

# Electrification of **Rural** **Communities** in Venezuela



In Movement  
Since 1970

**Bornay** 

BY **JUANDE BORNAY**

# Area





# Area



# Area





# Jacuque





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# Isolated Communities with no electricity





# Case Study



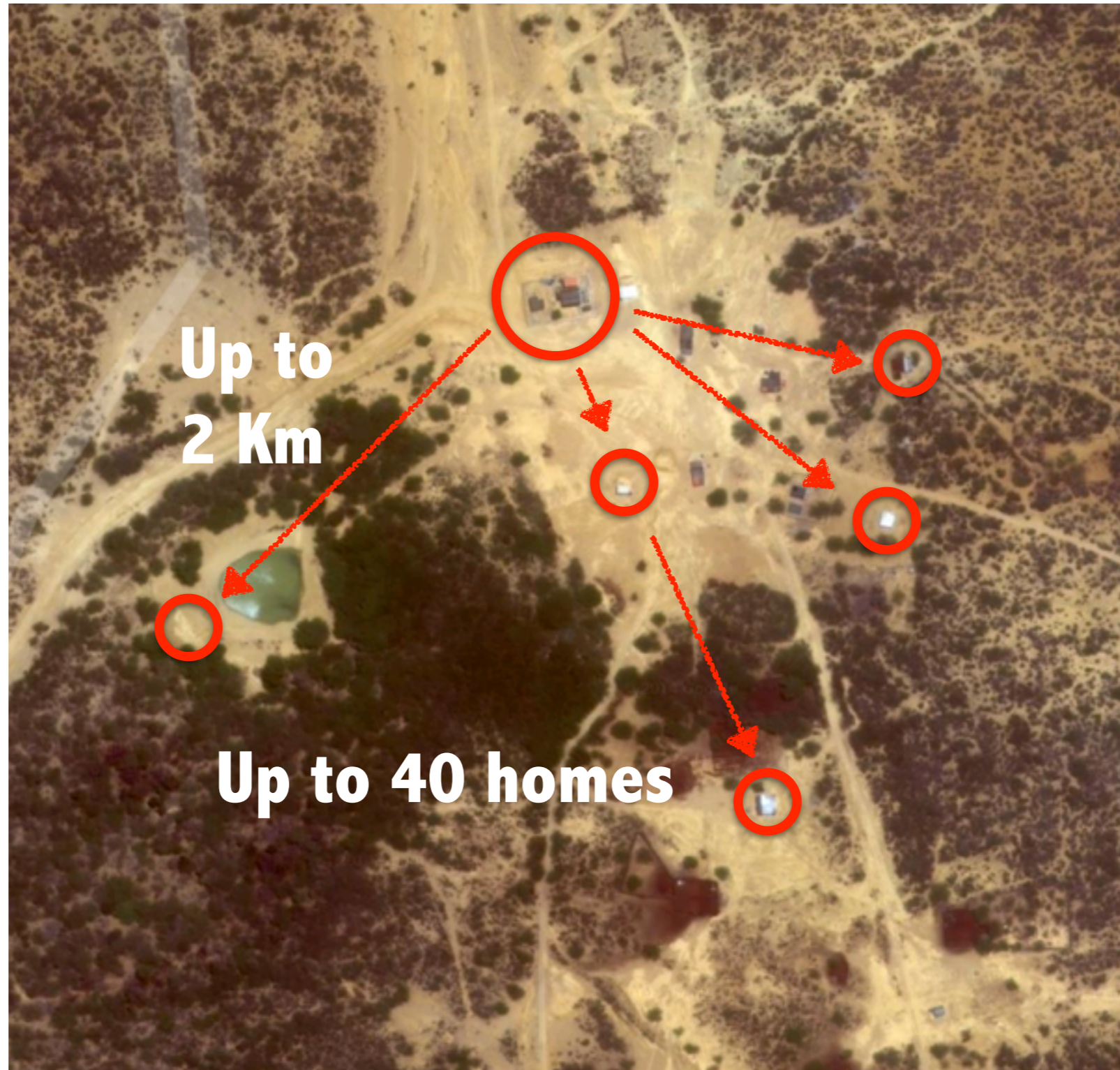


# Case Study





# Case Study





# Case Study

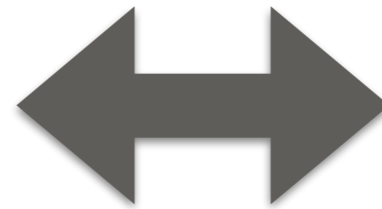
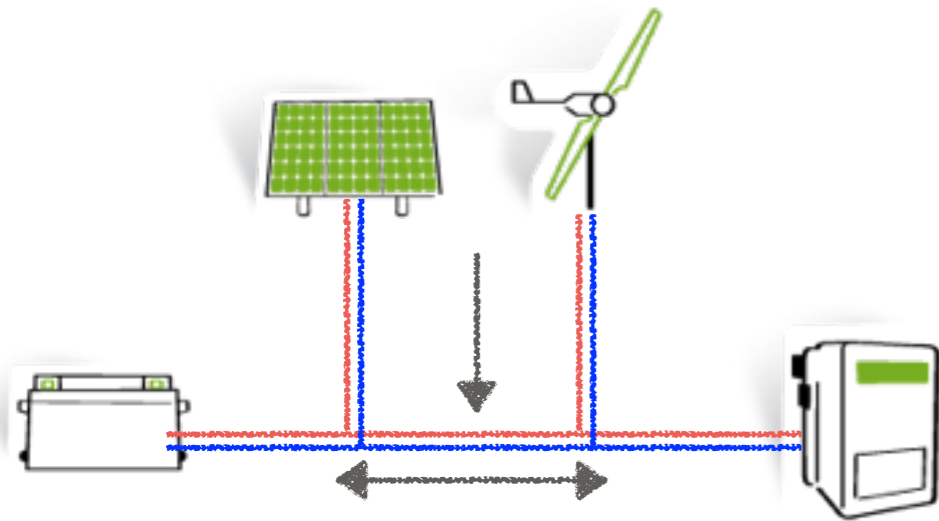
Description	Systems
<b>Communities up to 10 homes</b>	<b>7</b>
<b>Communities up to 20 homes</b>	<b>15</b>
<b>Communities up to 30 homes</b>	<b>14</b>
<b>Communities up to 40 homes</b>	<b>12</b>



# Case Study

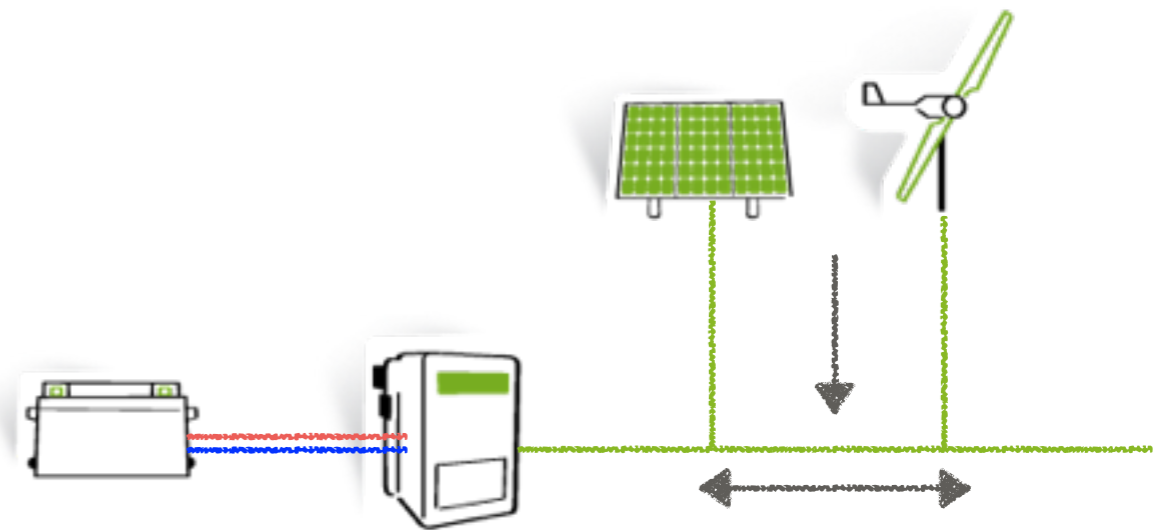
## Traditional systems

Centralized installation  
DC Bus  
DC losses  
Low distances



## Venezuela system

De-centralized installation  
AC Bus  
DC losses reduction  
Long distances



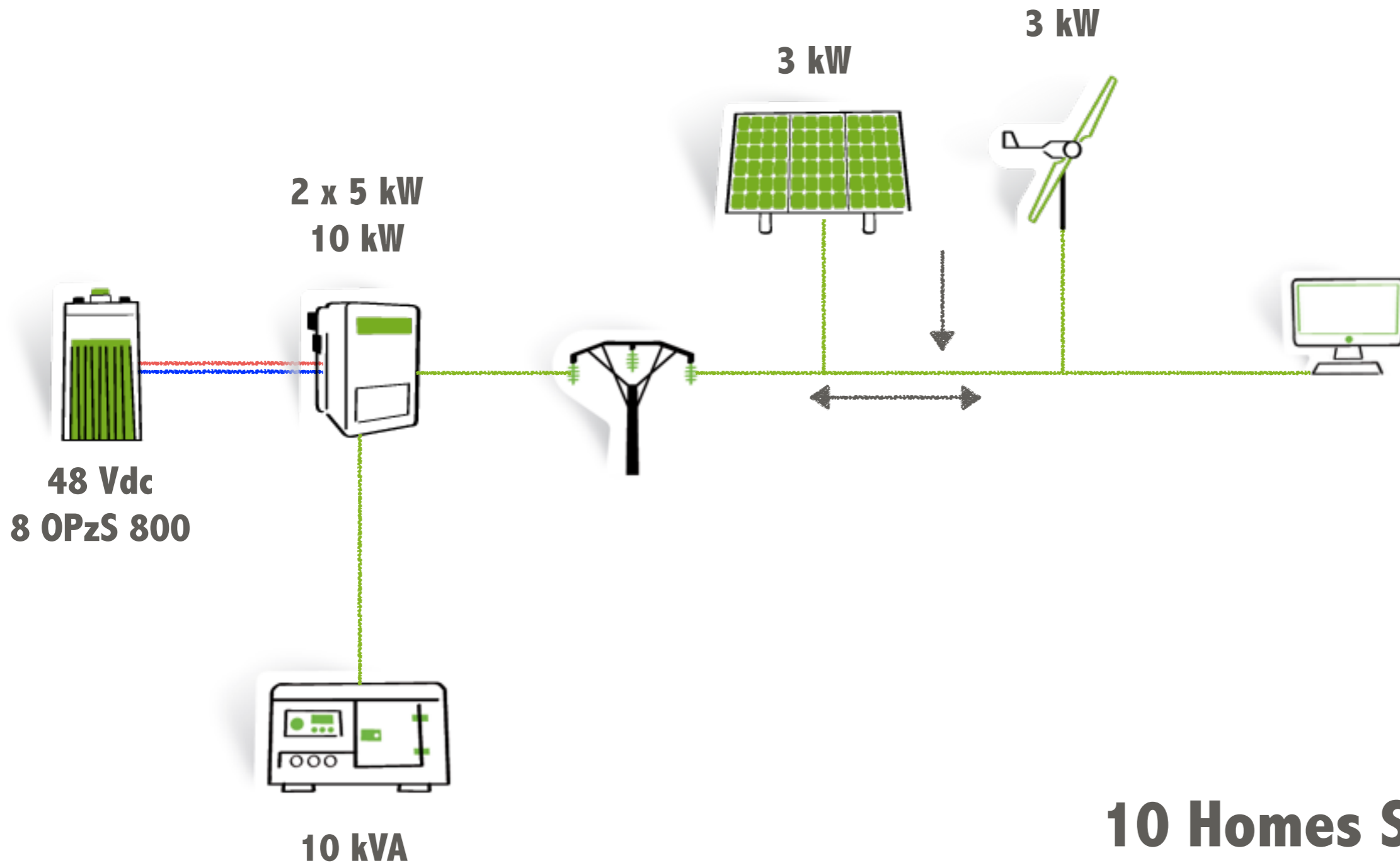


# Case Study

## Technical parameters

Maximum power per home	450 VA
Daily energy consumption per home	2 kWh/day
Solar irradiation	5 kWh/m <sup>2</sup> day
Wind production	54 %
Solar production	46 %
Battery autonomy	2 days
Battery maximum discharge rate	80%
Battery type	OPzS
Ambient temperature	32 °C
Minimum electronic efficiency	90 %
Consumption / Generation relation	1.10

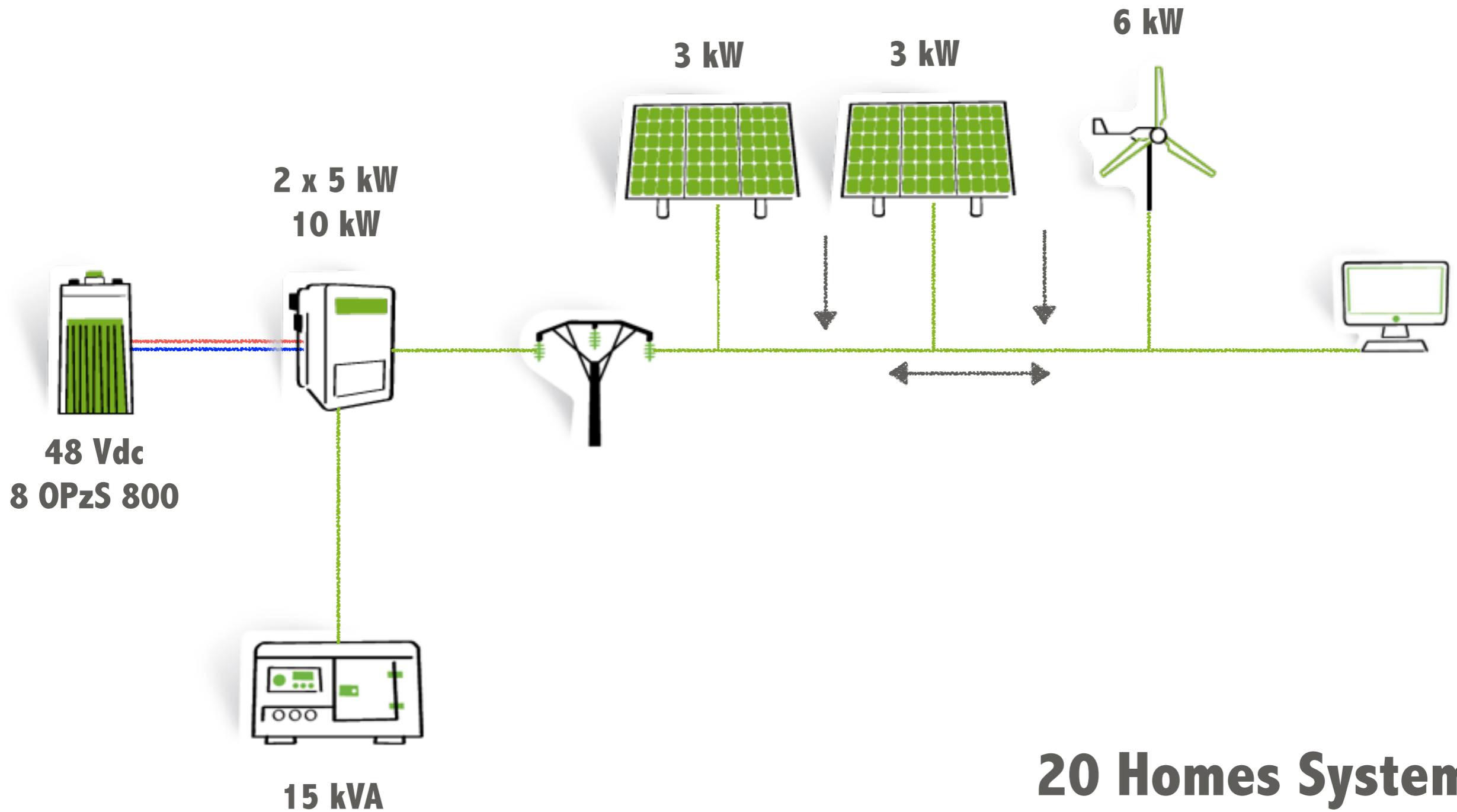
# Solutions



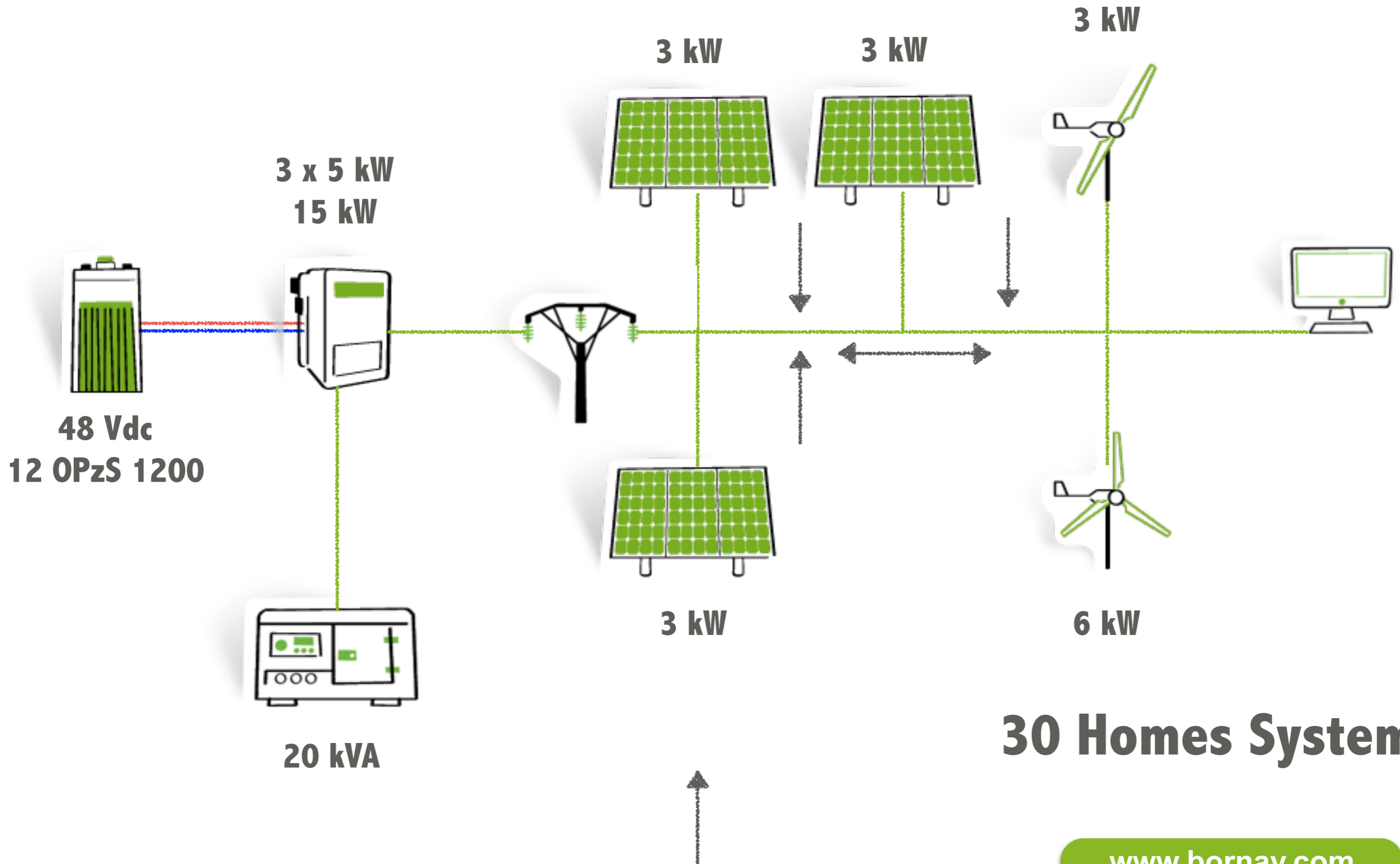
## 10 Homes System



# Solutions



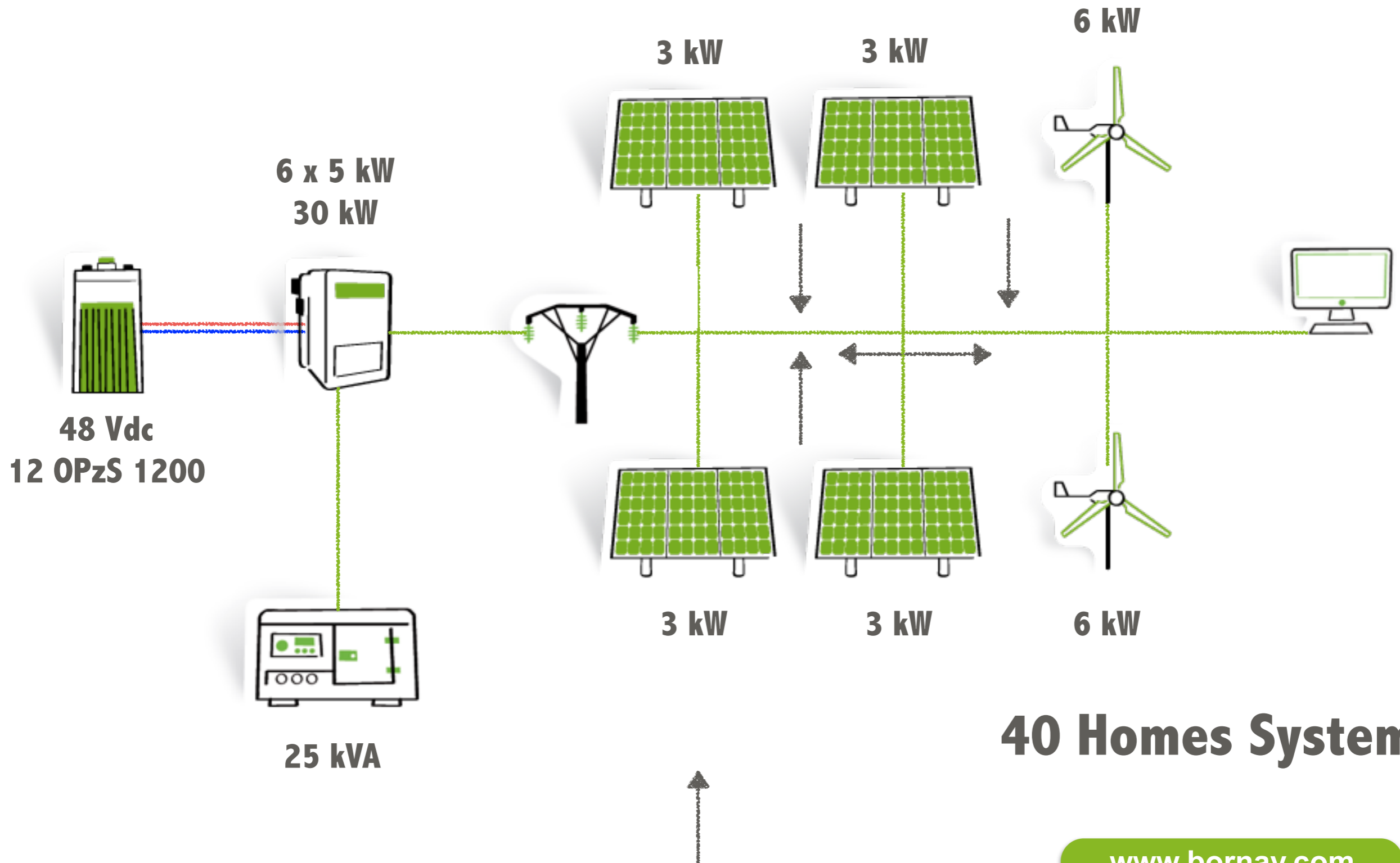
# Solutions



## 30 Homes System



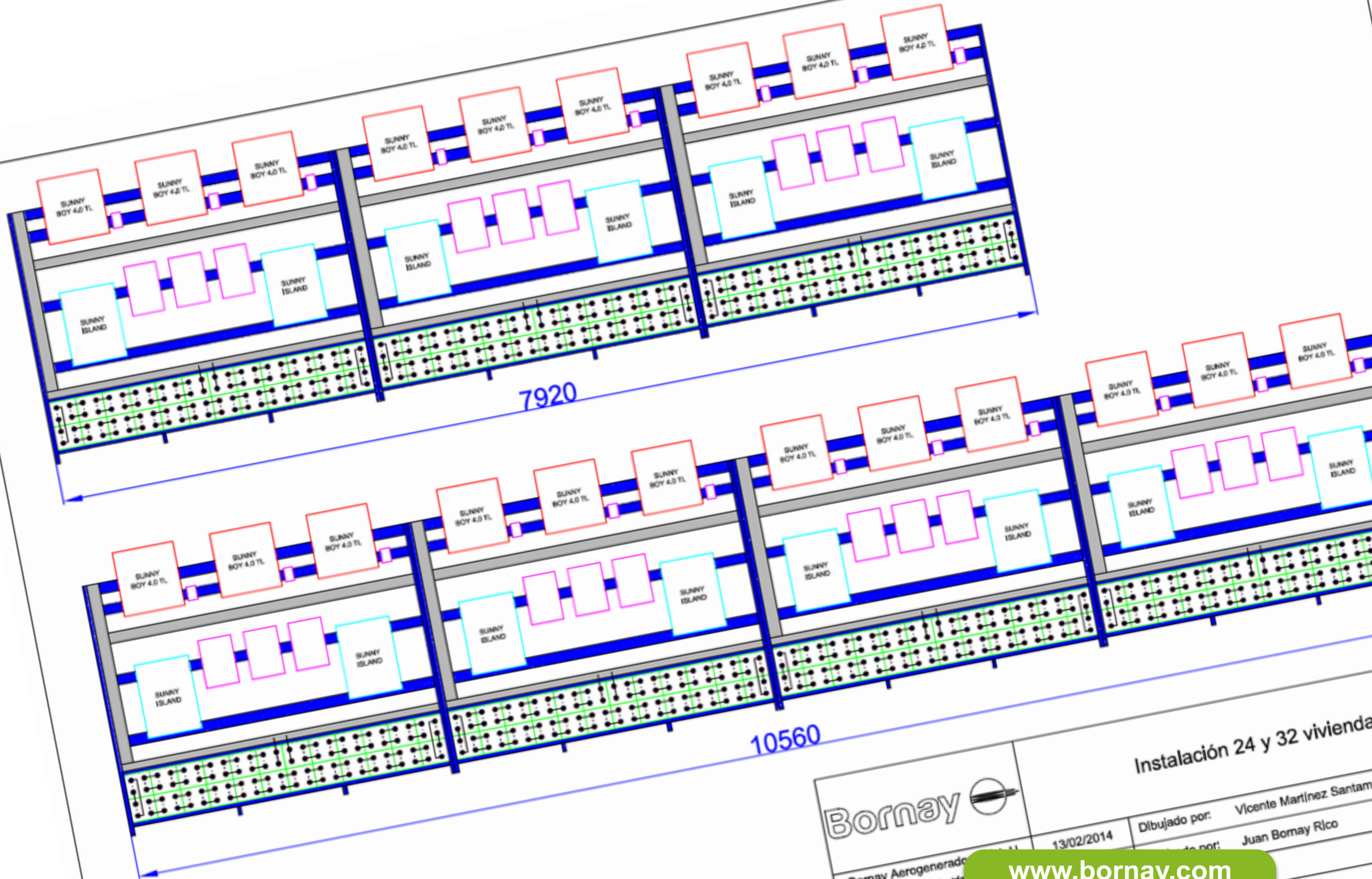
# Solutions



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# ENG & DESIGN



Instalación 24 y 32 viviendas

Dibujado por: Vicente Martínez Santamaría  
Revisado por: Juan Bornay Rico

13/02/2014

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# INSTALLATION





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# COMMISSIONING



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# USERS





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# Other projects





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# Tanzania





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# Congo





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# Windturbines



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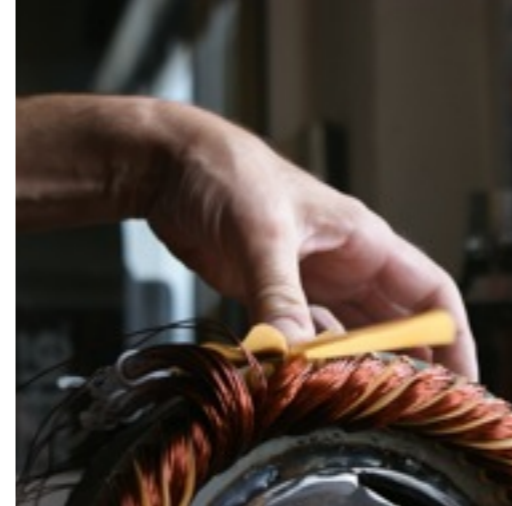
# 100% PRODUCTION



**RAW MATERIAL**



**MECHANICAL**



**ELECTRICAL**



**COMPOSITES**



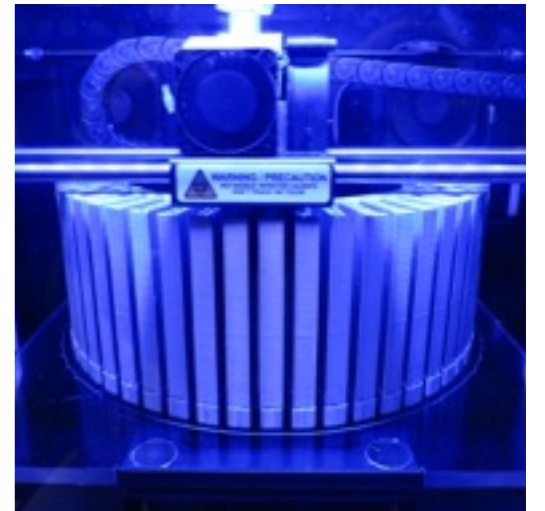
**ASSEMBLING**



**QUALITY INSPECTIONS**



**PACKAGING**



**R+D**



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**BORNAY 600**

600 W  
2 BLADES

**BATTERY CHARGE:**  
12, 24, 48 V

**BORNAY 1500**

1500 W  
2 BLADES

**BATTERY CHARGE:**  
24, 48 V

**GRID CONNECTION**

**BORNAY 3000**

3000 W  
2 BLADES

**BATTERY CHARGE:**  
24, 48 V

**GRID CONNECTION**

**BORNAY 6000**

6000 W  
3 BLADES

**BATTERY CHARGE:**  
48 V

**GRID CONNECTION**



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# Gracias

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