



### General Description/Main Features

Clean Current has developed a family of turbines ideally suited to the specific environment found in rivers. This technology, adapted from Clean Current’s extensive experience with tidal turbines, uses the same proprietary generator technology and combines this with specific blade and duct modifications. The result is a simple, yet robust, product designed to operate with minimal maintenance over a 25 year period. The product family has been developed to suit 3 different minimum river depths ranging from 3.0

to 5.5 metres. These units produce a given rated power for a given rated current speed as shown in the Table below.

Model	Min. River Depth (m)	Blade Diameter (m)	Rated Power Output (KW)	Rated Current Speed (m/s)
CC015A	3.0	1.5	12	3.0
CC025A	4.0	2.5	33	3.0
CC035A	5.5	3.5	65	3.0

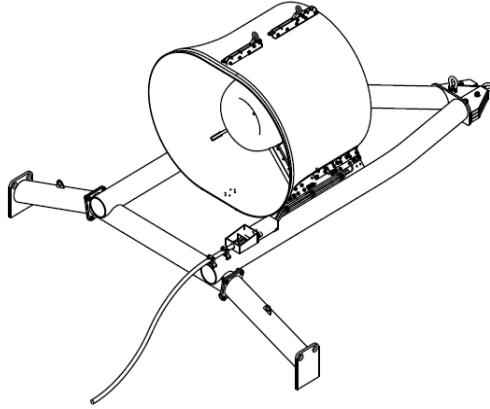
Each of these models also has a “growth” version in which the core of the machine remains unchanged but the blade and duct size are increased to provide additional power output.

Model	Min. River Depth (m)	Blade Diameter (m)	Rated Power Output (KW)	Rated Current Speed (m/s)
CC020A	3.3	1.7	16	3.0
CC030A	4.5	2.9	44	3.0
CC040A	6.0	4.0	84	3.0

This family of river in-stream turbines provides the following benefits:

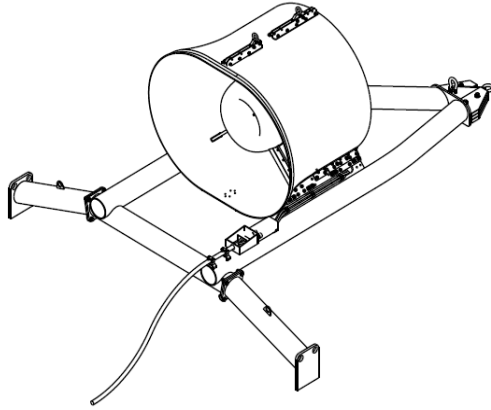
- Simplified design enhances reliability
- Fault tolerant generator specifically designed for the marine environment
- Proprietary coatings technology
- Demonstrated superior performance (proprietary duct design)
- Easily deployed and retrieved, even in remote locations
- Autonomous operation and remote performance monitoring
- Plug and power capability with onshore equipment
- Ideally suited for remote locations as it is easily integrated with other renewable energy sources and existing diesel generation

## Technical Specifications – CC015A



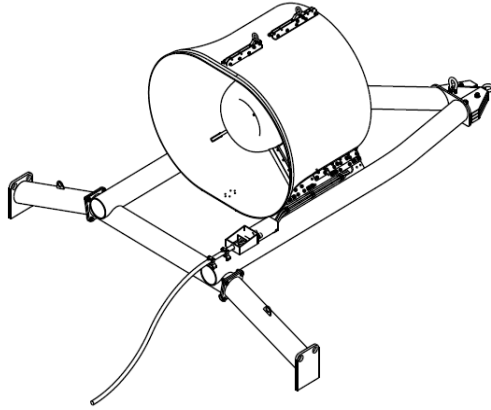
Operating Data		Main Dimensions	
<b>General</b>			
Rate Power:	12 kW	Diameter at inlet	1.5 m
Rated water speed:	3.0 m/s	Height at outlet	1.5 m
Power regulation:	Fixed pitch, variable speed	Width at outlet	2.0 m
Cut-in water speed:	1.5 m/s	Overall length	1.3 m
Operating range:	1.5- 3.5 m/s		
Cut-out water speed:	4.2 m/s	<b>Weight</b>	
Operating depth:	3.0 m	Turbine:	1.4 T
		Substructure:	1.6T
<b>Rotor</b>		Installation:	Surface or riverbed mounted
Type:	3-bladed, ducted		
Rotor diameter:	1.5 m	Lifetime/Service:	25 yrs /every 10 yrs
Swept/Inlet area:	1.8 m <sup>2</sup>		
Nominal rpm:	180 rpm		
Operational range:	90 - 210 rpm		
<b>Generator</b>			
Type:	Flooded, permanent magnet, segmented, direct drive		
Nominal output:	12 kW		

## Technical Specifications – CC025A



Operating Data		Main Dimensions	
<b>General</b>			
Rate Power:	33 kW	Diameter at inlet	2.5 m
Rated water speed:	3.0 m/s	Height at outlet	2.5 m
Power regulation:	Fixed pitch, variable speed	Width at outlet	3.2 m
Cut-in water speed:	1.5 m/s	Overall length	2.2 m
Operating range:	1.5- 3.5 m/s		
Cut-out water speed:	4.2 m/s	<b>Weight</b>	
Operating depth:	4.0 m	Turbine:	2.2 T
		Substructure:	Depends on installation
<b>Rotor</b>		Installation:	Surface or riverbed mounted
Type:	3-bladed, ducted		
Rotor diameter:	2.5 m	Lifetime/Service:	25 yrs /every 10 yrs
Swept/Inlet area:	4.9 m <sup>2</sup>		
Nominal rpm:	108 rpm		
Operational range:	54 - 126 rpm		
<b>Generator</b>			
Type:	Flooded, permanent magnet, segmented, direct drive		
Nominal output:	33 kW		

## Technical Specifications – CC035A



Operating Data		Main Dimensions	
<b>General</b>			
Rated Power:	65 kW	Diameter at inlet	3.5 m
Rated water speed:	3.0 m/s	Height at outlet	3.5 m
Power regulation:	Fixed pitch, variable speed	Width at outlet	4.6 m
Cut-in water speed:	1.5 m/s	Overall length	3.1 m
Operating range:	1.5- 3.5 m/s		
Cut-out water speed:	4.2 m/s	<b>Weight</b>	
Operating depth:	5.5 m	Turbine:	3.2 T
		Substructure:	Depends on installation
<b>Rotor</b>		Installation:	Surface or riverbed mounted
Type:	3-bladed, ducted		
Rotor diameter:	3.5 m	Lifetime/Service:	25 yrs /every 10 yrs
Swept/Inlet area:	9.6 m <sup>2</sup>		
Nominal rpm:	75 rpm		
Operational range:	40 - 90 rpm		
<b>Generator</b>			
Type:	Flooded, permanent magnet, segmented, direct drive		
Nominal output:	65 kW		