MOBILE
COMPRESSED AIR

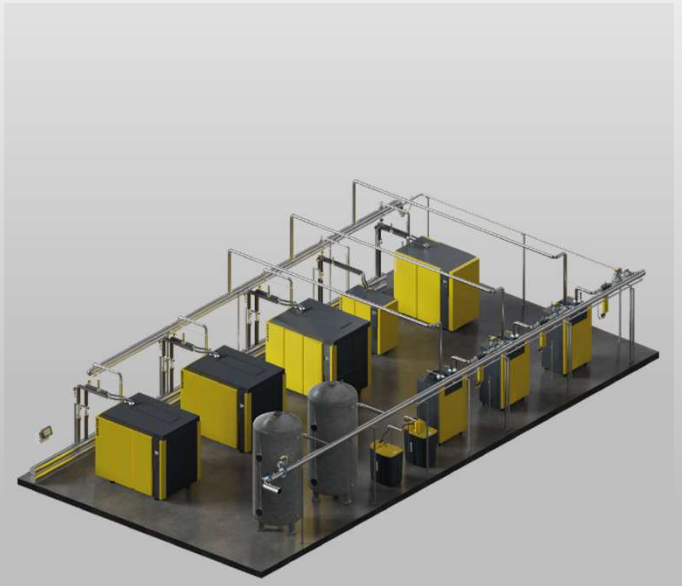
CCC Facility Services

CCC Facility Services Pty Ltd

SAMPLE ONLY

KESS 4.0 Report

Energy efficient compressed air solutions
Conducted by Mobile Compressed Air



KESS 4.0 Report

Contents

Requirements analysis

Scope conditions

Analysis Period	30/06/2025, Mo 11:17	⇒	07/07/2025, Mo 11:17

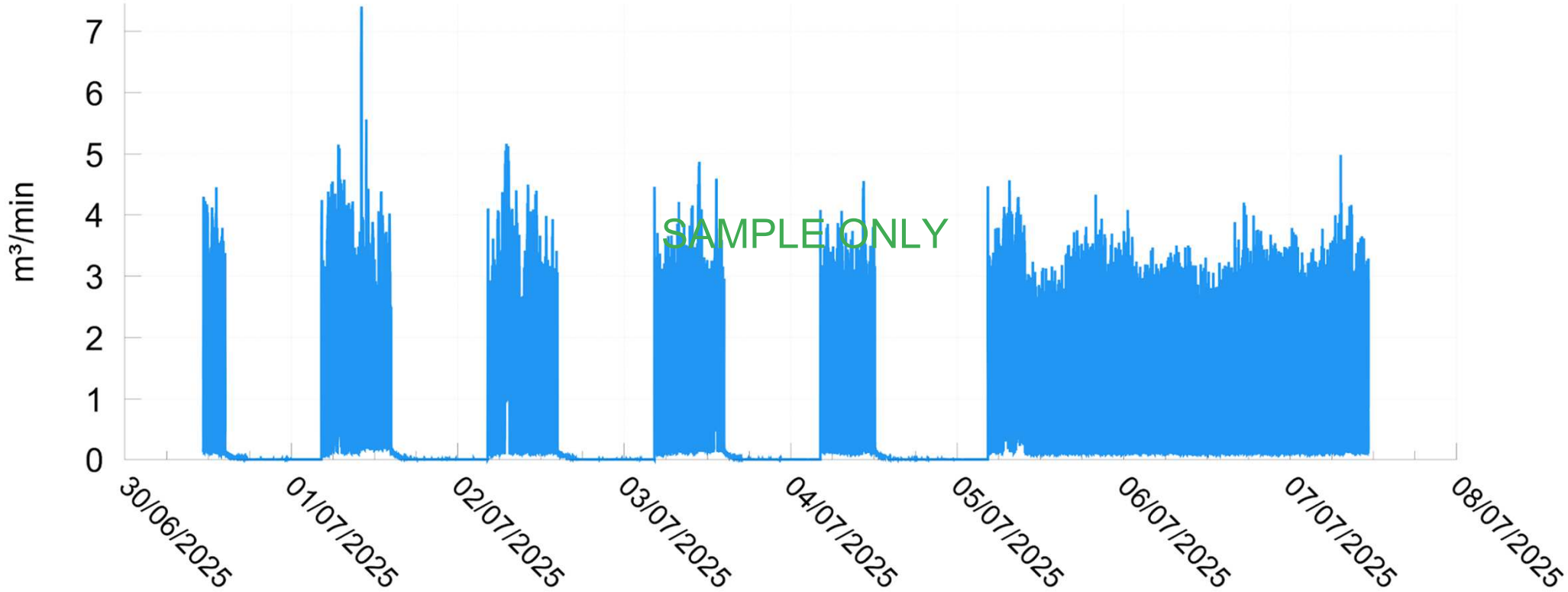
Working weeks per year	52	weeks
Projected annual consumption of compressed air	195,682	m^3

Electricity price	0.20	AUD/kWh
CO_2 emission factor	470	g/kWh

Maximum allowed pressure	7.50	bar(g)
Minimum required pressure	6.00	bar(g)

Compressed air consumption

Volume flow during analysis period - 30/06/2025 - 07/07/2025



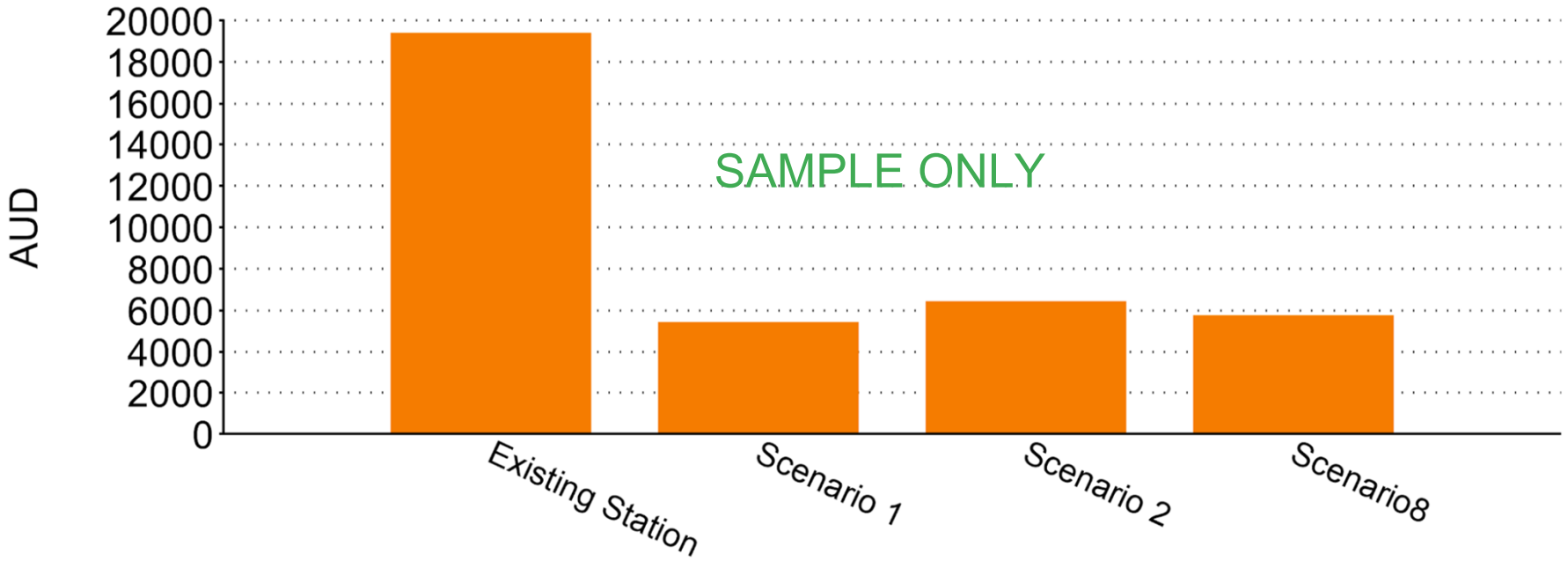
Solution comparison

Table

Scenario			FAD	V_{Eff}	Differential pressure across air treatment	Control	$E_{\sum}$	Energy costs	CO_2	P_{Spec}
			m³/min	m³	bar		kWh	AUD	t	kW/(m³/min)
Existing Station	☐	☐	10.29	1.1	0.0		97,055	19,411	45.6	29.76
Scenario 1	☑	☐	3.50	3.1	0.0	Local	27,192	5,438	12.8	8.33
Scenario 2	☐	☐	5.04	3.1	0.0	Local	32,206	6,441	15.1	9.87
Scenario8	☑	☐	6.00	3.1	0.0	Local	28,817	5,763	13.5	8.83

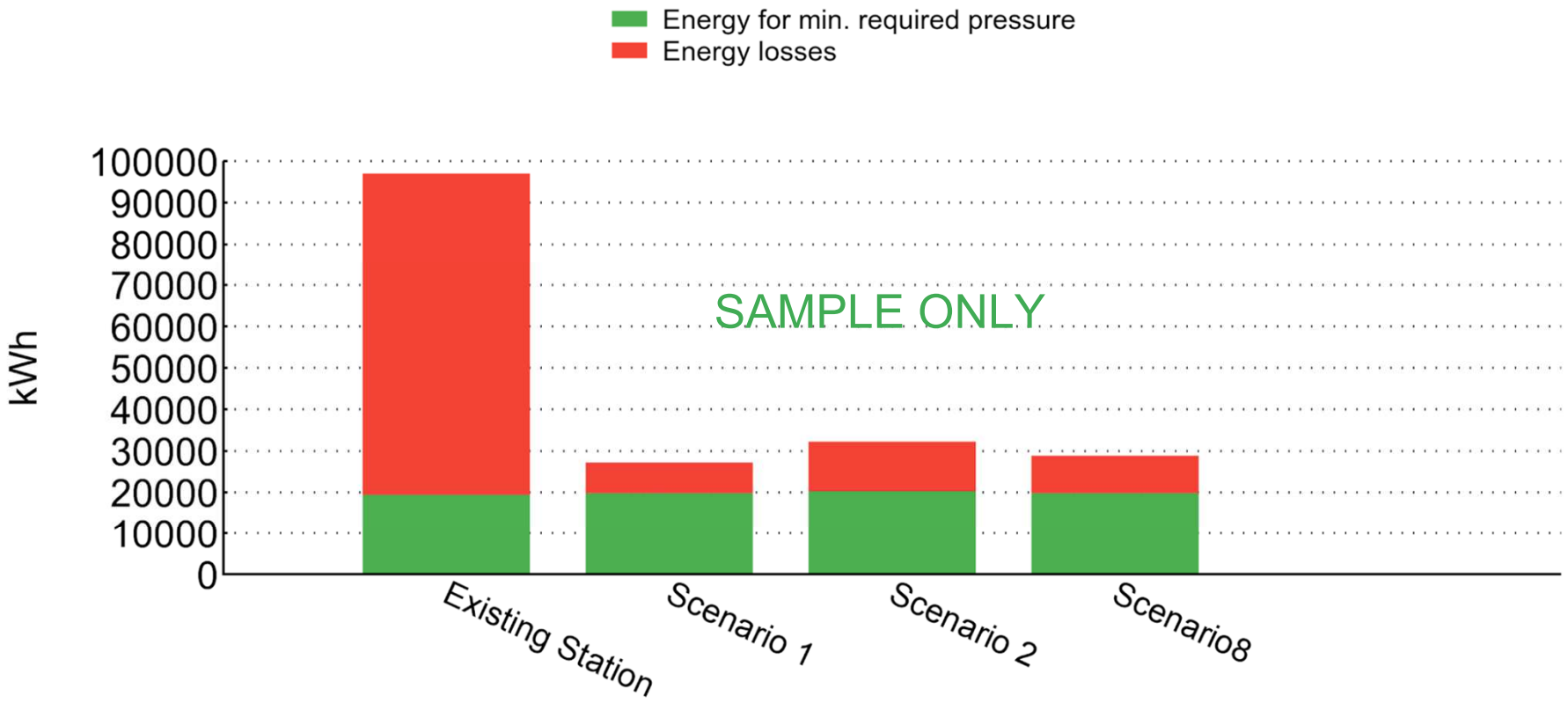
Solution comparison

Energy costs



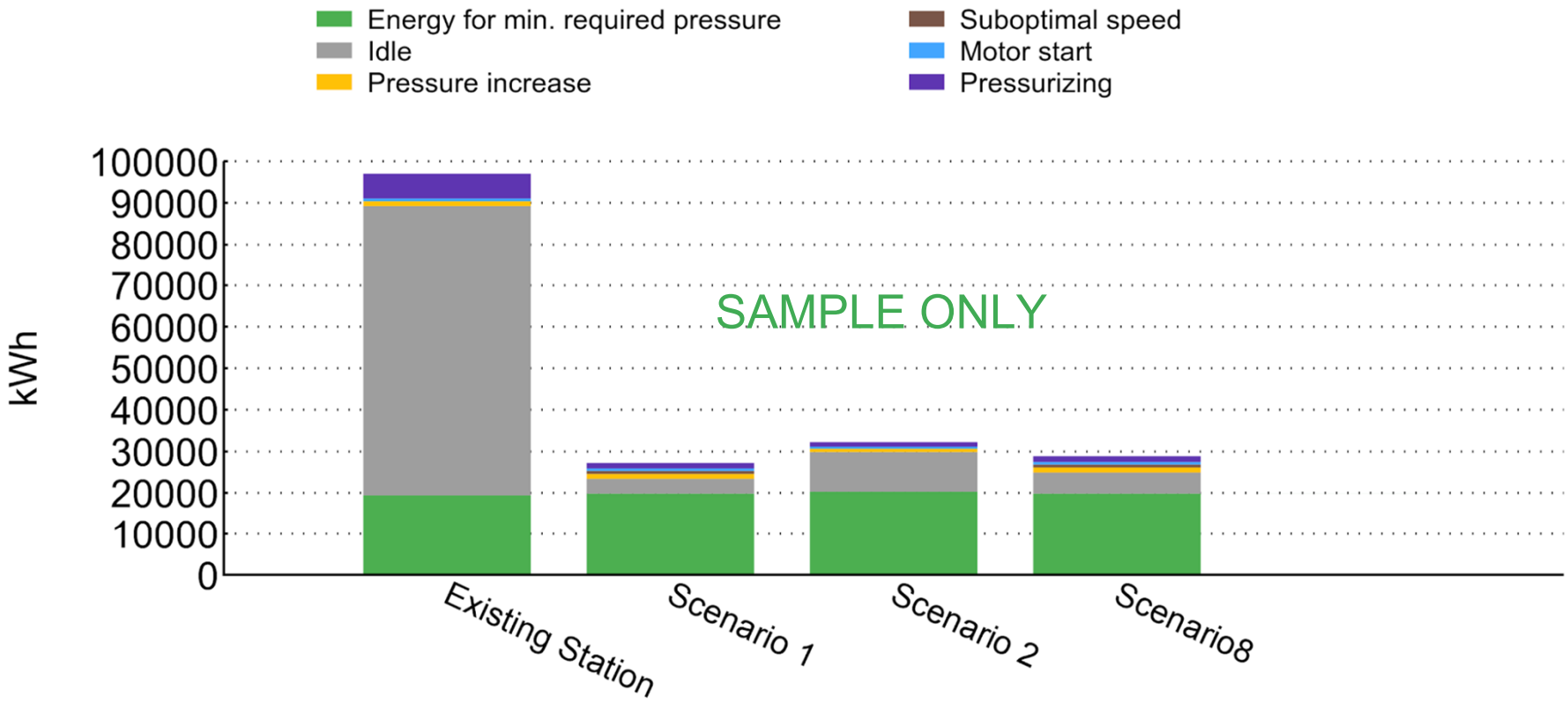
Solution comparison

Energy overview



Solution comparison

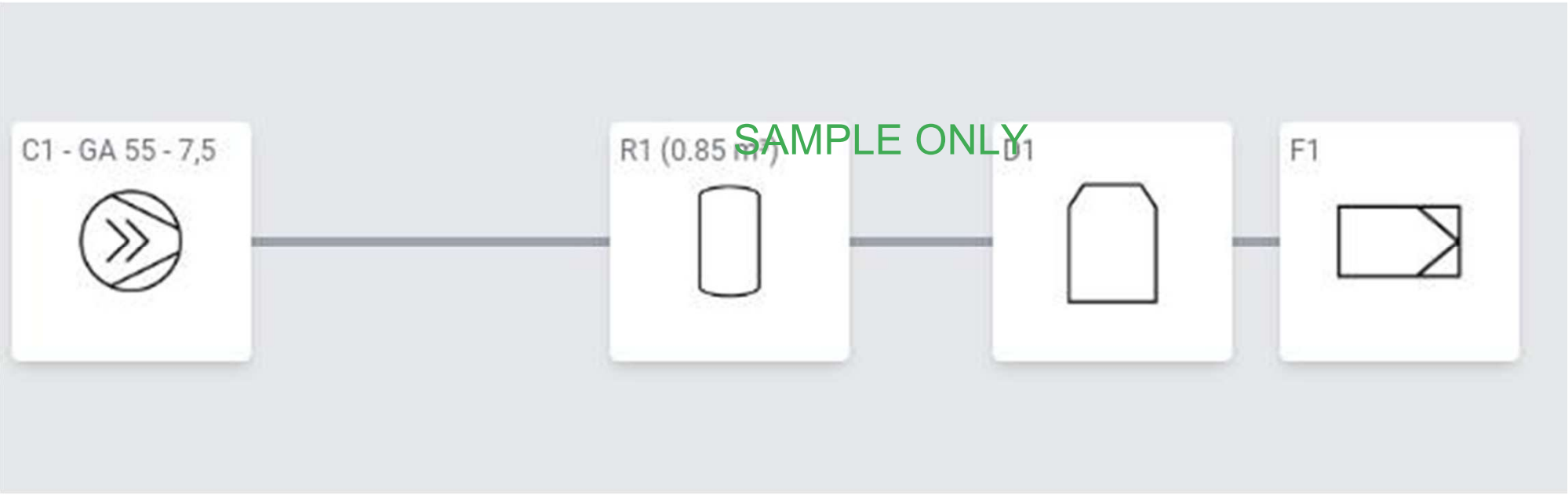
Energy distribution



System description

Existing Station

Process flow diagram

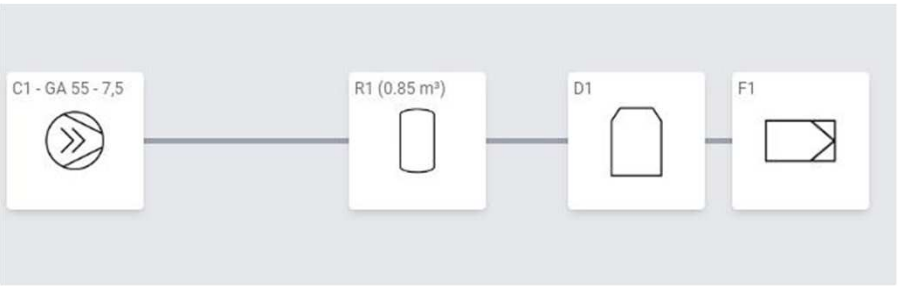


System description

Existing Station

Max. delivery volume flow at max. pressure	10.29	m³/min
Effective buffer volume	1.15	m³
Differential pressure via treatment	0.0	bar
Control method		
With variable speed compressors		
With water cooled compressors		

Import from ADA 4.0



El. energy consumption per year	**97,055 kWh**
El. energy costs per year	**19,411 AUD**
CO_2 equivalent per year	**45.6 t**
Specific power	**29.76 kW/(m³/min)**
Energy savings per year	**0 kWh**
Energy costs savings per year	**0 AUD**

System description

Existing Station

Utilized compressors - Datasheet values

	Manufacturer	Sales type	YOP	p_{Max}	P @ p_{Max}	FAD @ p_{Max}	P_{Spec} @ p_{Max}	P_{Idle}
				bar(g)	kW	m³/min	kW/(m³/min)	kW
C1	Compressor 1	GA 55 - 7,5	2003	7.50	67.70	10.29	6.579	15.10

System description

Existing Station

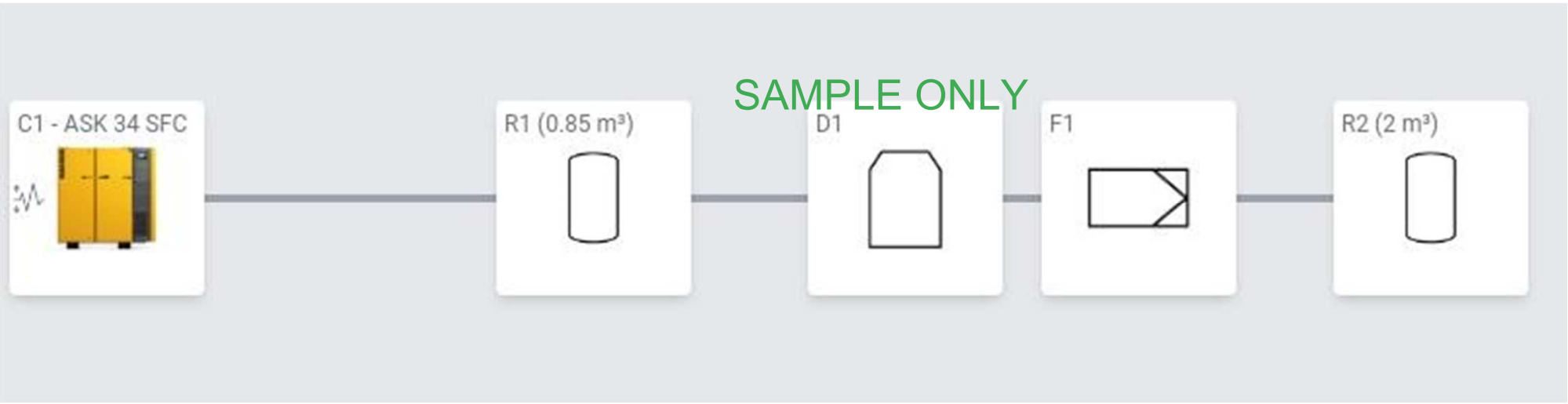
Utilized compressors - Simulation values

	Manufacturer	Sales type	YOP	t_{Load}	t_{Idle}	Load energy	Idle energy	Total energy	Delivered volume	P_{Spec}
				h	h	kWh	kWh	kWh	m³	kW/(m³/min)
C1	Compressor 1	GA 55 - 7,5	2003	316	4,628	20,561	76,494	97,055	195,683	29.76

System description

Scenario 1

Process flow diagram

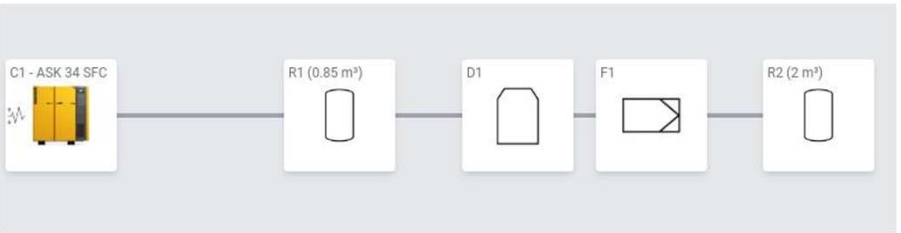


System description

Scenario 1

Max. delivery volume flow at max. pressure	3.50	m³/min
Effective buffer volume	3.15	m³
Differential pressure via treatment	0.0	bar
Control method	Local	
With variable speed compressors	☑	
With water cooled compressors	☐	

ASK34SFC + 2m3 Tank



El. energy consumption per year	**27,192 kWh**
El. energy costs per year	**5,438 AUD**
CO_2 equivalent per year	**12.8 t**
Specific power	**8.33 kW/(m³/min)**
Energy savings per year	**69,863 kWh**
Energy costs savings per year	**13,973 AUD**

System description

Scenario 1

Utilized compressors - Datasheet values

	Manufacturer	Sales type	YOP	p_{Max}	P @ p_{Max}	FAD @ p_{Max}	P_{Spec} @ p_{Max}	P_{Idle}
				bar(g)	kW	m³/min	kW/(m³/min)	kW
C1	KAESER	ASK 34 SFC	2025	8.00	24.40	3.50	6.971	2.60

System description

Scenario 1

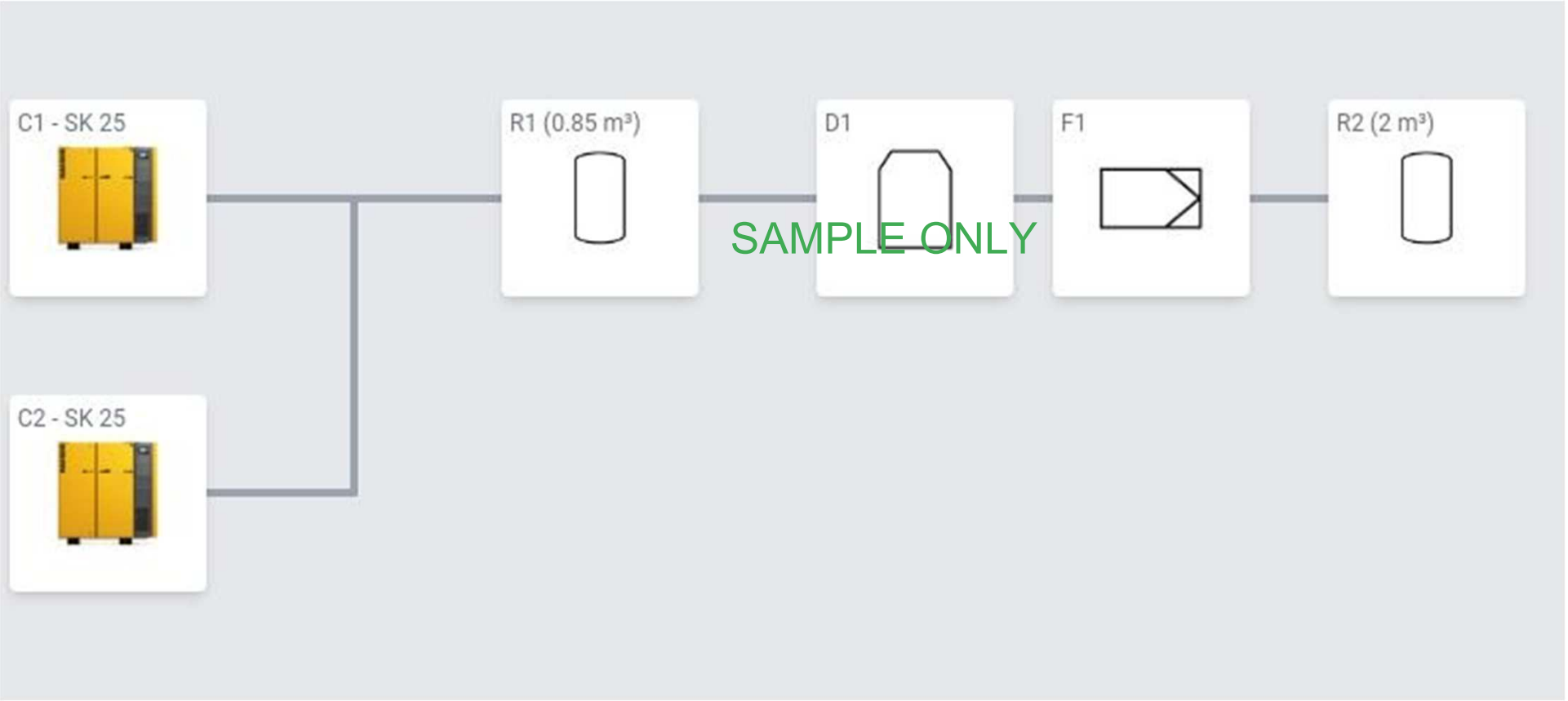
Utilized compressors - Simulation values

	Manufacturer	Sales type	YOP	t_{Load}	t_{Idle}	Load energy	Idle energy	Total energy	Delivered volume	P_{Spec}
				h	h	kWh	kWh	kWh	m³	kW/(m³/min)
C1	KAESER	ASK 34 SFC	2025	1,365	1,494	21,722	5,470	27,192	195,756	8.33

System description

Scenario 2

Process flow diagram

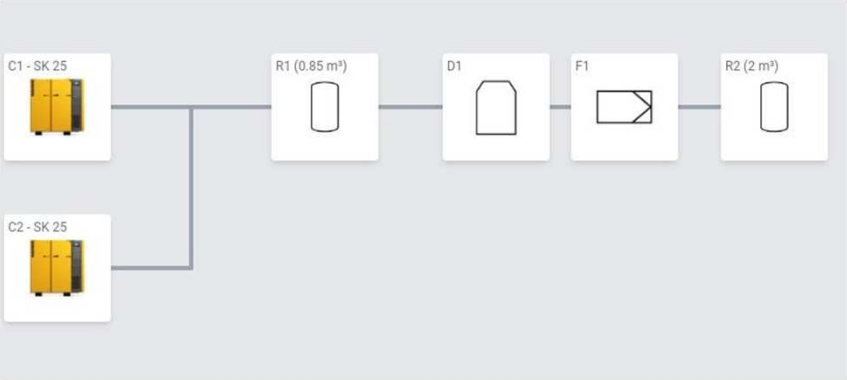


System description

Scenario 2

Max. delivery volume flow at max. pressure	5.04	m³/min
Effective buffer volume	3.15	m³
Differential pressure via treatment	0.0	bar
Control method	Local	
With variable speed compressors		
With water cooled compressors		

2xSK25 with additional 2m3 Tank



El. energy consumption per year	**32,206**	**kWh**
El. energy costs per year	**6,441**	**AUD**
CO_2 equivalent per year	**15.1**	**t**
Specific power	**9.87**	**kW/(m³/min)**
Energy savings per year	**64,849**	**kWh**
Energy costs savings per year	**12,970**	**AUD**

System description

Scenario 2

Utilized compressors - Datasheet values

	Manufacturer	Sales type	YOP	p_{Max}	P @ p_{Max}	FAD @ p_{Max}	P_{Spec} @ p_{Max}	P_{Idle}
				bar(g)	kW	m³/min	kW/(m³/min)	kW
C1	KAESER	SK 25	2023	8.00	17.20	2.52	6.825	4.60
C2	KAESER	SK 25	2023	8.00	17.20	2.52	6.825	4.60

System description

Scenario 2

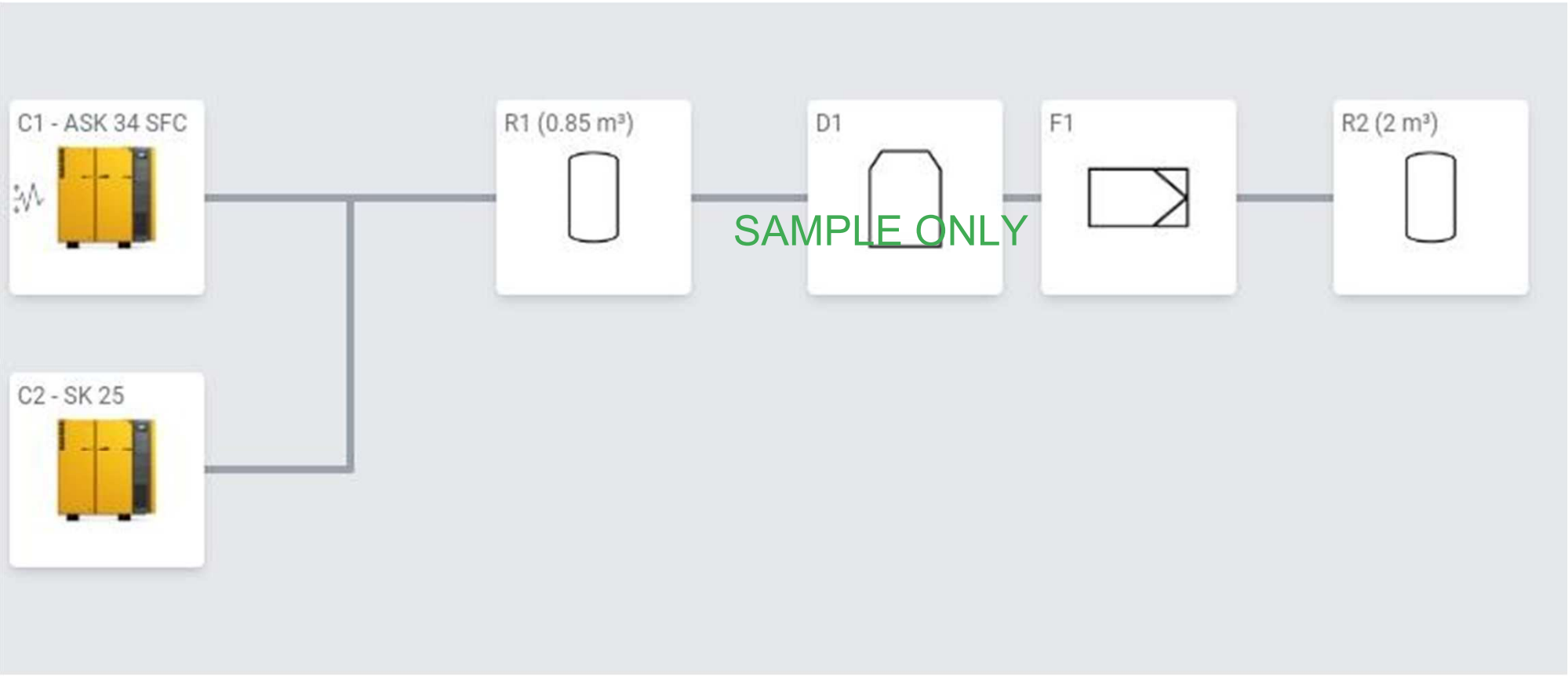
Utilized compressors - Simulation values

	Manufacturer	Sales type	YOP	t_{Load}	t_{Idle}	Load energy	Idle energy	Total energy	Delivered volume	P_{Spec}
				h	h	kWh	kWh	kWh	m³	kW/(m³/min)
C1	KAESER	SK 25	2023	1,262	2,190	20,616	10,980	31,596	191,394	9.90
C2	KAESER	SK 25	2023	28	28	457	153	610	4,322	8.47

System description

Scenario8

Process flow diagram

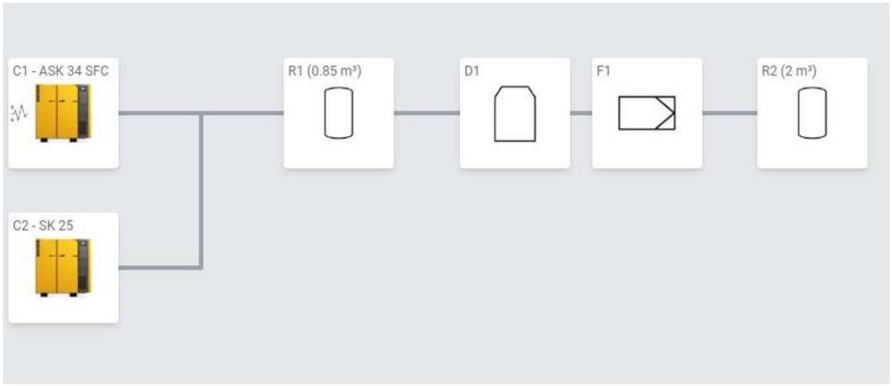


System description

Scenario8

Max. delivery volume flow at max. pressure	6.00	m³/min
Effective buffer volume	3.15	m³
Differential pressure via treatment	0.0	bar
Control method	Local	
With variable speed compressors	☑	
With water cooled compressors	☐	

ASK34SFC+ SK25 + 2m3 Tank



El. energy consumption per year	**28,817**	**kWh**
El. energy costs per year	**5,763**	**AUD**
CO_2 equivalent per year	**13.5**	**t**
Specific power	**8.83**	**kW/(m³/min)**
Energy savings per year	**68,238**	**kWh**
Energy costs savings per year	**13,648**	**AUD**

System description

Scenario8

Utilized compressors - Datasheet values

	Manufacturer	Sales type	YOP	p_{Max}	P @ p_{Max}	FAD @ p_{Max}	P_{Spec} @ p_{Max}	P_{Idle}
				bar(g)	kW	m³/min	kW/(m³/min)	kW
C1	KAESER	ASK 34 SFC	2025	8.00	24.40	3.50	6.971	2.60
C2	KAESER	SK 25	2010	8.00	17.20	2.50	6.880	4.60

System description

Scenario8

Utilized compressors - Simulation values

	Manufacturer	Sales type	YOP	t_{Load}	t_{Idle}	Load energy	Idle energy	Total energy	Delivered volume	P_{Spec}
				h	h	kWh	kWh	kWh	m³	kW/(m³/min)
C1	KAESER	ASK 34 SFC	2025	1,387	2,078	21,718	7,063	28,781	195,429	8.84
C2	KAESER	SK 25	2010	2	0	33	3	36	312	6.85

Legend

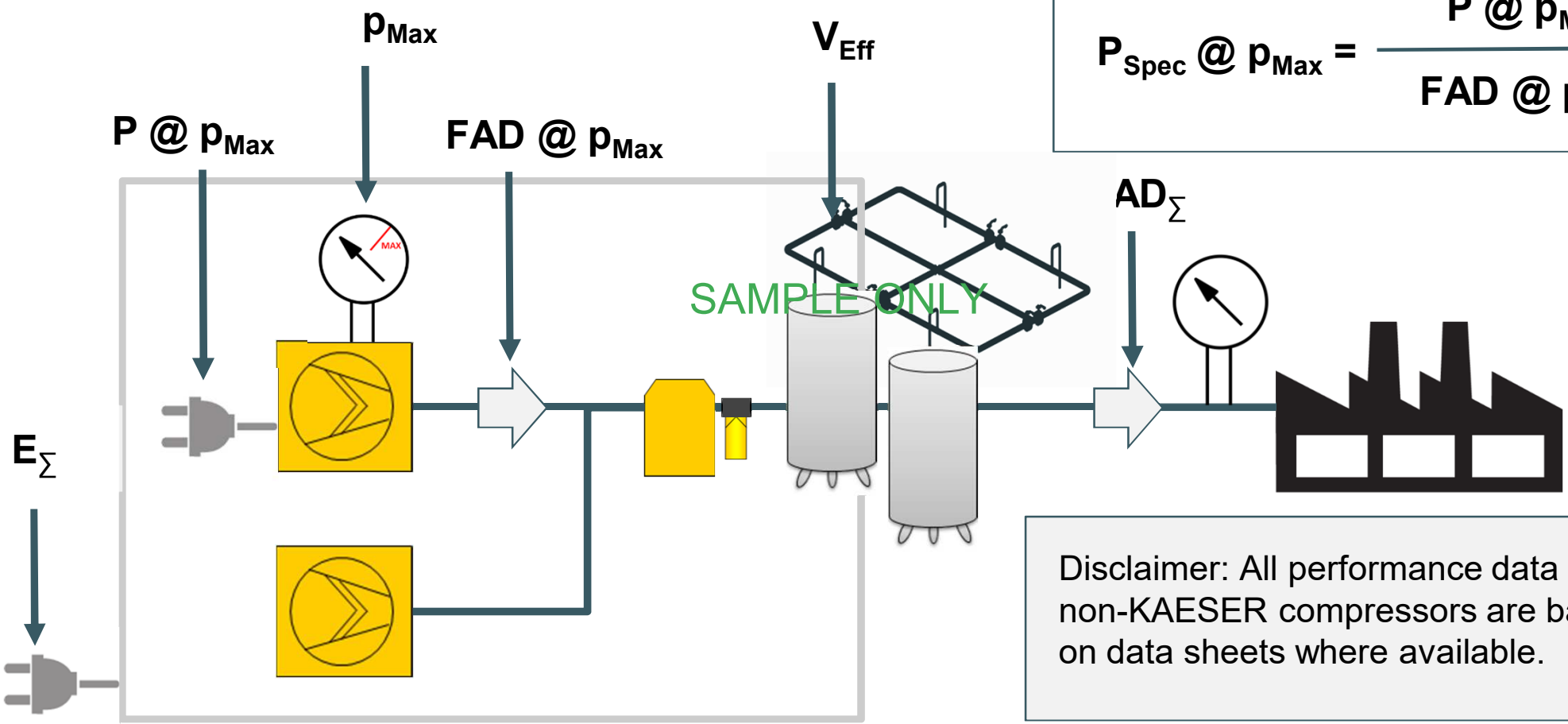
Part 1

p_{Max}	Maximum pressure on which a compressor can be operated
P @ p_{Max}	Electrical power consumption of a complete compressor during load at p_Max
FAD @ p_{Max}	Delivery volume flow of a compressor at p_Max
P_{Spec} @ p_{Max}	Specific power consumption of a compressor at p_Max
P_{Idle}	Electrical power consumption of a complete compressor during idling.
t_{Load}	Load time of a compressor
t_{Idle}	Idle time of a compressor
	The scenario has at least one compressor with variable speed
	The scenario has at least one compressor with water cooling
FAD_{Σ}	Total delivery volume flow of a considered compressed air station
V_{Eff}	Effective buffer volume of a considered compressed air station
E_{Σ}	Total electrical energy consumption of all compressors in a station calculated up on one year
P_{Spec}	Specific power of compressed air generation

Legend

Part 2

$$P_{Spec} @ p_{Max} = \frac{P @ p_{Max}}{FAD @ p_{Max}}$$



Disclaimer: All performance data of non-KAESER compressors are based on data sheets where available.

MOBILE
COMPRESSED AIR

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