

# Zytech CPV 120X

## Medium Concentration PV

zero emissions · low maintenance · high efficiency



**NEXT GENERATION CPV**





# Zytech 120X MCPV

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Generating electricity from solar energy is becoming increasingly important considering the rapidly rising costs of fossil fuels such as gas. This trend looks likely to increase in rate over the coming years and therefore the total electricity generated from renewable energy sources such as the sun needs to be rapidly scaled up if demands are to be met and maintained.

Although solar power plants have been in existence for many years the electricity generated by them has been costly in comparison to conventional generating methods. This problem has been compounded by the shortage of solar grade silicon which has become expensive.

A solution to this problem was found by developing technologies which enable the solar radiation to be concentrated onto a smaller geometric area of silicon. using concentrator technology requires a significantly smaller area of costly silicon while still producing the desired level of power.

Current CPV ( Concentrated Photovoltaic) systems on the market (or under development) offer typical concentration ratios of 500X and greater. These systems however are difficult to manufacture and require precision components with very tight tolerances. This results in products that are difficult to manufacture at the required levels of quality and reliability. They are also critical in terms of installation, setup, tracking accuracy, and operating support required. The advantage gained by using a high concentration ratio is lost due to negative effect of the above factors.

The intensive research conducted by Zytech CPV pls has determined that medium concentration ratio systems will provide the most effective route for reaching cost parity with conventional energy production methods. The disruptive technology built into the Zytech module will result in a rapid reduction in the cost of generated electricity, rapidly bringing forward the point of grid cost parity.

The Zytech MCPV module incorporates a patented concentrator system which requires no individual and critical on site module alignment. The innovative prismatic lens refracts the sun's radiation onto the cell with a very uniform energy distribution pattern, unlike many concentrator lenses which are based on traditional focusing technology and do not distribute the energy efficiently.

In all PV systems today a percentage of the energy from the sun's radiation is converted to heat rather than electrical power. In high concentration systems the heat density profile can become a major issue affecting the overall efficiency and long term reliability of the cell and special heat sinks are therefore required. This increases the manufacturing complexity of the module. Due to the lower concentration ratio, the Zytech module generates a lower heat density profile and the innovative design provides excellent passive heat dissipation which removes the requirement for individual cell heat sinks. This greatly simplifies the manufacturing process, reduces costs, improves reliability and ensures the cells operate at their optimum efficiency throughout their lifetime.

At the heart of 'Zytech' technology is a specially designed single junction mono crystalline silicon cell only 20mm by 20mm and with conversion efficiency of 18%. The 'Zytech' cell design is optimised for our chosen 120 sun concentration and has low series resistance and capable of high current density. 'Zytech' is making use of single junction silicon technology which is inherently reliable, easy to manufacture and proven to be long lasting. The simplicity of design makes it easy to manufacture at a low price and only uses about 1% of the silicon required to produce conventional flat plate modules.

The entire module is structurally very strong, extremely robust and durable making it one of the best products on the market.

### Zytech CPV advantages...

- We have a manufacturability advantage over our competitors
- We have a major cost advantage over our competitors
- No one has the simplicity of our technology
- Our product reliability is outstanding

The Zytech 120X MCPV is a medium concentration ratio module with the following features:

- Patented 120X concentrator system
- Extremely cost effective for rapid ROI
- Designed for long term durability and reliability
- Suitable for large grid connected applications and solar farms

		MCPV-36	MCPV-48
<b>ELECTRICAL DATA</b>			
Maximum Power*	<i>P<sub>max</sub></i>	115W	150W
Open Circuit Voltage	<i>V<sub>oc</sub></i>	22.08	29.39
Max Power Point Voltage	<i>V<sub>mpp</sub></i>	17.41	23.22
Short Circuit Current	<i>I<sub>sc</sub></i>	7.18A	7.18A
Max Power Point Current	<i>I<sub>mp</sub></i>	6.62A	6.62A
Cells per module		36	48
<b>DIMENSIONS</b>			
Cell (L) x (W)	<i>cm</i>	2.0 x 2.4	2.0 x 2.4
Module (L) x (W) x (D)	<i>cm</i>	102x102x21	134x102x21
Module Weight	<i>kg</i>	21	27

<b>MECHANICAL</b>	
Frame:	Pc + ABS
Front	PMMA Lens
Back	Aluminium
Cell Encapsulation	EVA
Junction Box	PPE- Ip65
Connector	MC Type 4
<b>TEMPERATURE COEFFICIENT</b>	
Current Temperature Coefcient	+4.40 mA/K
Power Temperature Coefcient	-0.46 %/K
NOCT Normal Operating Cell Temperature	70°C ± 2°C
<b>LIMITS</b>	
Operating Temperature Limits	-25°C to +85°C
Power Tolerance	±3%
Maximum System Voltage	1,000V DC

