친환경에너지타운 내 신재생열에너지 시스템 운영결과 분석

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Operation Result Analysis of Renewable Heat Energy System in Eco-friendly Energy Town

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한국태양에너지학회 논문집 41권 2호에 게재된 논문 중 일부 내용이 잘못 기재되어 있어 바로잡습니다.

1. 온열공급량에 따른 기대수익 계산방법 및 계산결과

변경전 :

-계산방법

$$\text{기대 수익} = \text{LPG절감량} [kg] \times \text{LPG단가} [\text{원}/kg] \times 1.1$$

$$\text{LPG절감량} = \frac{\text{온열공급량} \left[\frac{kWh}{\%} \right] \times 860 \left[\frac{kcal}{kWh} \right] \times \frac{1}{\text{LPG열량} \left[\frac{kg}{kcal} \right]}}$$

$$\text{LPG단가} : 1,832 [\text{원}/kg]$$

-계산결과

(Unit : million won)

	2017	2018	2019	2020
Hot heat	61.71	101.40	93.30	92.24

변경후 :

-계산방법¹

$$\text{기대 수익} = \text{LPG절감량} [kg] \times \text{LPG단가} [\text{원}/kg] \times 1.1$$

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$$LPG\text{절감량} = \frac{\text{온열공급량}}{\text{보일러효율}} \left[\frac{kWh}{\%} \right] \times 860 \left[\frac{kcal}{kWh} \right] \times \frac{1}{LPG\text{열량}} \left[\frac{kg}{kcal} \right] \times \frac{1}{\text{밀도}} \left[\frac{m^3}{kg} \right] \times \frac{1}{\text{표준기화율}} \left[\frac{kg}{m^3} \right] \times \text{조정기보정계수}$$

$$LPG\text{단가} = LPG\text{평균가격}^2 [\text{원/kg}] \times \text{낙찰율} [\%]$$

밀도 : 1.86 kg/m³, 표준기화율 : 0.4810 m³/kg, 조정기보정계수 : 1.6334, 낙찰율 : 83 %

-계산결과

(Unit : million won)

	2017	2018	2019	2020
Hot heat	94.38	160.33	142.40	140.70

2. 냉열공급량에 따른 기대수익 계산결과

변경전 :

(Unit : million won)

	2017	2018	2019	2020
Cold heat	0.89	1.31	1.48	1.19

변경후:

(Unit : million won)

	2017	2018	2019	2020
Cold heat	3.70	5.44	6.13	4.94

3. 온실가스저감효과 계산결과

변경전 :

	LPG (m ³)	Electricity (kWh)	Greenhouse gas (ton CO ₂ eq.)	Pine grove (ha)	Passenger car (ea)
2017	16,463	8,295	101.1	9.34	42
2018	27,053	12,434	165.6	15.30	68
2019	24,891	14,557	153.8	14.21	63
2020	24,607	11,860	150.9	13.94	62

변경후 :

	LPG (m ³)	Electricity (kWh)	Greenhouse gas (ton CO ₂ eq.)	Pine grove (ha)	Passenger car (ea)
2017	16,463	34,452	113.1	10.45	46
2018	27,053	51,638	183.6	16.95	75
2019	24,891	60,456	174.9	16.15	72
2020	24,607	49,256	168.0	15.52	69

1 LPG 단가 산출 근거, 일신에너지(주): 서전고등학교 LPG공급업체

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