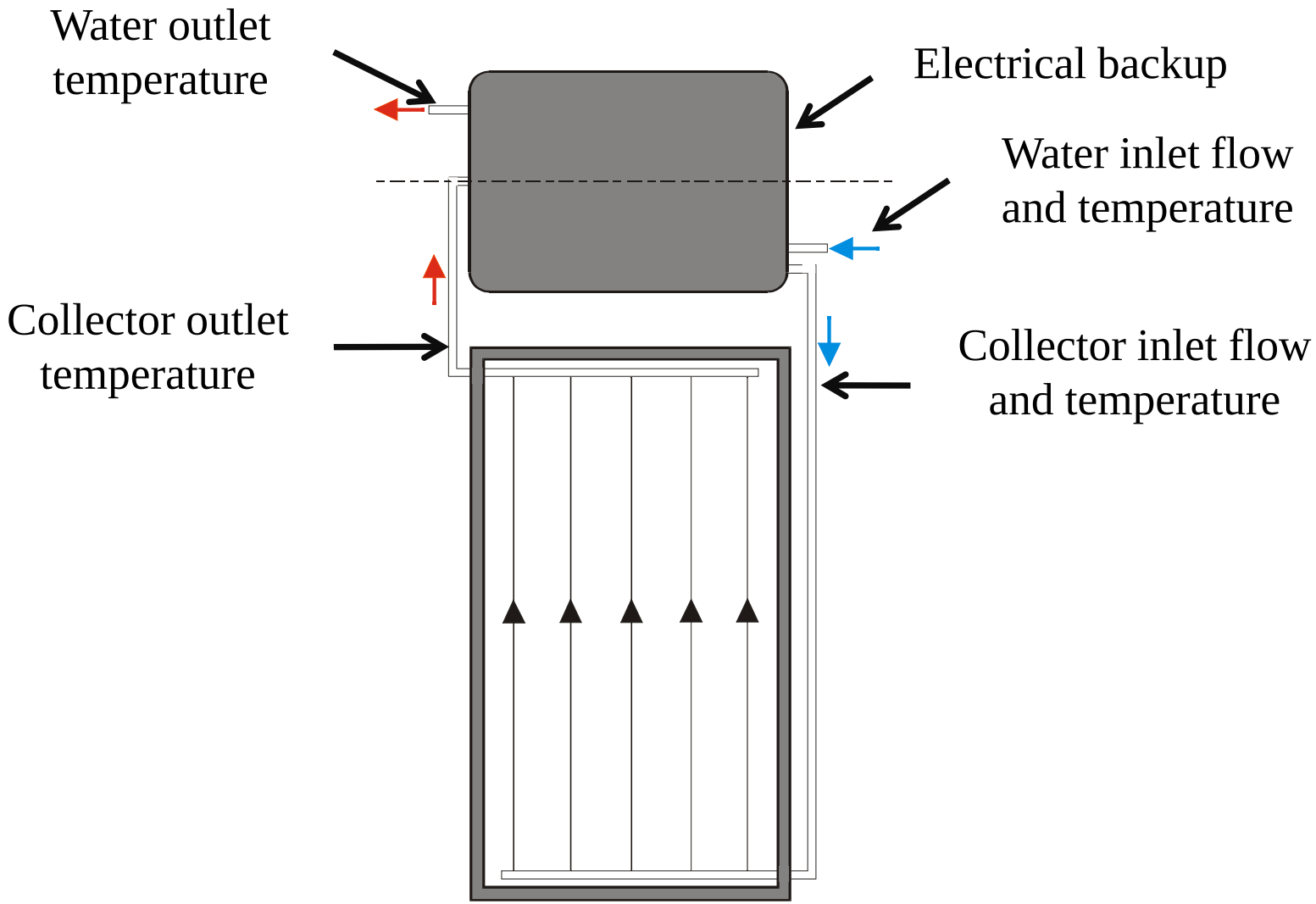
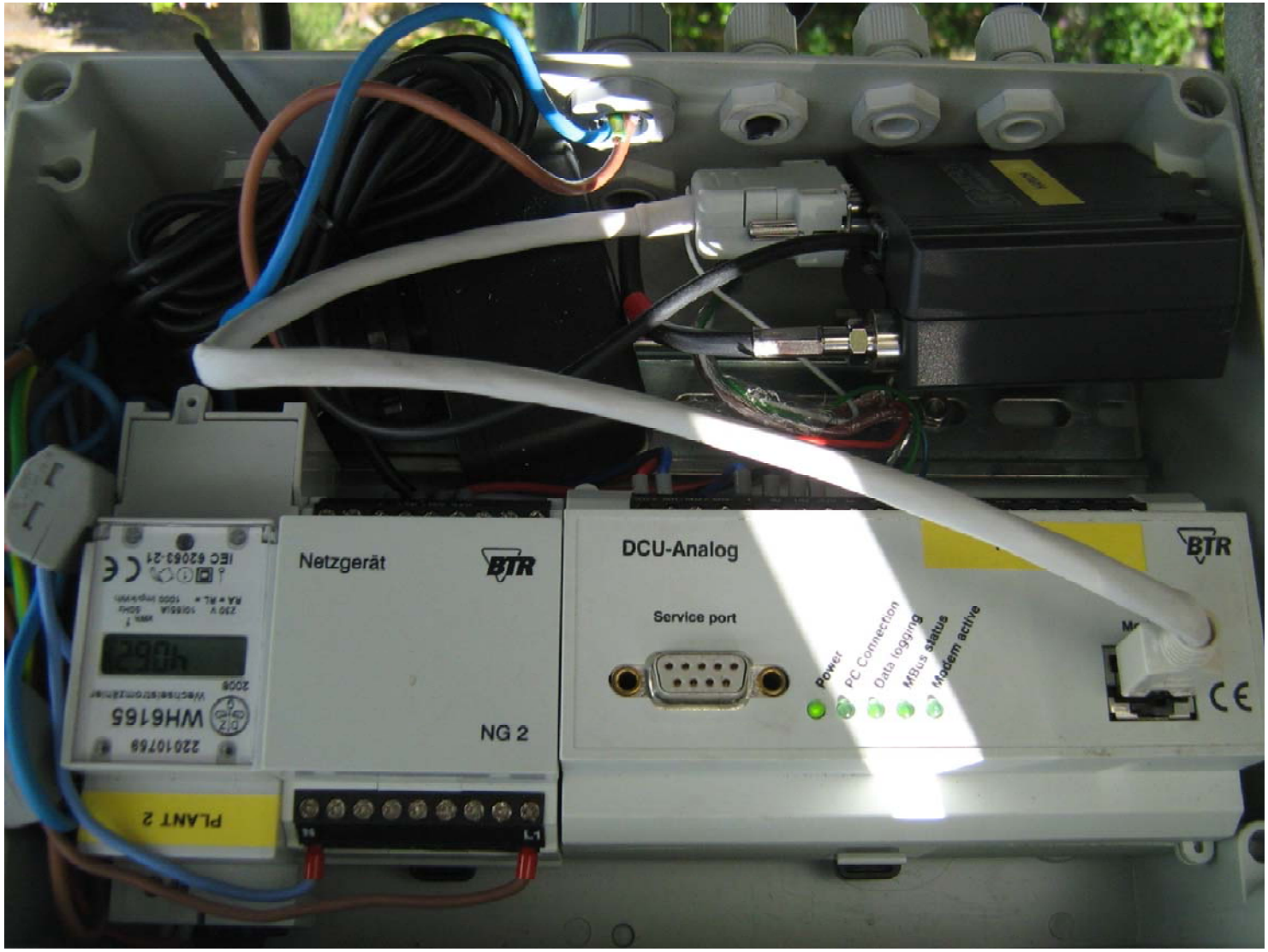
System 1 in Tokai

300 l, 4 m^2, indirect system

Probe placements

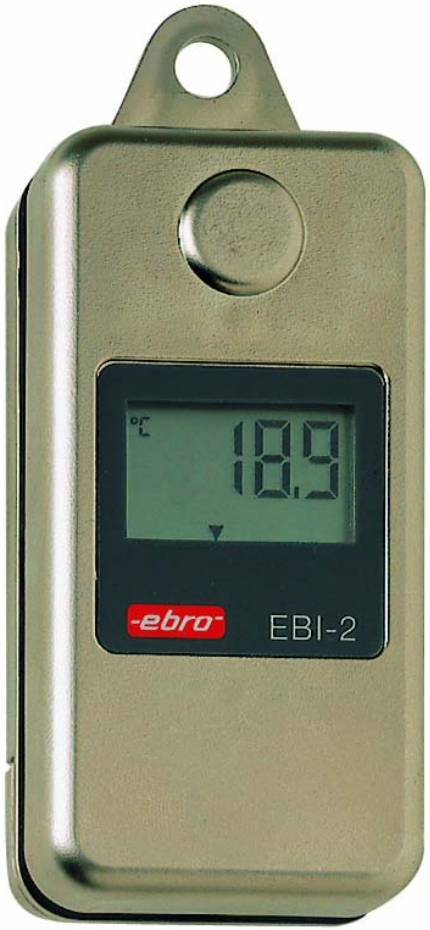


Monitoring equipment: DCU and modem



Flow and temperature

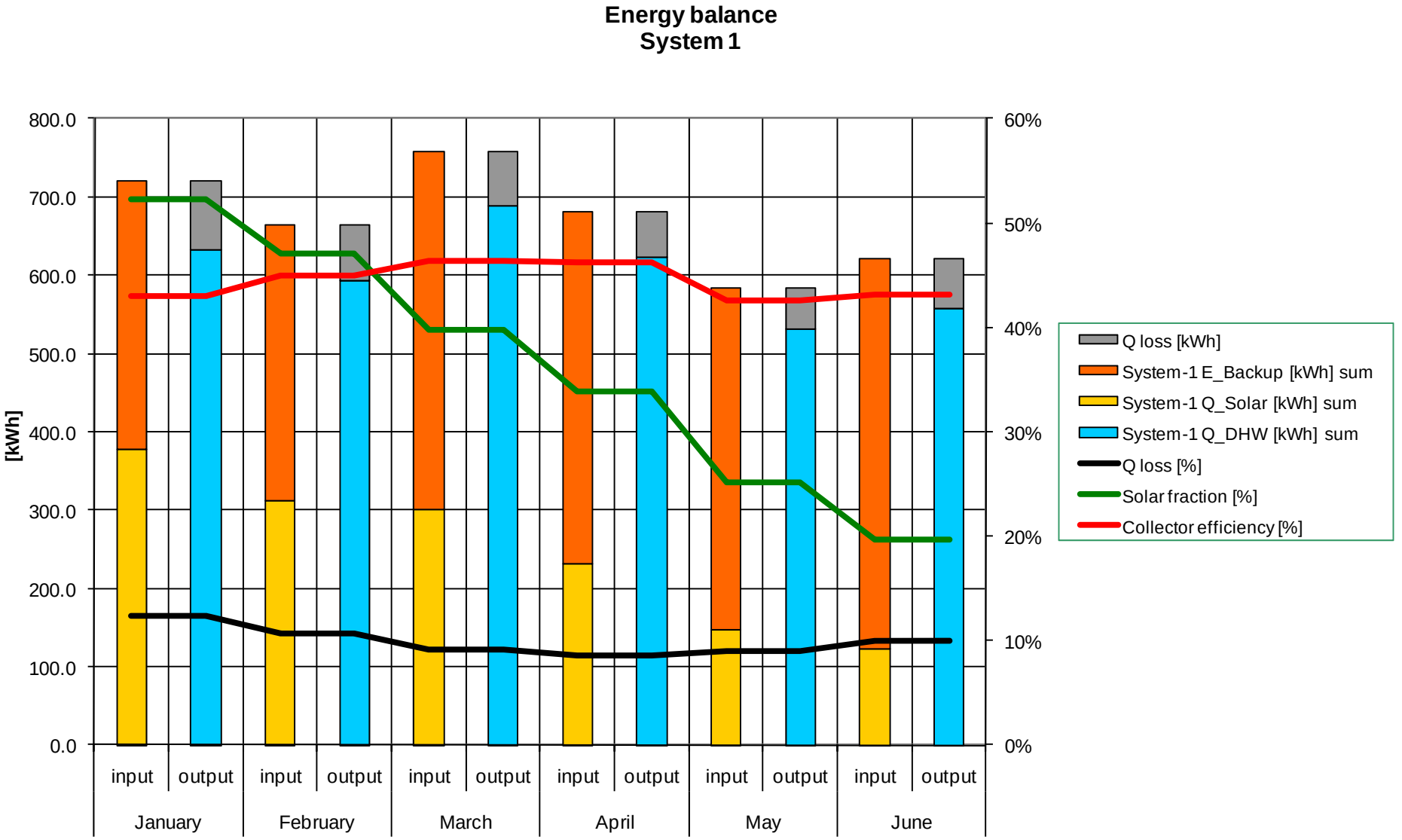
Solar radiation



Usage basics

month	System-1 G_Sol_Radiation [kWh/m2] avg	System-1 Q_Solar [kWh] sum	System-1 E_Backup [kWh] sum	System-1 Q_DHW [kWh] sum	System-1 T_Solar_f [-C] avg	System-1 T_Solar_rf [-C] avg	System-1 T_DHW_hot [-C] avg	System-1 T_DHW_cold [-C] avg	System-1 V_Solar [m³] sum	System-1 V_DHW [m³] sum
January	219.4	376.8	343.8	631.4	52.0	32.7	68.8	26.8	11.5	13.8
February	173.9	312.5	351.4	593.5	50.8	31.2	67.1	27.6	9.3	13.8
March	161.9	300.7	456.4	687.9	49.2	28.8	65.3	28.3	8.9	16.2
April	124.7	230.8	450.1	622.1	43.0	24.3	57.7	24.2	7.1	16.6
May	86.1	146.6	436.2	530.4	35.2	20.4	52.4	20.7	5.0	14.4
June	71.0	122.3	498.0	558.0	32.9	18.2	50.9	19.3	4.2	15.0
	139.50	**1489.70**	**2535.88**	**3623.30**	**43.84**	**25.92**	**60.36**	**24.50**	**45.90**	**89.81**

Usage basics continued



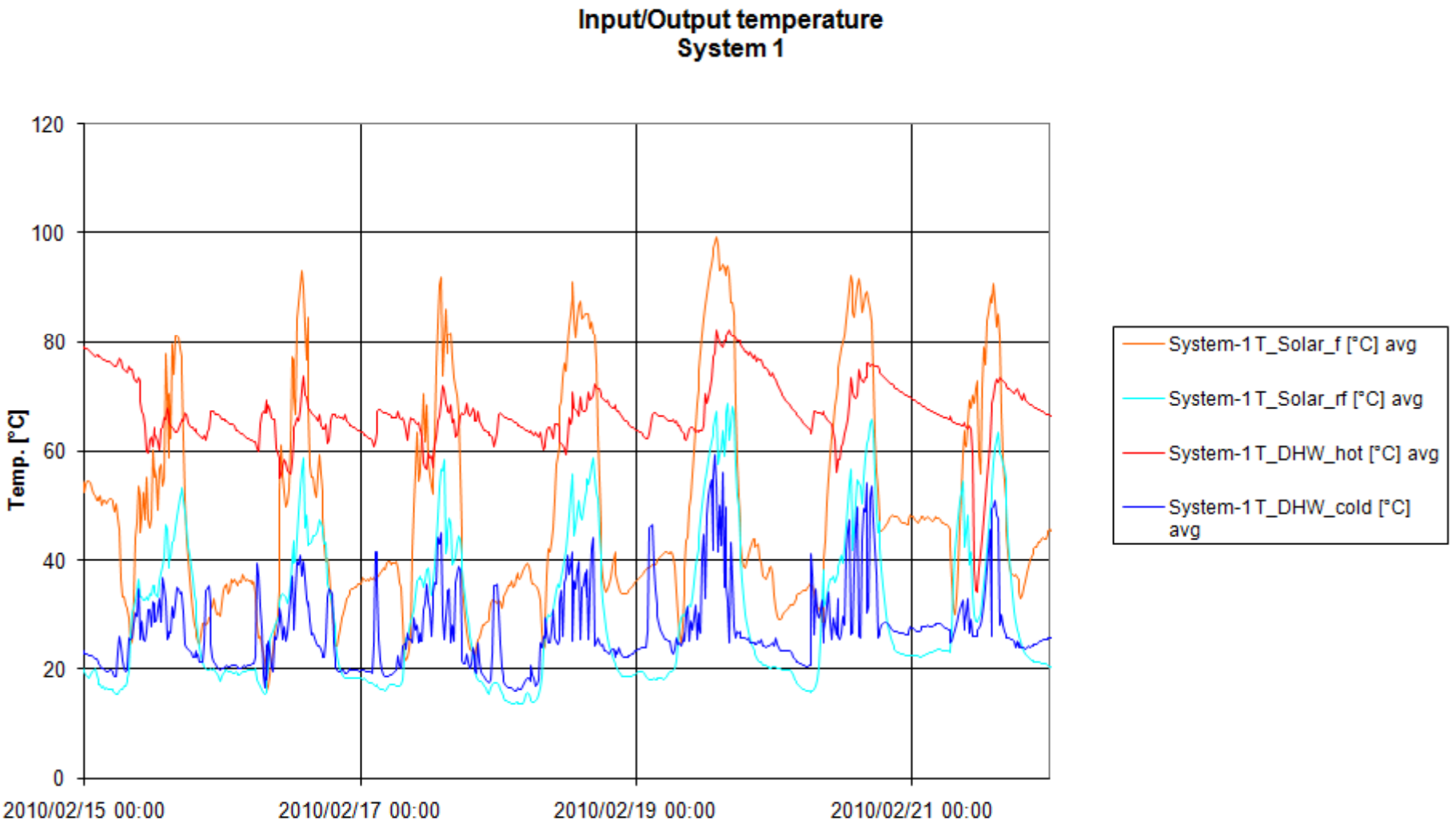
System changes

- 18 February 2010: All pipes were lagged
- 11 March 2010: The glass was cleaned
- 13 April 2010: Turned the element down from 75 °C to 60 °C

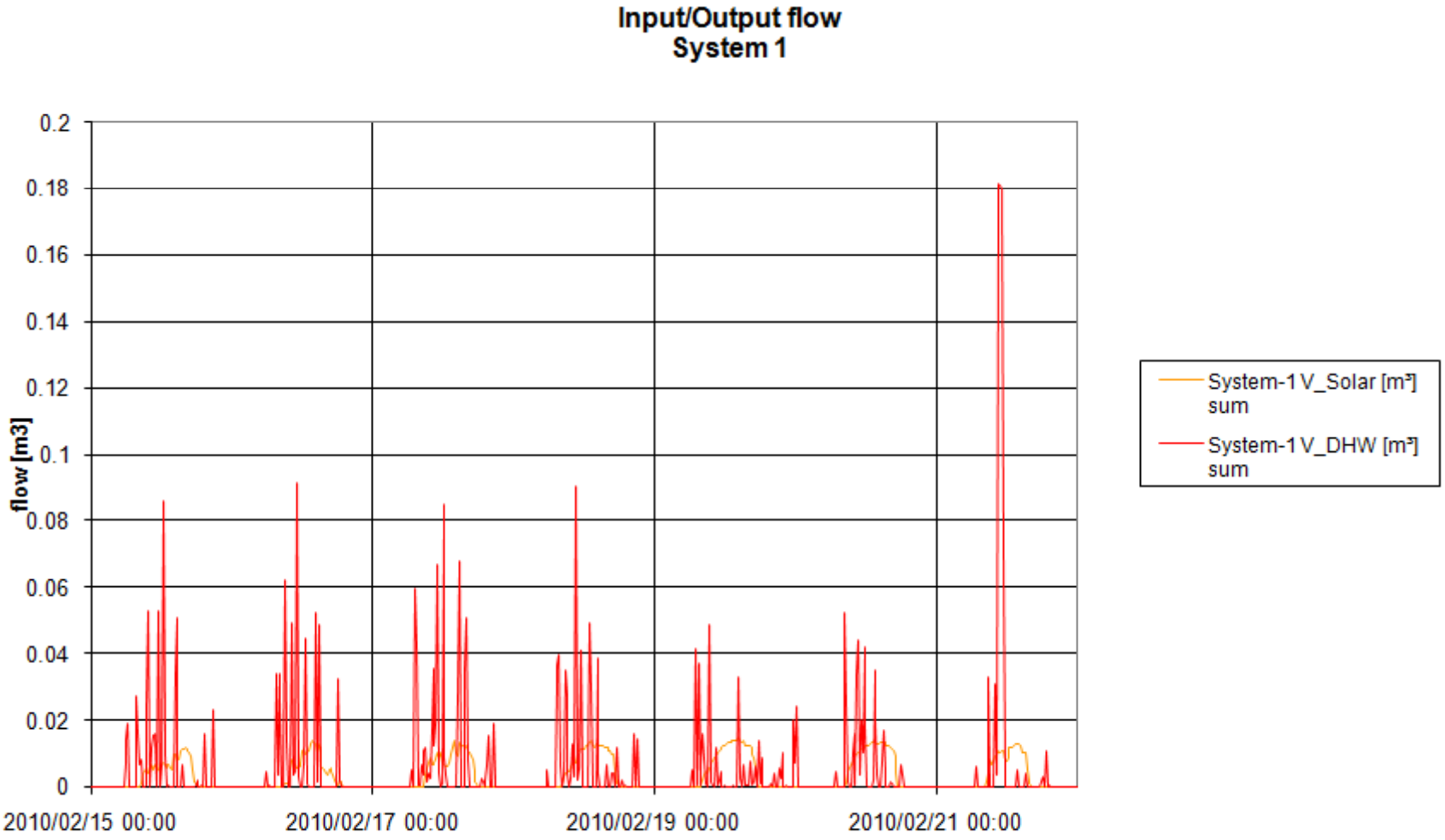
Lagging of pipe: February

month	Q domestic hot water [%]	Q loss [%]	Solar fraction [%]	Collector efficiency [%]
January	88%	12%	52%	43%
February	89%	11%	47%	45%
March	91%	9%	40%	46%
April	91%	9%	34%	46%
May	91%	9%	25%	43%
June	90%	10%	20%	43%

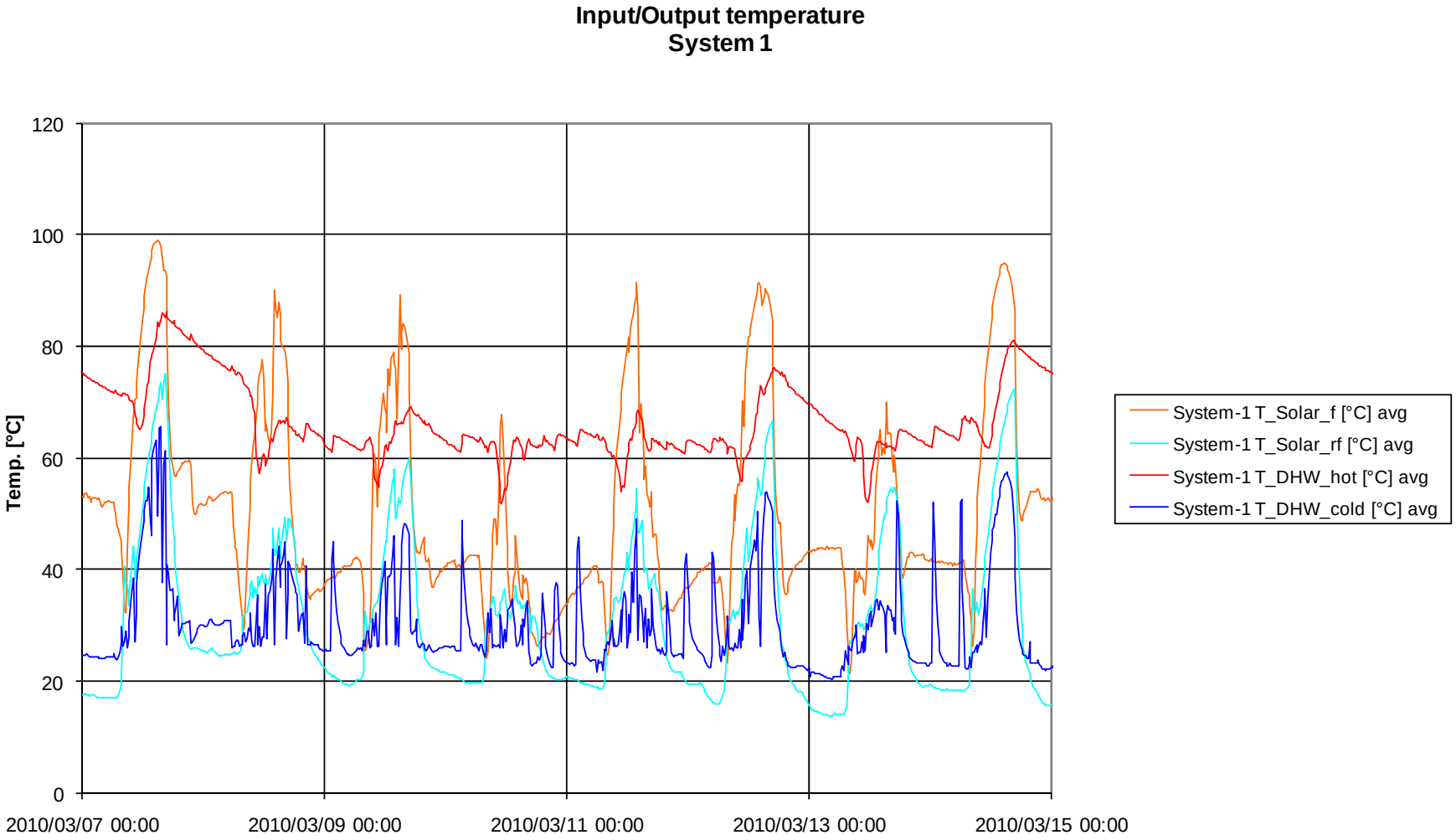
Lagging of pipe: 18 February



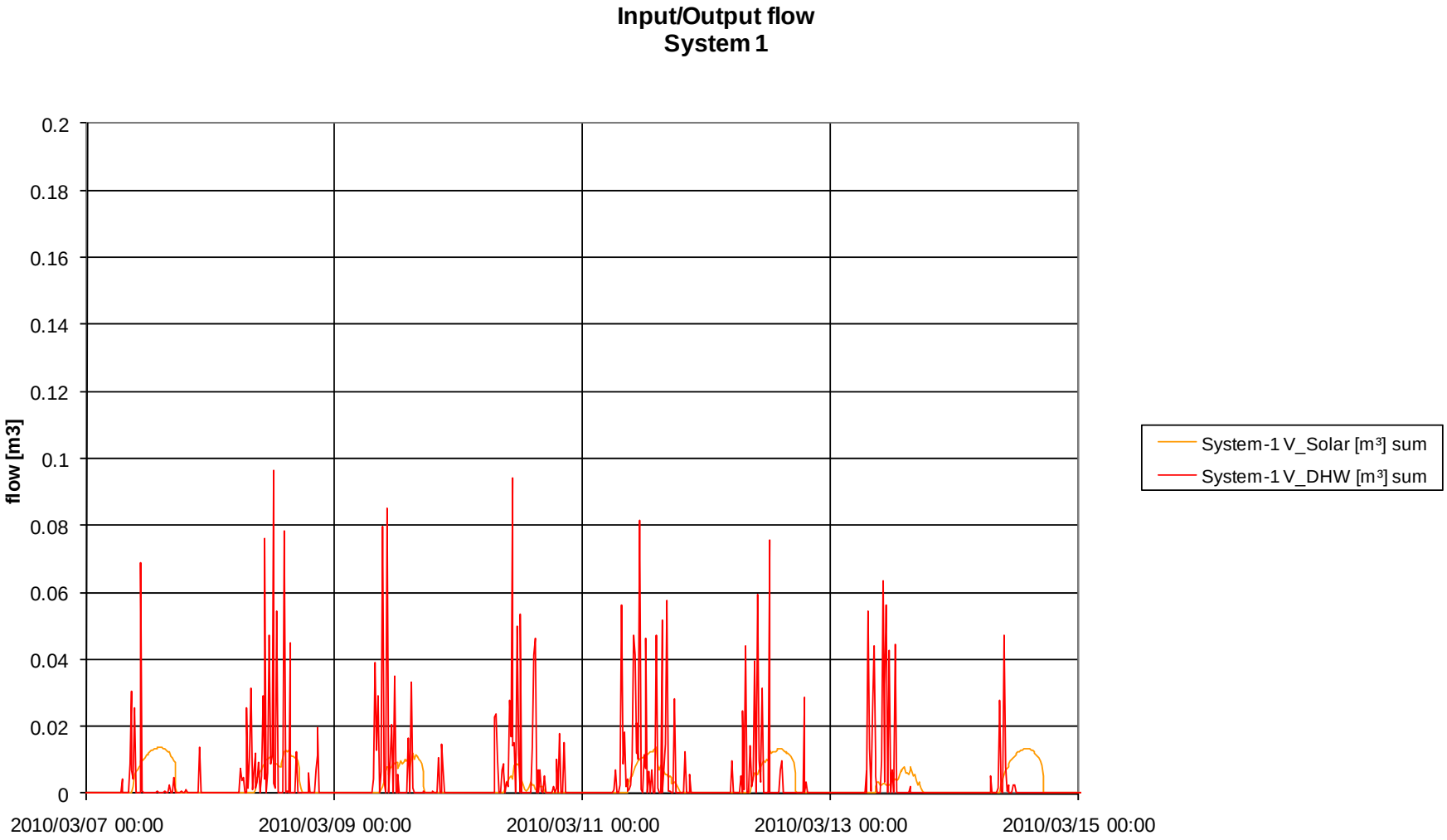
Lagging of pipe: February



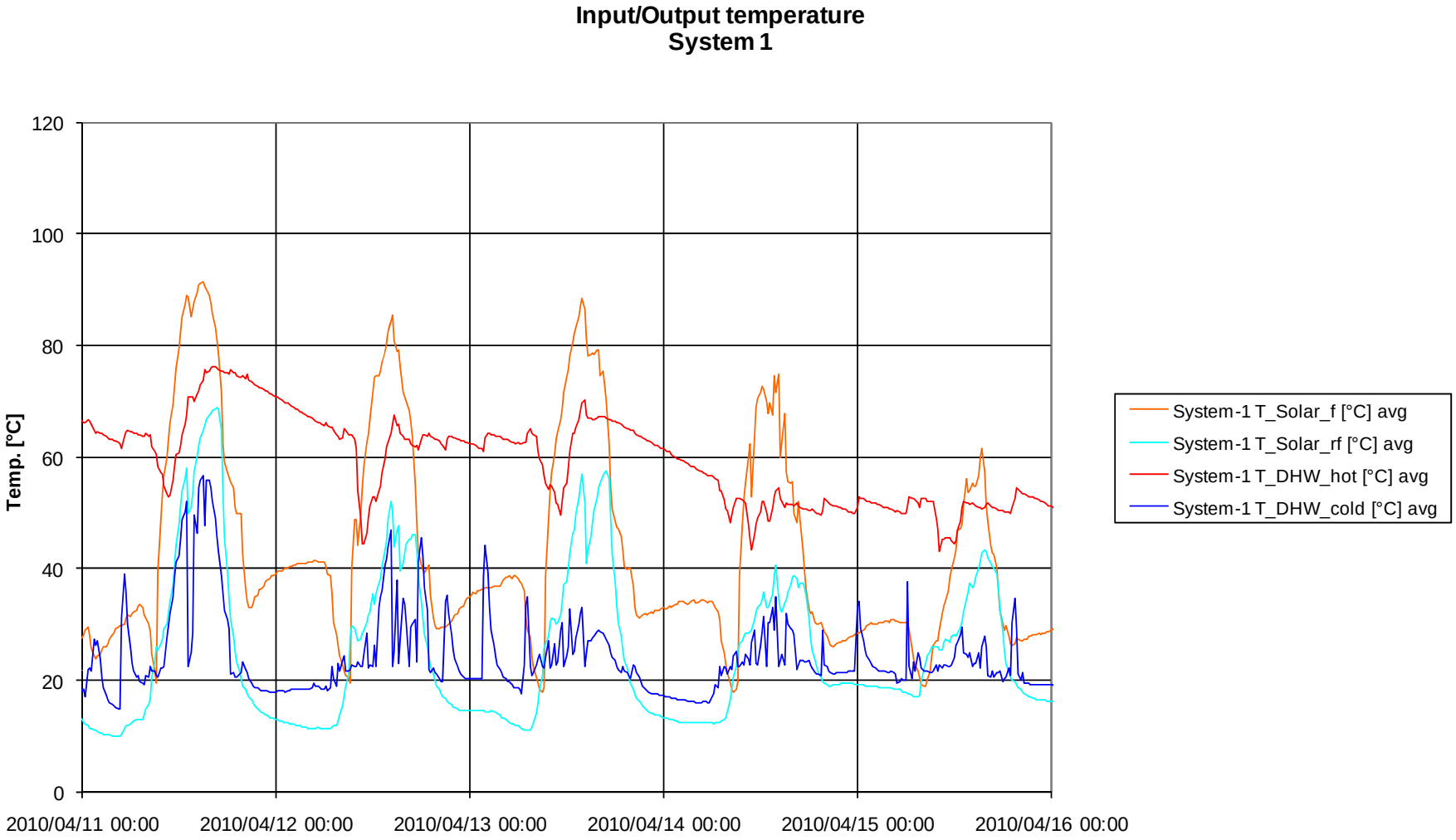
Cleaning the collector: March



Cleaning the collector: March



Turning down element: April



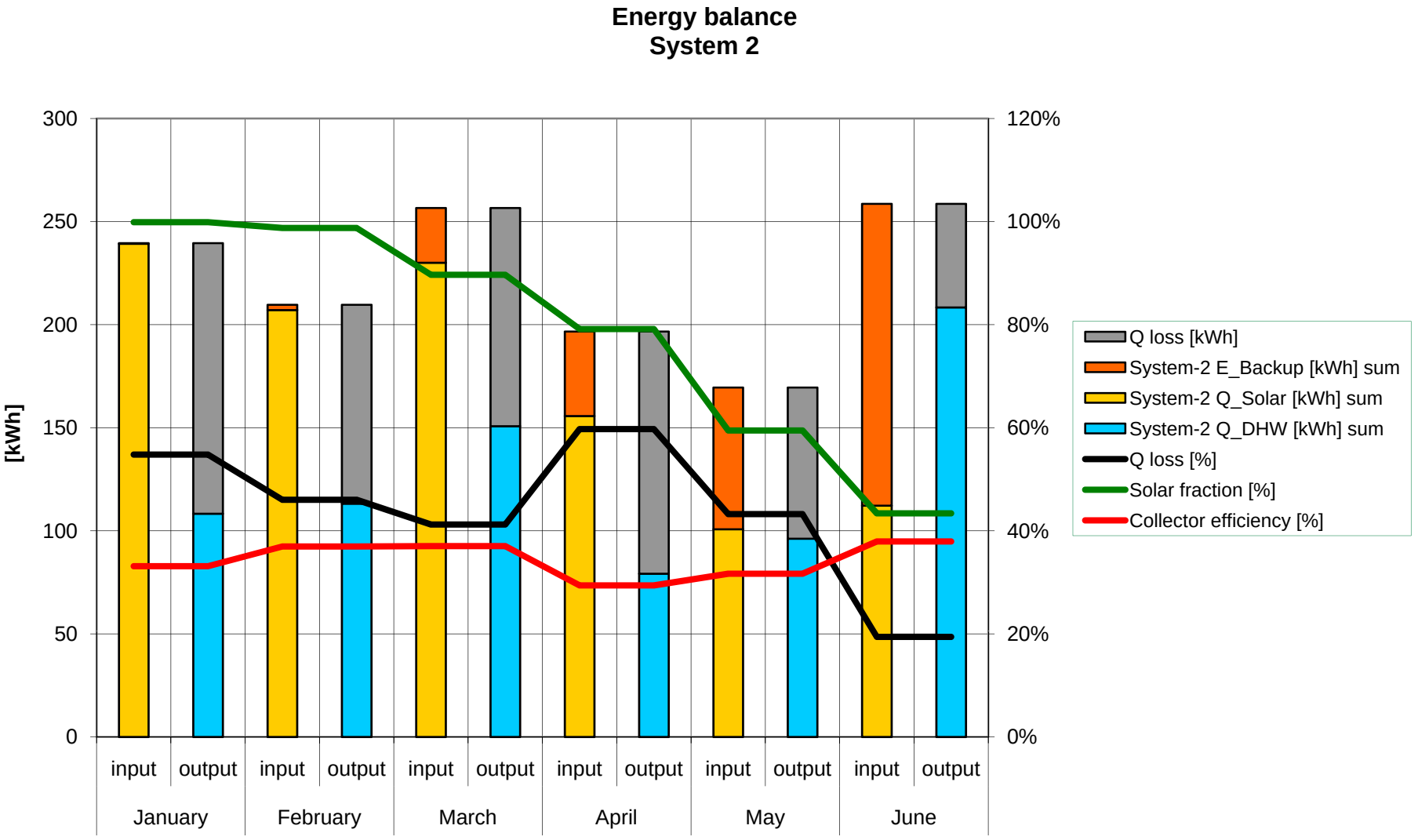
System 2 in Stellenbosch

200 l, 3 m^2, direct system

Usage basics

month	System-2 G_Sol_Radiation [kWh/m2] avg	System-2 Q_Solar [kWh] sum	System-2 E_Backup [kWh] sum	System-2 Q_DHW [kWh] sum	System-2 T_Solar_f [-C] avg	System-2 T_Solar_rf [-C] avg	System-2 T_DHW_hot [-C] avg	System-2 T_DHW_cold [-C] avg	System-2 V_Solar [m³] sum	System-2 V_DHW [m³] sum
January	240.7	239.3	0.3	108.3	53.1	37.9	52.5	28.3	8.9	3.6
February	186.8	207.1	2.6	113.2	42.2	30.5	50.0	25.7	10.3	4.2
March	207.1	230.1	26.5	150.8	41.7	29.9	52.8	25.1	11.1	4.6
April	176.4	155.7	41.0	79.2	39.3	25.7	49.0	19.9	8.2	2.4
May	106.1	100.8	68.7	96.2	29.8	20.3	49.3	16.9	5.4	2.7
June	98.6	112.2	146.4	208.4	25.2	16.2	46.9	14.7	5.4	5.1
	1015.8	**1045.2**	**285.5**	**756.1**	**38.6**	**26.8**	**50.1**	**21.8**	**49.3**	**22.5**

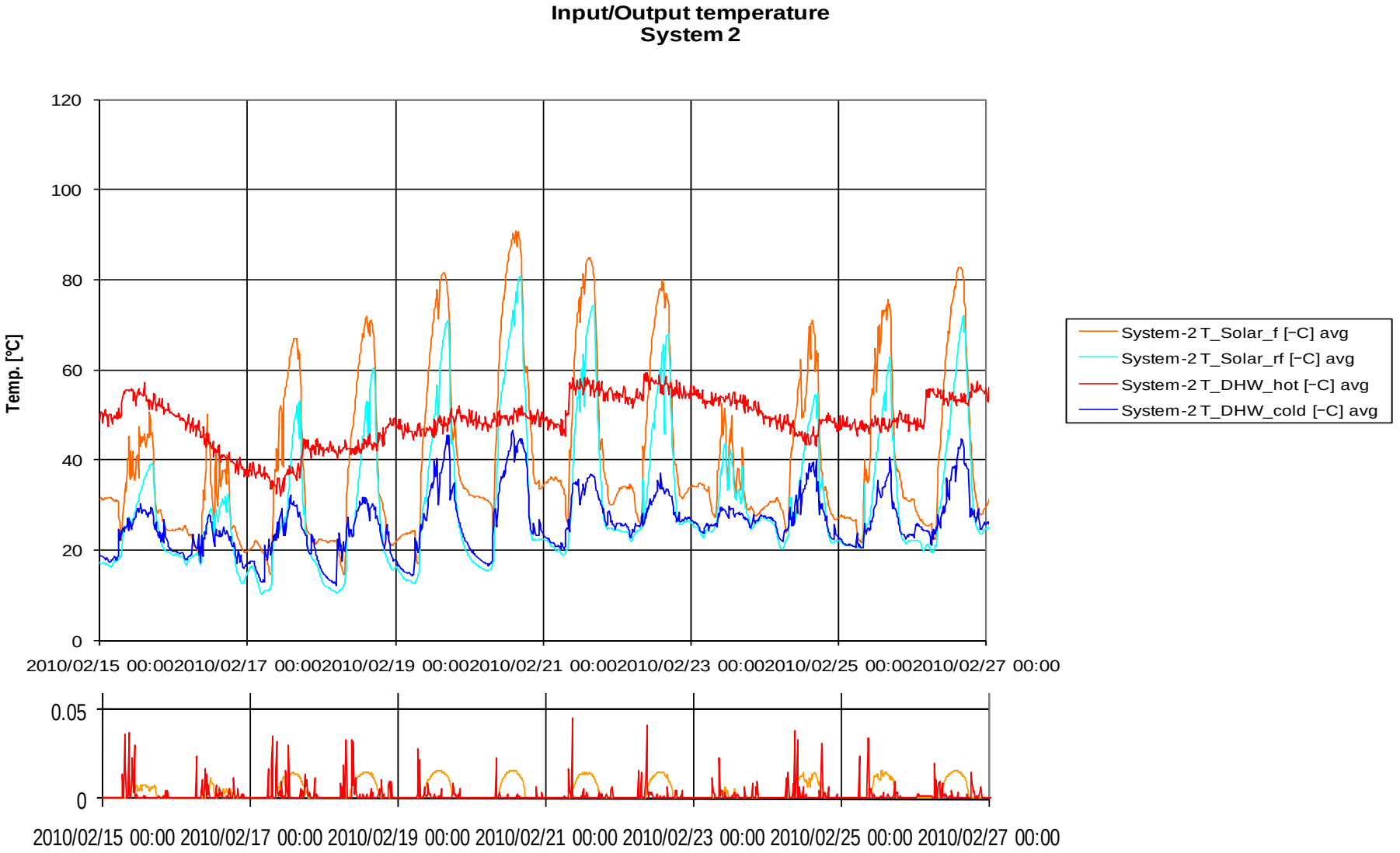
Usage basics



System changes

- 11 June 2010: Convert pre-feed to standard thermosyphon
- 14 June 2010: Temperature probe moved from old geyser into solar geyser

Potential pre-feed problems



After system change