

Cool Roofs Spread Action in Indonesia 2021

23 Jan 2020 11:08:27
6.15497422S 106.62987247E
No. 23 Rt. 01/03 Jalan Mustang
Mekarsari
Kecamatan Neglasari
Kota Tangerang
Banten
sws



COOL ROOFS 2021 PROJECT TEAM

Project Manager:

Beta Paramita

Universitas Pendidikan Indonesia

Team:

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University of Florida, US

Jaime Cruz

Milenium Solution Inc., US

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Aprilia Nurul H

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Harpa Sugiharti

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Arif Firdaus

Field Workteam :

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Collaborator:

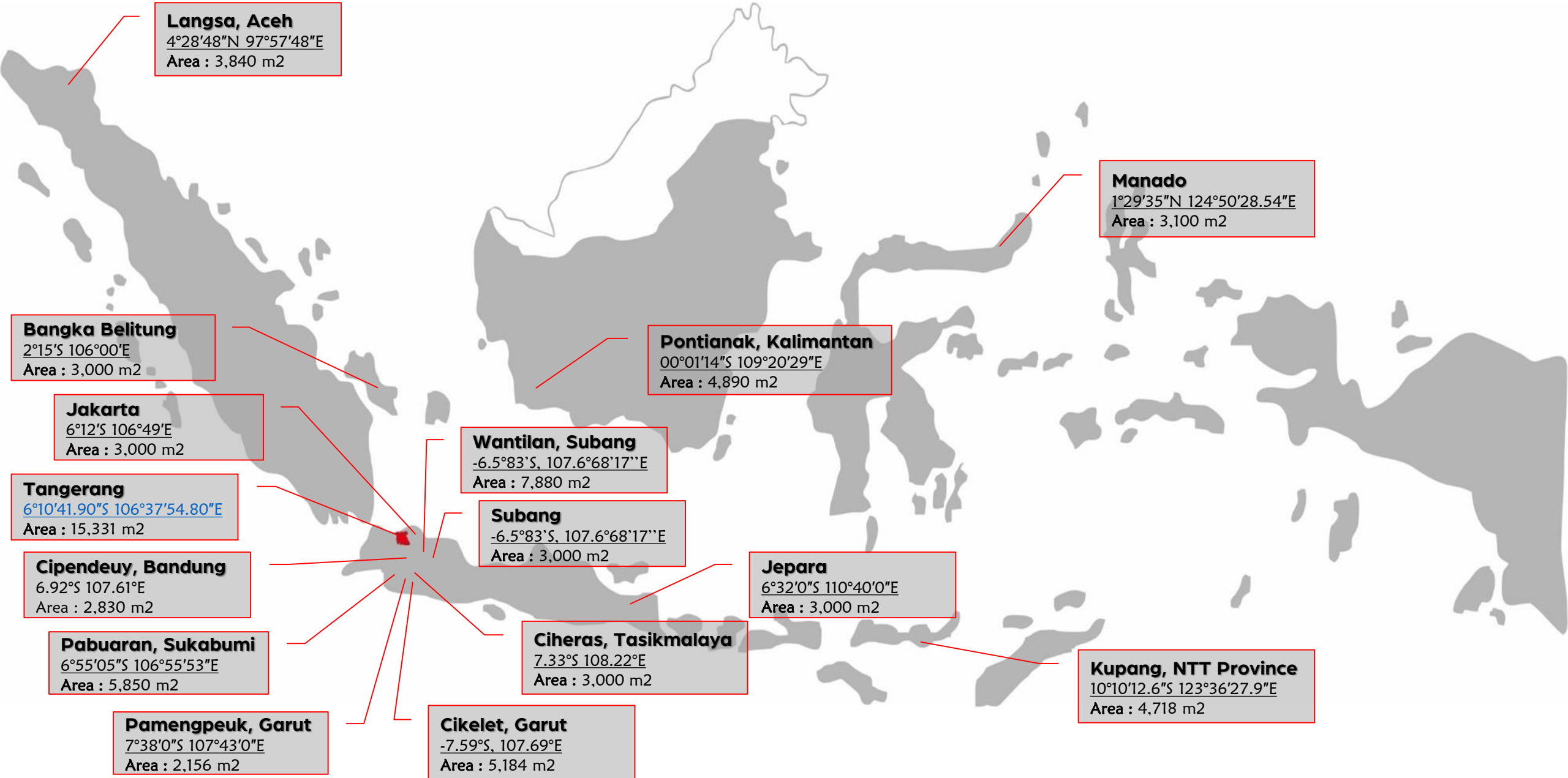
1. Environmental Agency (government), Tangerang City
2. Institute of Technology and Science, Al Akmal, Jakarta
3. PT. Chakra Tunggal Elektrindo, Subang, West Java
4. State Senior High School (SMAN 3), Pamengpeuk, Garut
5. Suka Sukur Foundation, Kupang, East Nusa Tenggara
6. Manado State University
7. Pontianak State Polytechnic
8. Wantilan Village, Subang Regency Government
9. Senior High School (M.A Ma'arif, Cikelet)
10. Bangka Belitung University
11. StateElementary School (SDN 4) Panggang, Jepara
12. Larva Panjang Foundation, Sukabumi
13. Malikussaleh University, Aceh
14. PT. Lentera Bumi Nusantara, Ciheras, Tasikmalaya
15. State Junior High School (SMPN 2), Cipendeuy, West Java



The Million Cool Roofs Challenge is a project of the Kigali Cooling Efficiency Program (K-CEP) in collaboration with the Global Cool Cities Alliance, Sustainable Energy for All and Nesta Challenges.



COOL ROOFS INDONESIA 2021



Project Description

No.	Location & Coordinate	Building Name	Roof Area (m2)	Total Roof Coverage
1.	Tangerang 6°10'41.90"S 106°37'54.80"E	Industrial building (Corrugated metal)	5,178	70,779m2
		Elementary school (Tile clay)	1,033	
		Low-cost housing (Tile clay/asbestos)	1,988	
		Religious building (Tile clay/concrete)	1,401	
		Government building (Tile clay)	5,731	
2.	Jakarta 6°12'S 106°49'E	Elementary school (Tile clay)	3,000	
3.	Jepara 6°32'0"S 110°40'0"E	Elementary school (Tile clay)	3,000	
4.	Wantilan, Subang Regency -6.5°83'S, 107.6°68'17"E	Low-cost housing (Tile clay)	2,700	
		Gymnasium (Tile clay)	108	
		Elementary school (Tile clay)	5,000	
5.	Cipendeuy, Bandung Regency	Junior High School (Tile clay)	2,830	
6.	Cikelet, Garut Regency -7.59°S, 107.69°E	Senior High School (Tile clay)	5,184	
7.	Pamengpeuk, Garut Regency 7°38'0"S 107°43'0"E	Senior High School (Tile clay)	2,156	
8.	Pabuaran, Sukabumi 6°55'05"S 106°55'53"E	Elementary school (Tile clay)	5,850	
9.	Kupang, NTT Province 10°10'12.6"S 123°36'27.9"E	Religious building (Asbestos)	4,718	
10.	Manado, North Sulawesi 1°29'35"N 124°50'28.54"E	Junior High School (Corrugated metal)	3,100	
11.	Pontianak, West Kalimantan 00°01'14"S 109°20'29"E	Orphanage building (Corrugated metal)	4,890	
12.	Bangka, Bangka Belitung Islands 2°15'S 106°00'E	Faculty of Engineering, Universitas Bangka Belitung (Asbestos)	3,000	
13.	Langsa City, Aceh Province 4°28'48"N 97°57'48"E	School (elementary, junior and senior)	3,840	
14.	Ciheras, Tasikmalaya	Lentera Bumi Nusantara (Tile clay)	3,000	
15.	Subang	PT. Chakra Tunggal Elektrindo (Corrugated metal)	3,000	

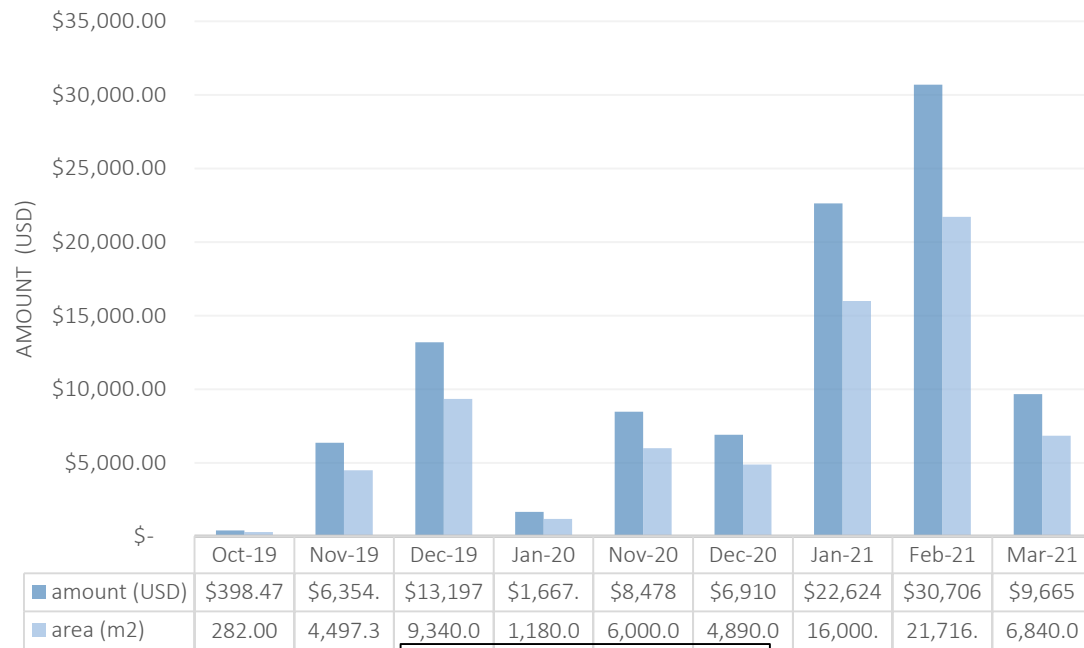
Building type	Total
factories	2
government offices	4
religious buildings (mosques)	14
orphanage building	1
non formal education building	1
gymnasium	1
low-cost housings	36
university	1
schools	10

Building type	Number of Occupants
factories	600 employees
government offices	80 employees
mosques	3740 people
orphanage building	450 peoples
non formal education building	100 students
gymnasium	50 peoples
low-cost housings	180 people
university	2400 students
schools	2650 students

Roof type
Corrugated metal
Concrete
Tile clay
Asbestos

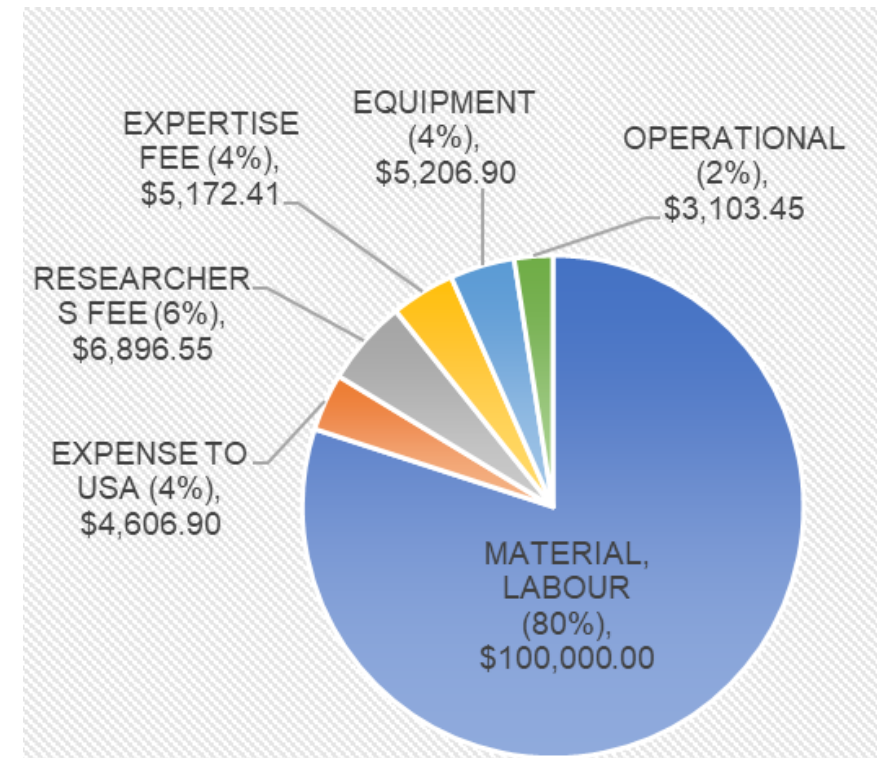
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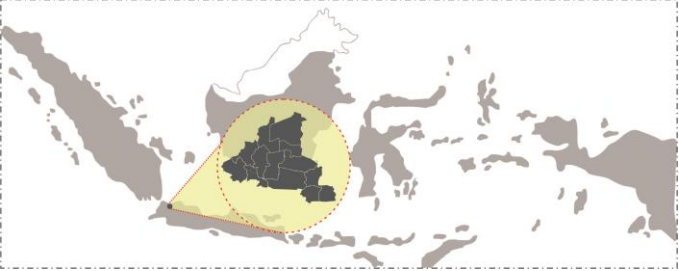
COVERAGE AREA OCT 2019 – MARCH 2021



TOTAL COVERAGE AREA : 70,779 M2
TOTAL AMOUNT : 100.000 USD

TOTAL EXPENDITURE





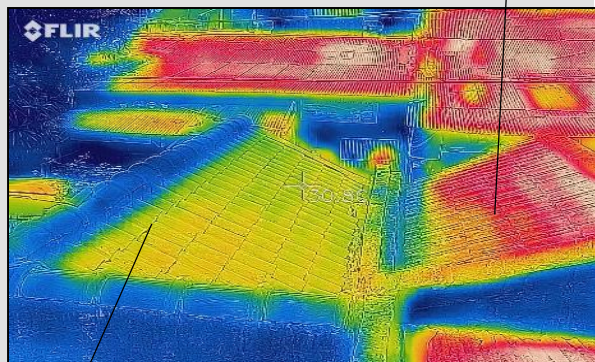
TANGERANG

Total roof area 15,331 m²
IDR 306,620,000
USD 21,157

Jln. Singgalang no 4
Low cost housing
186 M²



33.7°C - UNCOATED

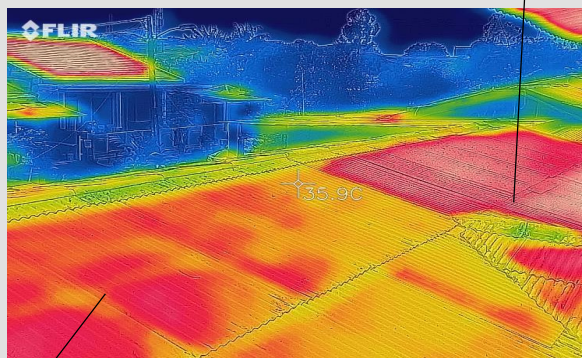


30.8°C - COATED

Jln. Merapi No. 7
Low cost housing
152 M²



38.4°C - UNCOATED

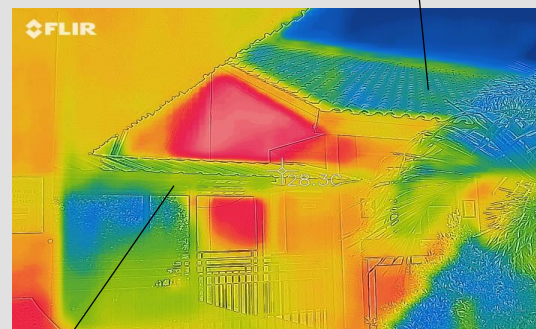


35.9°C - COATED

SD Pabuaran Tumpeng 1
Elementary school
1033 M²

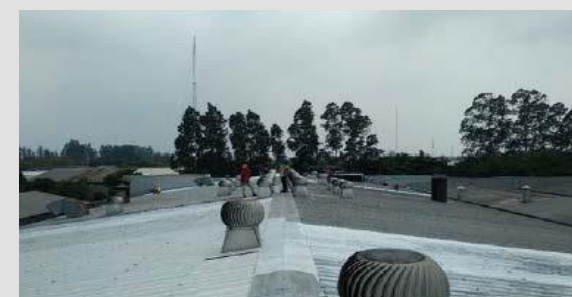


26.8°C - COATED



28.3°C - UNCOATED

PT. Mayora
Industry
5178 m²



37.1°C - UNCOATED



35.5°C - COATED

Results of Drone and IR Surveys in Tangerang





1. JLN. SINGGALANG NO 4

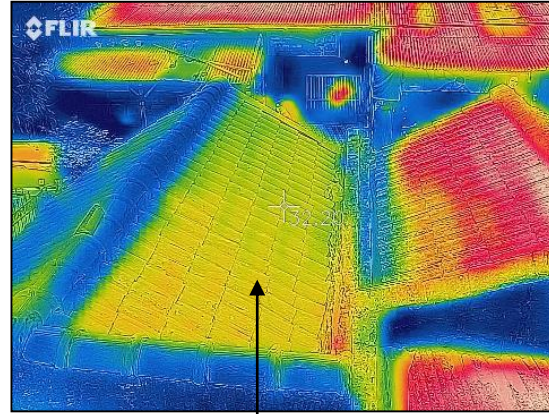


1. Jl. Singgalang no 4

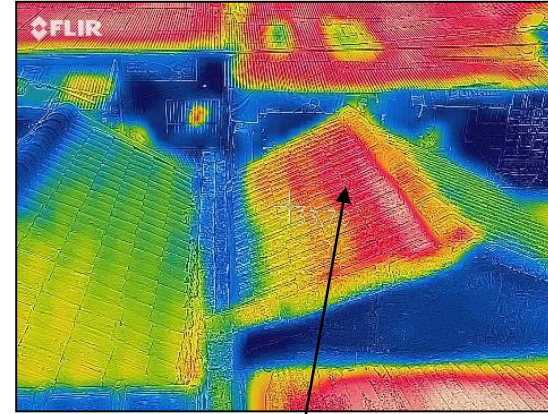
Existing



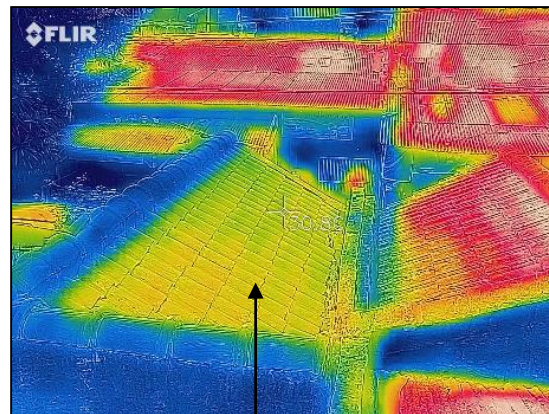
FLIR Camera results



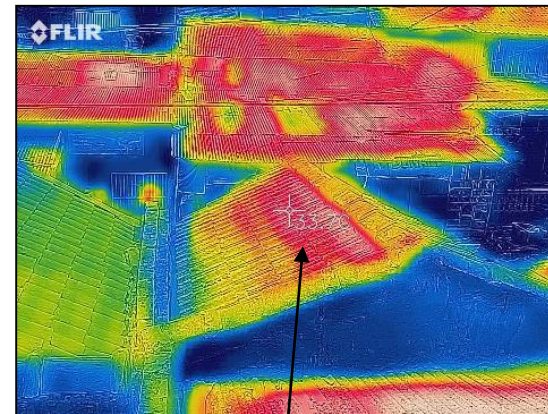
32.20°C - COATED



33.7°C - UNCOATED



30.8°C - COATED



33.7°C - UNCOATED

1. The photo was taken at 08.54 – 09.17 WIB.
2. The weather is cloudy.
3. The roof that has been coated with paint is covered by pollution particles or dust.



2. JLN. MERAPI NO 7

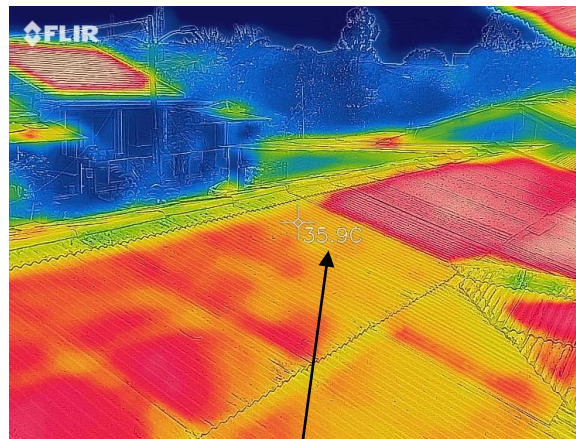


2. Jl. Merapi no 7

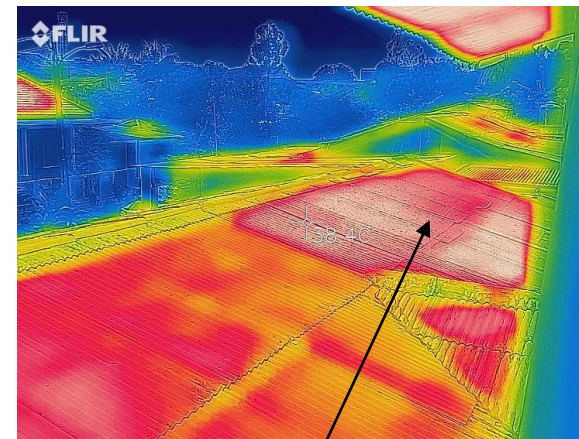
Existing



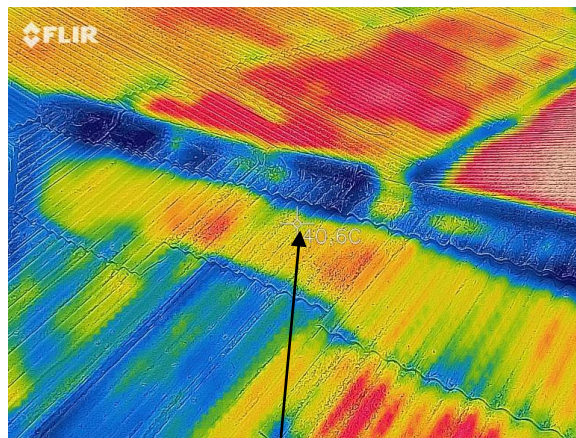
FLIR Camera results



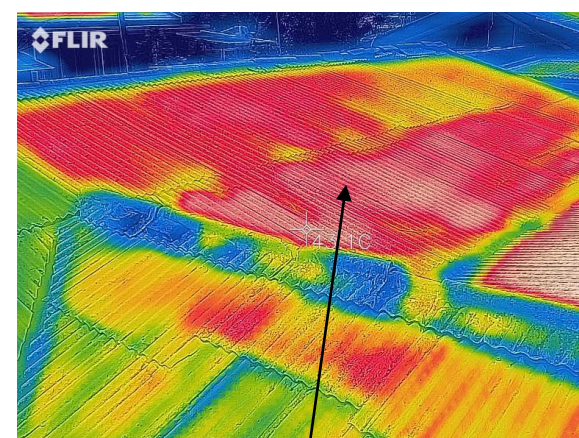
35.9°C - COATED



38.4°C - UNCOATED



40.6°C - COATED



43.1°C - UNCOATED

1. The photo was taken at 09.56 – 09.59 WIB.
2. The weather is cloudy.
3. The roof that has been coated with paint is covered by pollution particles or dust.



3. SDN. PABUARANG TUMPENG 1 (ELEMENTARY SCHOOL)



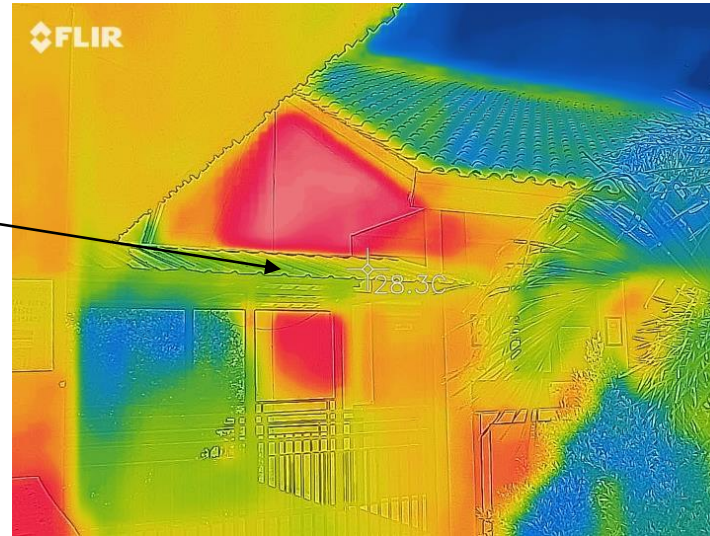
3. SDN. Pabuaran Tumpang 1 (Elementary School)

Existing

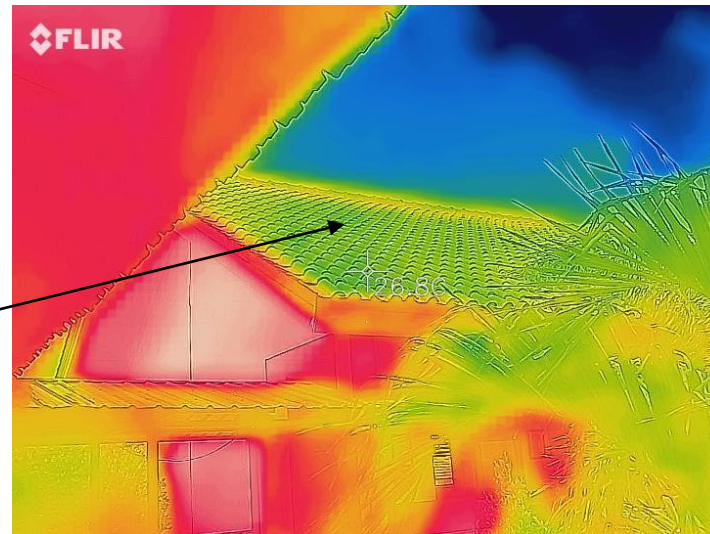


FLIR Camera results

28.3°C
UNCOATED



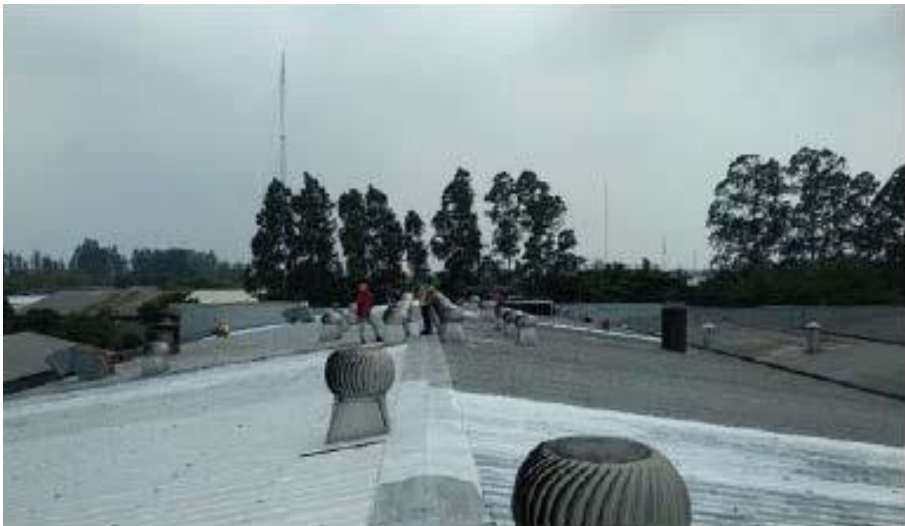
26.8°C
COATED



1. Photo taken at 13:57-14:00 WIB
2. The condition of the roof is wet because of the rain
3. Difficult to take photo of the roof due to insufficient space



4. PT. MAYORA (INDUSTRY)



4. PT. MAYORA (Industry)



On the roof
(canteen area)



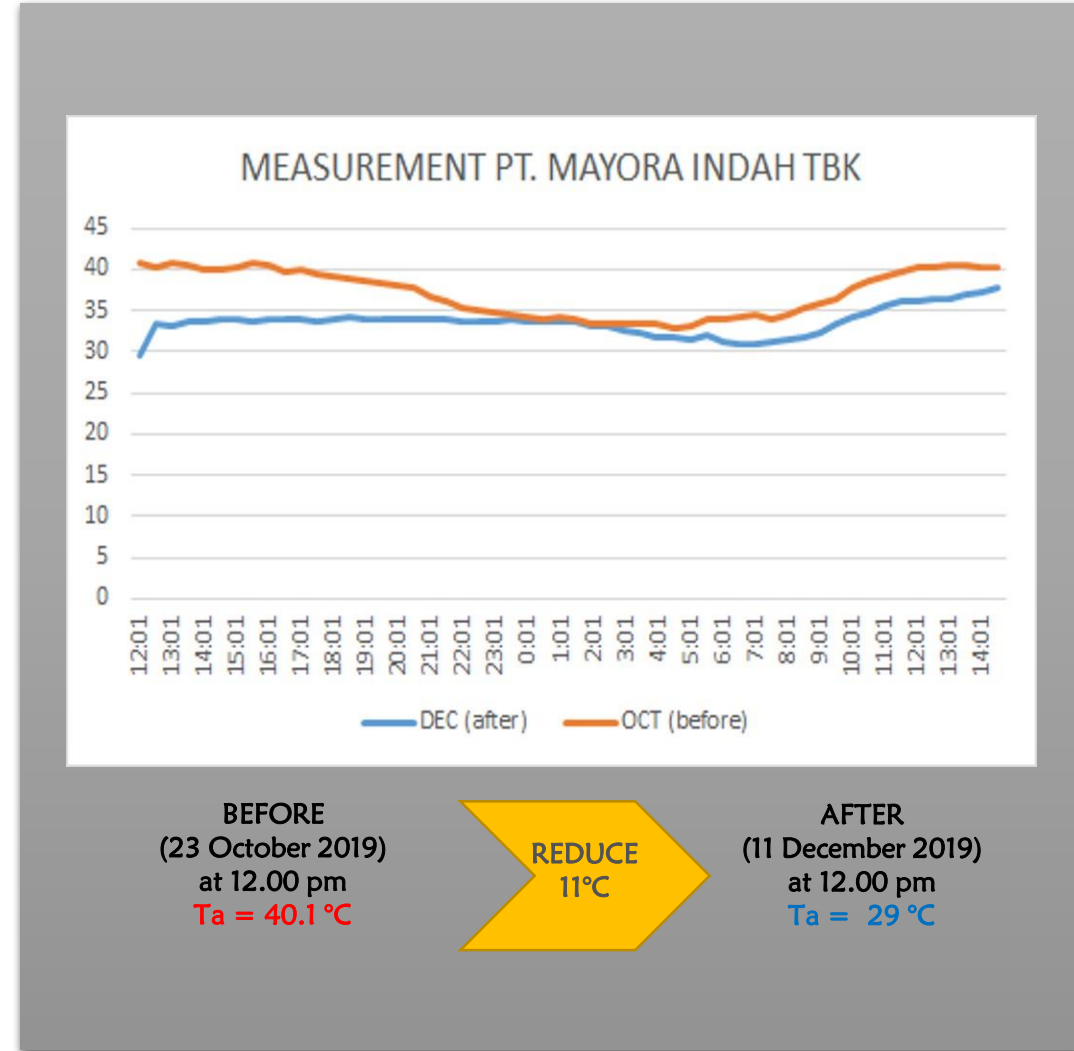
Under roof/indoor
(Canteen area)



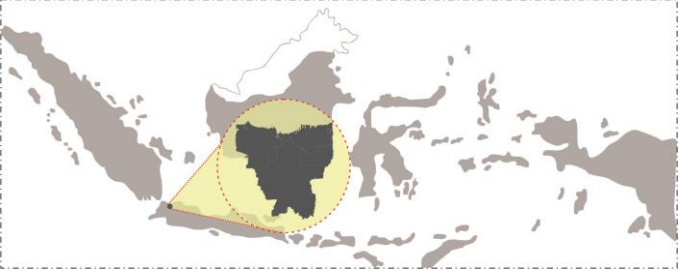
INDOOR
(23 October 2019)
at 12.00 pm
Ta (air temperature) :
39.9°C



OUTDOOR
(23 October 2019)
at 12.00 pm
Ta (air temperature) :
38.5 °C



Click to
return
to
maps



JAKARTA

SD Al - Kamal Elementary School

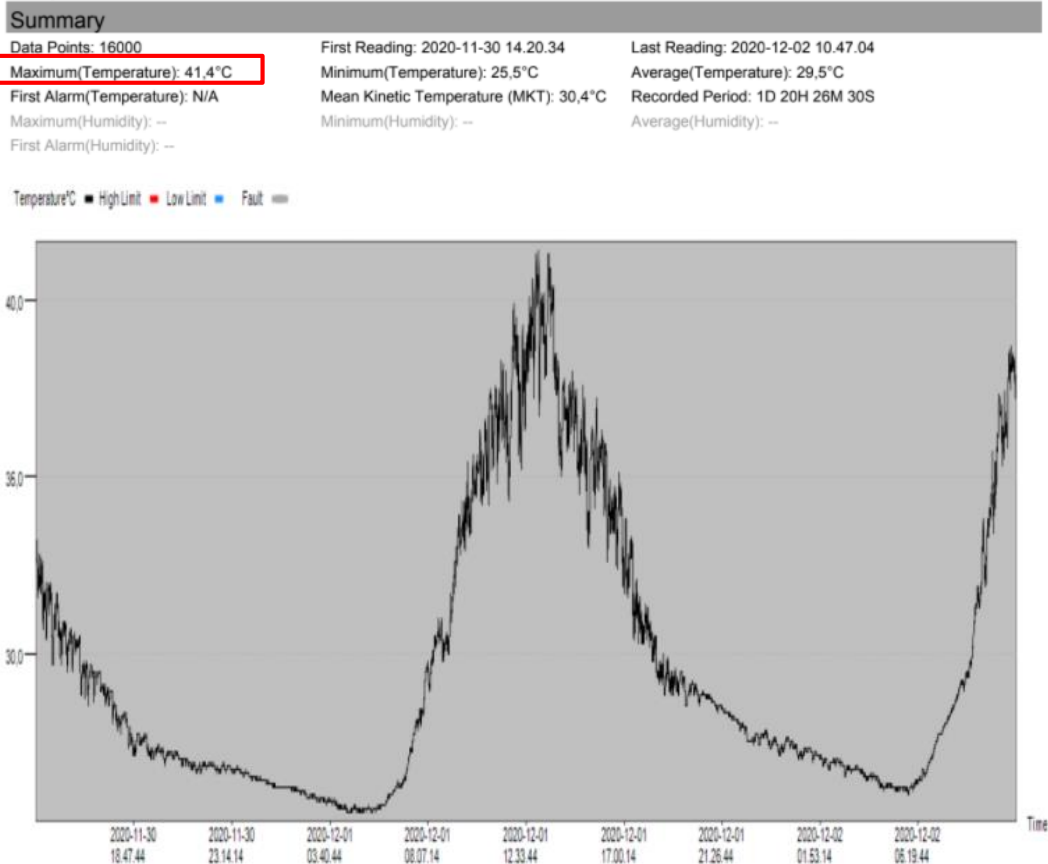
Total roof area 3,000 m²
IDR 60,000,000
USD 4,140



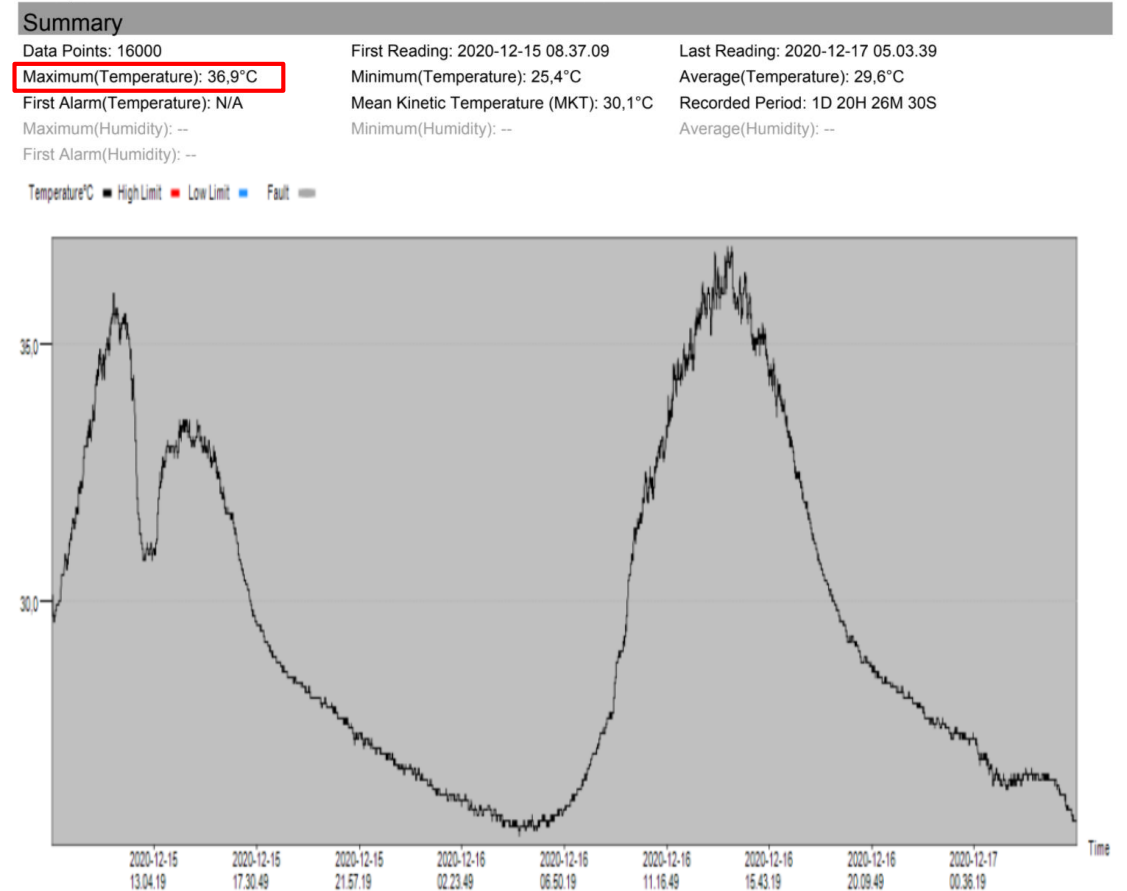
Mesurement results	Before 30 Nov 2020	After 15 Dec 2020
Tile roof temperature	41,4 °C	36,9°C
Indoor temperature	33,0 °C	31,5 °C

Cool roof paint measurement results (temperature) Under the roof

BEFORE



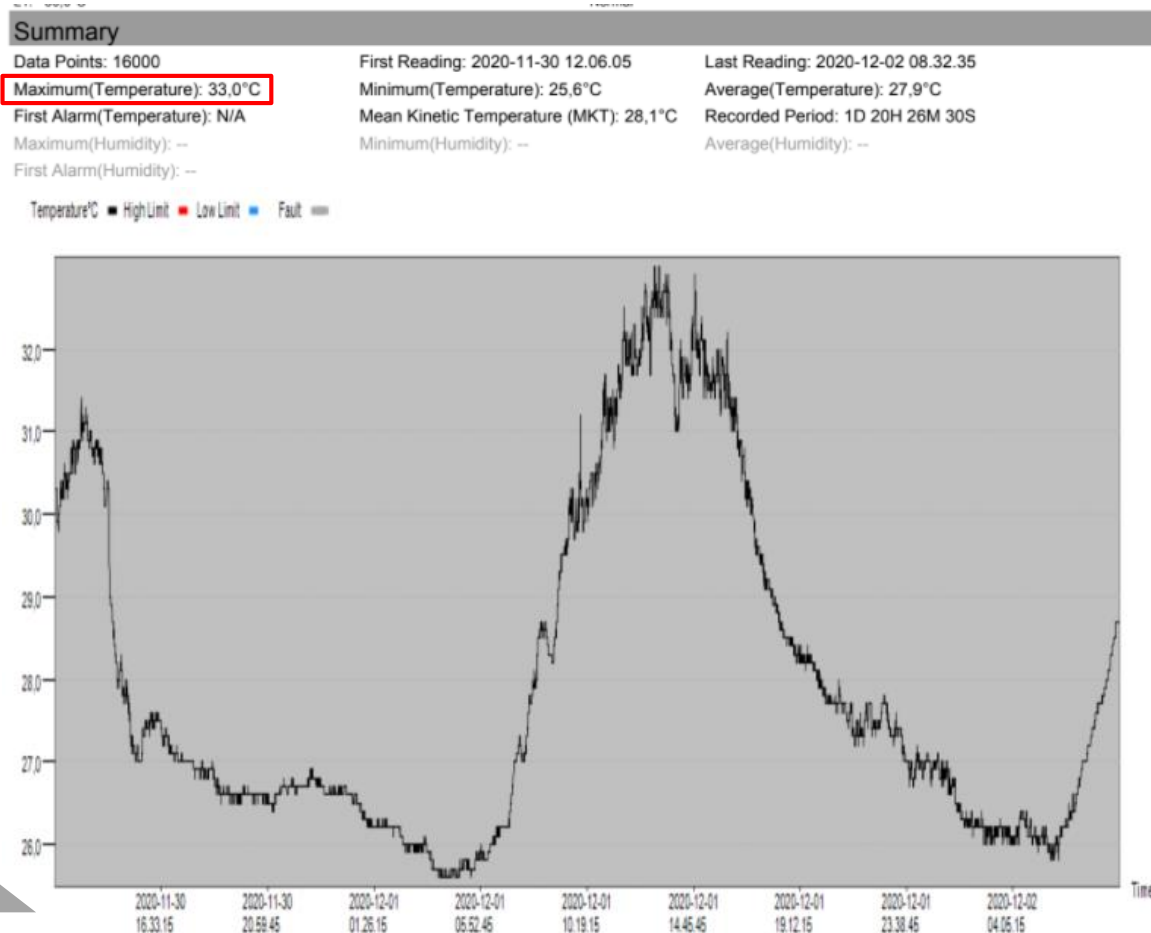
AFTER



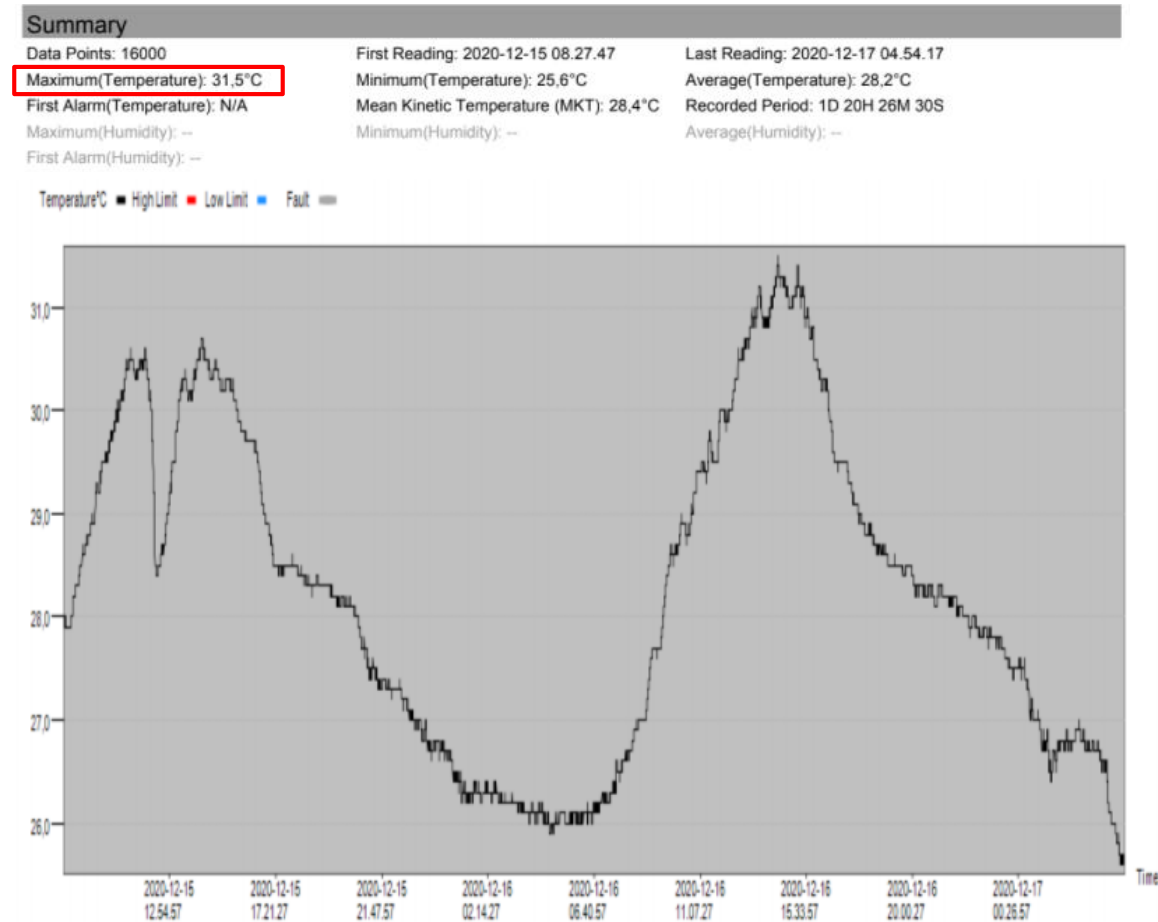
Cool roof paint measurement results (temperature)

Indoor

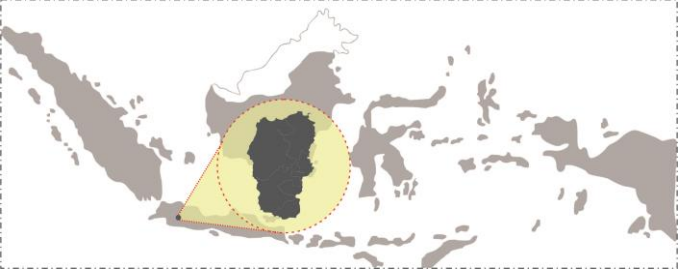
BEFORE



AFTER



Click to return to maps



SUBANG

PT. Chakra Tunggal Elektrindo

Production room/industry

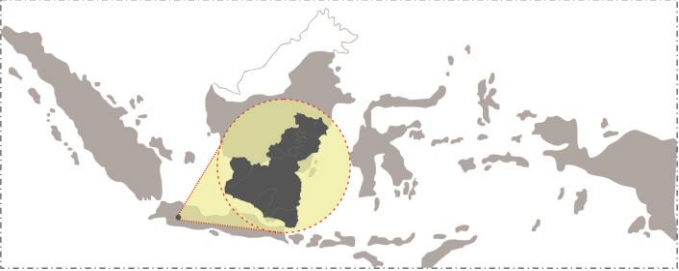
3000 m²

300 - 100 people

IDR 56,600,000

USD 3,905



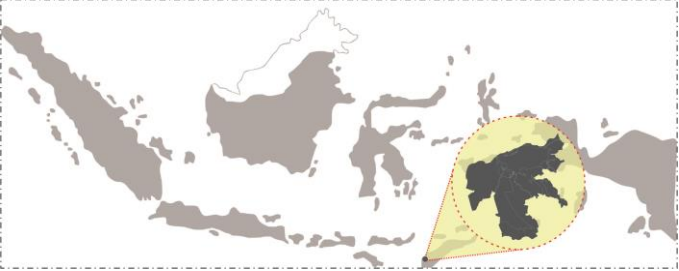


PAMEUNGPEUK, GARUT

Aliyah Ma'arif
School

Total roof area 2,156 m²
IDR 43,120,000
USD 2,975





KUPANG, NTT

Masjid At – Taqwa
Religious building (mosque)

Total roof area: 4,718 m²
500-700 people
IDR 94,360,000
USD 6,511



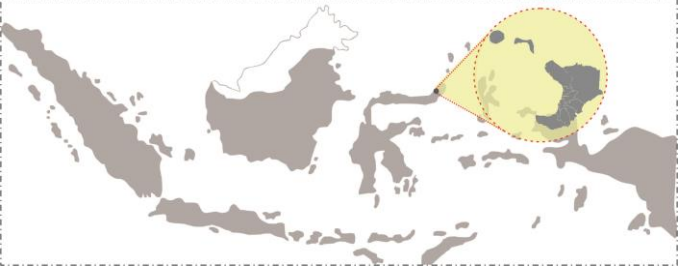
Process



Before



After

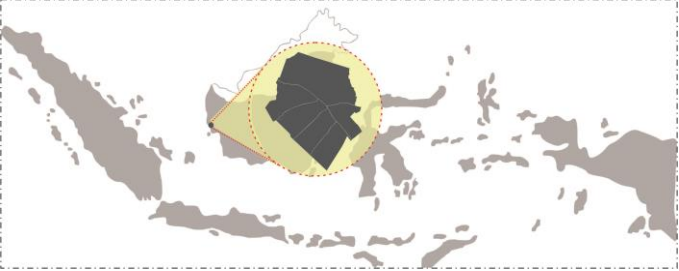


MANADO

Total roof area 3,100 m2
IDR 62,000,000
USD 4,278

1	2	3
MIS HIDAYATULLAH PALAES Islamic Elementary School 804 m2 69 people	MTs HIDAYATULLAH PALAES Islamic Junior High School 789 m2 48 people	MA HIDAYATULLAH PALAES Islamic Senior High School 471 m2 34 people





PONTIANAK

Panti Mu'tashim Billah Orphanage

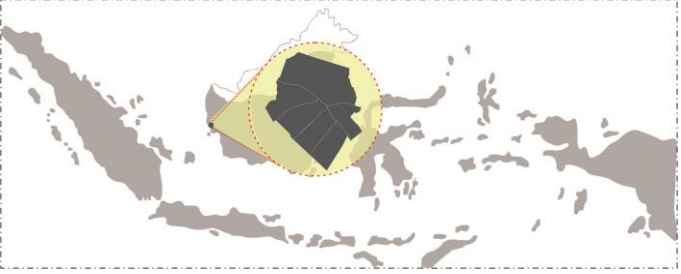
Total roof area 4,890 m²

450 people

IDR 97,800,000

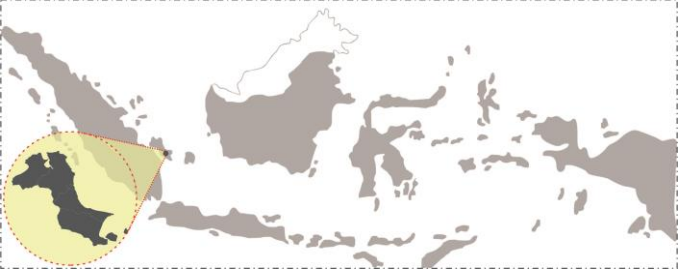
USD 6,748





PONTIANAK





BANGKA BELITUNG

Faculty of Engineering
Universitas Bangka Belitung

Total roof area 3000 m²
IDR 60,000,000
USD 4,140

