

Buffer tank size requirements vary depending on the boiler manufacturer. Use this as a guide only and always check with the boiler manufacturer.
 Manufacturer example in red

Tipper Grate

Pellets	DeltaT	Boiler Size	10	11	12	13	14	15	16	17	18	19	20	Example
	Buffer Capacity (l/kW)		22.40267	20.3681996	18.67264	17.2378	16.00783	14.94178	14.00891	13.18574	12.45398	11.79921	11.20988	
		20	448	407	373	345	320	299	280	264	249	236	224	800
		35	784	713	654	603	560	523	490	462	436	413	392	800
		45	1008	917	840	776	720	672	630	593	560	531	504	1000
		60	1344	1222	1120	1034	960	897	841	791	747	708	673	1500

Tipper Grate

Chip	DeltaT	Boiler Size	10	11	12	13	14	15	16	17	18	19	20	Example
	Buffer Capacity (l/kW)		8.853577	8.04632859	7.373812	6.804907	6.317391	5.89497	5.525429	5.199427	4.9097	4.650515	4.417287	
		20	177	161	147	136	126	118	111	104	98	93	88	800
		35	310	282	258	238	221	206	193	182	172	163	155	800
		45	398	362	332	306	284	265	249	234	221	209	199	1000
		60	531	483	442	408	379	354	332	312	295	279	265	1000

Walking floor

Pellets	DeltaT	Boiler Size	10	11	12	13	14	15	16	17	18	19	20	Example
	Buffer Capacity (l/kW)		24.89561	22.6302155	20.74256	19.14545	17.7766	16.59034	15.55244	14.63671	13.82277	13.09454	12.43918	
		80	1992	1810	1659	1532	1422	1327	1244	1171	1106	1048	995	1000
		100	2490	2263	2074	1915	1778	1659	1555	1464	1382	1309	1244	1000
		130	3236	2942	2697	2489	2311	2157	2022	1903	1797	1702	1617	1500
		150	3734	3395	3111	2872	2666	2489	2333	2196	2073	1964	1866	2000
		180	4481	4073	3734	3446	3200	2986	2799	2635	2488	2357	2239	2000
		199	4954	4503	4128	3810	3538	3301	3095	2913	2751	2606	2475	3000
		250	6224	5658	5186	4786	4444	4148	3888	3659	3456	3274	3110	3000
		300	7469	6789	6223	5744	5333	4977	4666	4391	4147	3928	3732	4000
		350	8713	7921	7260	6701	6222	5807	5443	5123	4838	4583	4354	5000
		400	9958	9052	8297	7658	7111	6636	6221	5855	5529	5238	4976	5000
		499	12423	11292	10351	9554	8871	8279	7761	7304	6898	6534	6207	5000

Walking floor

Chip	DeltaT	Boiler Size	10	11	12	13	14	15	16	17	18	19	20	Example
	Buffer Capacity (l/kW)		20.30297	18.4604164	16.9247	15.62505	14.51091	13.5452	12.7001	11.95434	11.29137	10.69813	10.16416	
		80	1624	1477	1354	1250	1161	1084	1016	956	903	856	813	1000
		100	2030	1846	1692	1563	1451	1355	1270	1195	1129	1070	1016	1000
		130	2639	2400	2200	2031	1886	1761	1651	1554	1468	1391	1321	1500
		150	3045	2769	2539	2344	2177	2032	1905	1793	1694	1605	1525	2000
		180	3655	3323	3046	2813	2612	2438	2286	2152	2032	1926	1830	2000
		199	4040	3674	3368	3109	2888	2695	2527	2379	2247	2129	2023	3000
		250	5076	4615	4231	3906	3628	3386	3175	2989	2823	2675	2541	3000
		300	6091	5538	5077	4688	4353	4064	3810	3586	3387	3209	3049	4000
		350	7106	6461	5924	5469	5079	4741	4445	4184	3952	3744	3557	5000
		400	8121	7384	6770	6250	5804	5418	5080	4782	4517	4279	4066	5000
		499	10131	9212	8445	7797	7241	6759	6337	5965	5634	5338	5072	5000

Screw fed

Pellets	DeltaT	Boiler Size	10	11	12	13	14	15	16	17	18	19	20	Example
	Buffer Capacity (l/kW)		13.16268	11.9712085	10.97791	10.1371	9.416163	8.791147	8.244095	7.761265	7.331969	6.947766	6.601902	
		220	2896	2634	2415	2230	2072	1934	1814	1707	1613	1529	1452	3000
		250	3291	2993	2744	2534	2354	2198	2061	1940	1833	1737	1650	3000
		300	3949	3591	3293	3041	2825	2637	2473	2328	2200	2084	1981	4000
		350	4607	4190	3842	3548	3296	3077	2885	2716	2566	2432	2311	4000
		400	5265	4788	4391	4055	3766	3516	3298	3105	2933	2779	2641	5000
		500	6581	5986	5489	5069	4708	4396	4122	3881	3666	3474	3301	5000

Screw fed

Chip	DeltaT	Boiler Size	10	11	12	13	14	15	16	17	18	19	20	Example
	Buffer Capacity (l/kW)		8.853577	8.04632859	7.373812	6.804907	6.317391	5.89497	5.525429	5.199427	4.9097	4.650515	4.417287	
		220	1948	1770	1622	1497	1390	1297	1216	1144	1080	1023	972	3000
		250	2213	2012	1843	1701	1579	1474	1381	1300	1227	1163	1104	3000
		300	2656	2414	2212	2041	1895	1768	1658	1560	1473	1395	1325	4000
		350	3099	2816	2581	2382	2211	2063	1934	1820	1718	1628	1546	4000
		400	3541	3219	2950	2722	2527	2358	2210	2080	1964	1860	1767	5000
		450	3984	3621	3318	3062	2843	2653	2486	2340	2209	2093	1988	5000

Walking floor

Pellets	DeltaT	Boiler Size	10	11	12	13	14	15	16	17	18	19	20	Example
	Buffer Capacity (l/kW)		46.313	42.1015208	38.59205	35.62258	33.07737	30.87158	28.94154	27.2386	25.72491	24.37057	23.15168	
		500	23156	21051	19296	17811	16539	15436	14471	13619	12862	12185	11576	5000
		600	27788	25261	23155	21374	19846	18523	17365	16343	15435	14622	13891	5000
		800	37050	33681	30874	28498	26462	24697	23153	21791	20580	19496	18521	10000
		995	46081	41891	38399	35444	32912	30717	28797	27102	25596	24249	23036	10000
		1500	69469	63152	57888	53434	49616	46307	43412	40858	38587	36556	34728	-

Walking floor

Chip	DeltaT	Boiler Size	10	11	12	13	14	15	16	17	18	19	20	Example
	Buffer Capacity (l/kW)		37.01214	33.6438682	30.83726	28.46266	26.42746	24.66375	23.12063	21.75914	20.54901	19.46632	18.49196	
		500	18506	16822	15419	14231	13214	12332	11560	10880	10275	9733	9246	5000
		600	22207	20186	18502	17078	15856	14798	13872	13055	12329	11680	11095	5000
		800	29610	26915	24670	22770	21142	19731	18497	17407	16439	15573	14794	10000
		995	36827	33476	30683	28320	26295	24540	23005	21650	20446	19369	18400	10000
		1500	55518	50466	46256	42694	39641	36996	34681	32639	30824	29199	27738	-

Thermal Store sizing

$$E = \frac{mc_p \Delta T}{3600}$$

kWh req	6000
ΔT	30
Store size (l)	171,429

Heat loss from thermal store

$$Q_{loss} = \lambda A \left(\frac{T_{in} - T_{out}}{r_{out} \ln \frac{r_{out}}{r_{in}}} \right)$$

Q=heat loss	543.2982 W	
λ = thermal conductivity	0.0496	0.117783
A=total surface area of store	16.59	
T _{in} = mean water temperature	80	
T _{out} =outside air temp	10	
r _{in} =radius of store	0.8	
r _{out} =radius of store including insulation	0.9	
h=height of thermal store	2.5	