thermal, Canning Line - thermal, CIP & Hot Water, Offices - thermal (kerosene)	4,264,682	4264.68	(not cross-checked, demand side only)
Fuel consumption / Primary energy input	Boiler House fuel, Offices - kerosene, Transport - diesel	17,036,696	17036.70	vs. Oil delivered - no difference
Oil delivered	According to Watsons Fuel Tracker	17,036,696	17036.70	Reference
Electricity consumption	Accounted from this spreadsheet	2,892,015.4	2892.02	vs. Invoices+gen -39.9%
Electricity consumption	According to manual meter readings	2,635,655	2635.66	vs. Invoices+gen - -45.2%
Electricity purchased	British Gas Invoices	4,756,262	4756.26	Reference
Electricity generated	According to meter readings	54,356	54.36	Included in comparison above

*Conversion kWh to MWh 0.001

BAT Indicative Environmental Performance Level for SEC (MWh/hL of products) by European Commission (2019)	Benchmark range	Westons Cider
	0,02-0,05	0.04