## **TECHNOLOGY FACTSHEET**



		SURFALF VV											
Date of factsheet	I-12-2018												
Author													
Sector	Built environment	Robin Niessink											
Sector	Buitenvironnent												
	Non FTS												
ETS / Non-ETS	Non-ETS												
Type of Technology		Renewable											
Description		Research shows that surface water can be a substantial source of sustainable heat, as an alternative to natural gas. It is a potential source for heating and cooling of buildings											
	(STOWA, 2018). Aquathermal is a technology that enables to extract thermal energy from water, store it, upgrade it to a higher temperature using a heat pump, and finally deliver it												
	to buildings. There are three different heat sources that can be used: 1) surface water such as lakes or rivers 2) waste water and 3) drinking water. Waste water and drinking water												
	have lower potentials compared to surface water (CE, 2018). This factsheet focuses on aquathermal from surface water.												
	Surface water has a temperature v	Surface water has a temperature varying between 7 and 25°C over the year making it a year low temperature heat source (CE 2018). As wether real corrections a storage to the inve											
	Surface water has a temperature varying between 7 and 25°C over the year making it a very low temperature heat source (CE, 2018). Aquathermal comprises a storage technique that works in a way similar to aquifer thermal energy storage (ATES). Thermal energy extracted during summer months is stored in a reservoir and used for heating in winter months												
	that works in a way similar to aquifer thermal energy storage (ATES). Thermal energy extracted during summer months is stored in a reservoir and used for heating in winter months Cooled down water is stored (in another spot of the aquifer) and can be used for cooling during summer months. The warmed up water is stored again, closing the cycle. The												
	technique makes use of heat exchangers at the reservoir. A heat network is used to transport heat to consumers. A collective heat pump is used to increase the temperature to a												
	suitable level for space heating and	suitable level for space heating and hot water. Alternatively, an individual heat pump can be used.											
	This factsheet includes the above r	mentioned system	i component	s: heat extraction	n, storage, hea	at network and h	eat pump.						
TDL 1 2020													
TRL level 2020	TRL 9	1 10 1 11 1 1 1		<u> </u>						(cto).			
	The technology to extract, store an	nd distribute heat	or cold from	surface water is	mature. It is a	lready being exp	loited on va	iríous locations o	on a commercial	basis (STOW	A, 2018).		
TECHNICAL DIMENSIONS													
	Functional Unit					Val	ue and Ran	ge					
Capacity	PJ										0.03		
					0.00		-				0.04		
	PJ	NL		Current			2030			2050			
Potential					150			150			150		
			35	-	150	35	-	150	35	-	150		
Market share	%	Share of final			0			-			-		
		heat	0	-	0	Min	-	Max	Min	-	Мах		
Capacity utlization factor				•				-			-		
Full-load running hours per year								1,500.	.00				
Unit of Activity	PJ/year										-		
Technical lifetime (years)								30.0	00				
Progress ratio													
								-					
Hourly profile Explanation	Yes The capacities of aquathermal are 5.500 dwellings and buildings (STO existing project is "De Mossen" in I Compared to the total heat deman	WA, 2018). On av Houten with a hea nd of the built env	erage a proje at supply of 2 rironment of	ect has a heat de 2,1 TJ per year. <sup>F</sup> around 400 PJ (	emand of 8,5 T. RVO, 2017), th	l per year (equal ere is a negligible	to the heat e small share	connections per r demand of 500-1 e for aquatherma	1000 dwellings). al at present. Aq	Currently, th uathermal h	ne only as a high		
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