

02 General Conditions and Boundary Conditions for stated values

Project:

Version / Alternative:

Comments concerning Operating Conditions	
Operating Condition / Plant Situation	Description / Comment
Standard week	Operating conditions are meant to represent a standardized and typical week of production. The goal is to establish a media consumption performance indicator under these conditions. Equipments or utilities having consumption of less than 1% of the total consumptions, may be neglected as being meaningless.
Nominal Speed	The Calculation for the machine(s) running at nominal speed. It does not include the line efficiency.
Efficiency factor	Efficiency factors and transport losses, i.e. for steam generation are not considered in this calculation
Production format 1	
Production format 2	
Start up	
Changeover	
CIP 1	
CIP 2	
COP	
SIP 1	
SIP 2	
SOP short	
SOP regular	
Shut Down	

General Comments	
Terminology	According to ABMI Glossary
CIP & COP	Removal of macroscopically identifiable contamination such as food residues, deposits, dust etc. proper cleaning eliminates the nutritive medium für microorganisms and is a prerequisite for proper disinfection or sterilization CIP = automatic cleaning of internal parts of pipes, vessels, etc. by liquid products (e.g. appropriate chemicals) COP = cleaning of external surfaces inside an isolator by liquid products (appropriate chemicals)
SIP & SOP	Inactivation of all pathogenic and product-damaging microbes to a level that complies with the respective hygiene requirements SIP = automatic sterilization of internal parts of pipes, vessels etc. by appropriate methods SOP = automatic sterilization of external surfaces inside an isolator by means of sterilants, disinfectants or other appropriate methods
Net Consumption Values	Consumptions Values in this consideration are supposed to be NET consumption values of the considered equipment. Internal recycling is not stated separately. Media available for other use are stated as negative values. (i.e. Compressed air available to be reinjected into a compressor that is not in the scope of supply).
Dedicated machines for energy transformation or media generation	In case dedicated machines for energy transformation or media generation (i.e. air compressors, steam generators, cooler, ...) are included in the scope of supply, it's consumption of input energy (i.e. electrical power, oil, gas, ...) will be stated in the net consumption values. In case all auxiliary equipment is part of an (existing) the infrastructure, the consumed medias are stated. Please refer also to comments about Air Compressors, Steam Generators and Hot Water.
- i.e. Air Compressors	In case a dedicated air compressor is included in the scope of supply it's electrical consumption will be stated in the net consumption values, whereas the air consumption from the customers infrastructure will be considered as air consumption.
- i.e. Steam Generator	In case a dedicated steam generator is included in the scope of supply it's consumption of primary energy will be stated in the net consumption values, whereas the steam consumption from the customers infrastructure will be considered as steam consumption.
- i.e. Cooler	In case a dedicated Cooler is included in the scope of supply it's electrical consumption will be stated in the net consumption values, whereas i.e. Glycol from the customers infrastructure will not be considered as Cooling.
Hot water	Hot water is used in different places within a plant. Per definition in this sheet the hot water is lost after it's use although it may be recycled within the plant for other purposes (i.e. hot water for CIP) To calculate the ΔT for the heat consumption for hot water delivered by the operating company the temperature of cold water 1 is used as reference. If the hot water is produced from cold water in the plant, the stated hot water consumption is zero. It is calculated as water consumption within cold water 1 and heat consumption (i.e. steam)
Heating water	Heating water is circulating in a closed loop. It is used to transfer heat.

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03 Data Input and Calculation (1/2)

Project:

Version / Alternative:

Running time per week		
Duration [h per week]		
[%]		

Production		
	format 1	format 2
Unit	Value	Value
Container size [litre per container]		
Nominal speed [container per hour]		

Media	brief description	
	Temp. [°C]	Press. [bar a]
Steam		
Fuel gas		
Fuel oil		
Heating Water		
Hot Water 1		
Hot Water 2		
Cold water 1		
Cold water 2		
Cold water 3		
Cold water 4		
Cold water 5		
Compressed Air 1		
Compressed Air 2		
Compressed Air 3		
Compressed Air 4		
Compressed Air 5		
Electrical Power		
Cooling 1		
Cooling 2		
Media	brief description	
CO2		
N2-Gas		
N2-Liquid		
NaOH		
HNO3		
Foaming agent		
H2O2		
PAA		
Wetting agent		

Please fill in Data

Net Consumption Data per hour		
Unit	Value	Value
kg/h		
m³/h		
kg/h		
MJ/h		
m³/h		
m³/h		
m³/h		
m³/h		
m³/h		
Nm³/h		
Nm³/h		
Nm³/h		
Nm³/h		
Nm³/h		
Nm³/h		
kW		
kW		
Unit	Value	Value
kg/h		
kg/h		
kg/h		
kg/h		
kg/h		
kg/h		
kg/h		
kg/h		
kg/h		
kg/h		

Non Productive Sequences per week											Sum	check:
Duration [h per week]											0	= 168
[%]											0%	= 100%

Start-up	Change-over / Stand by	Cleaning						Shut-down	No Production / No equipment running	
		CIP 1	CIP 2	COP	SIP 1	SIP 2	SOP short	SOP regular		
Duration of Cycle [h]										
Number of Cycles per Week										

Media	brief description		Net Consumption Data per Cycle											
	Temp. [°C]	Press. [bar a]	Unit	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Steam			kg per cycle											
Fuel gas			m³ per cycle											
Fuel oil			kg per cycle											
Heating Water			MJ per cycle											
Hot Water 1			m³ per cycle											
Hot Water 2			m³ per cycle											
Cold water 1			m³ per cycle											
Cold water 2			m³ per cycle											
Cold water 3			m³ per cycle											
Cold water 4			m³ per cycle											
Cold water 5			m³ per cycle											
Compressed Air 1			Nm³ per cycle											
Compressed Air 2			Nm³ per cycle											
Compressed Air 3			Nm³ per cycle											
Compressed Air 4			Nm³ per cycle											
Compressed Air 5			Nm³ per cycle											
Electrical Power			kWh per cycle											
Cooling 1			kWh per cycle											
Cooling 2			kWh per cycle											
Media	brief description		Unit	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
CO2			kg per cycle											
N2-Gas			kg per cycle											
N2-Liquid			kg per cycle											
NaOH			kg per cycle											
HNO3			kg per cycle											
Foaming agent			kg per cycle											
H2O2			kg per cycle											
PAA			kg per cycle											
Wetting agent			kg per cycle											

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03 Data Input and Calculation (2/2)

Project:

Version / Alternative:

Production Data

format 1	format 2	
		h / week
		litre / container
		container / hour
		SUM: container / week
		SUM: litre / week
		hectolitre / week

Consumption Data - Summary and Transformation

Media	brief description		Sum	Unit	total consumption					...per week		...per container		...per litre	
	Temp. [°C]	Press. [bar a]			ABMI default factors	adopted factor	Unit	converted value	Unit	sum of converted values	Unit	converted value	Unit	converted value	Unit
Steam				kg / week	2.1 0- 3.05		MJ/kg		MJ / week		GJ / week	MJ / container	MJ / hectolitre		
Fuel gas				m³ / week	36 - 41		MJ/m³								
Fuel oil				kg / week	36 - 42		MJ/kg								
Heating Water				MJ / week	1		MJ / MJ								
Hot Water 1				m³ / week	ΔT [°K] *		q [GJ/week] = v [m³/week] * ΔT [°K] * 4.2 [kJ/(l*°K)] * 0,001 (GJ*l)/(kJ/m³)								
Hot Water 2				m³ / week	ΔT [°K] *										
Cold water 1				m³ / week							m³ / week	litre / container	litre / litre		
Cold water 2				m³ / week											
Cold water 3				m³ / week											
Cold water 4				m³ / week											
Cold water 5				m³ / week											
Compressed Air 1				Nm³ / week	0.10 - 0.20		KWh / Nm³		kWh / week	3,6 MJ / kWh	MJ / week	MJ / container	MJ / hectolitre		
Compressed Air 2				Nm³ / week	for 8 bar (abs)		KWh / Nm³								
Compressed Air 3				Nm³ / week			KWh / Nm³								
Compressed Air 4				Nm³ / week	0.19 - 0.40		KWh / Nm³								
Compressed Air 5				Nm³ / week	for 40 bar (abs)		KWh / Nm³								
Electrical Power				kWh / week	1		kWh / kWh								
Cooling 1				kWh / week	3.6 - 4.0		kWh / MJ								
Cooling 2				kWh / week	3.6 - 4.0		kWh / MJ								
Media	brief description		Sum	Unit											
CO2				kg / week	(no conversion)										
N2-Gas				kg / week											
N2-Liquid				kg / week											
NaOH				kg / week											
HNO3				kg / week											
Foaming agent				kg / week											
H2O2				kg / week											
PAA				kg / week											
Wetting agent				kg / week											

Please fill in Data

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04 Ecological Summary



Association of the Beverage
Machinery Industry

Project:

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Electrical Energy	Water	Heat
[MJ / hectolitre]	[litre / litre]	[MJ / hectolitre]

The consumption values of other Media will be stated separately