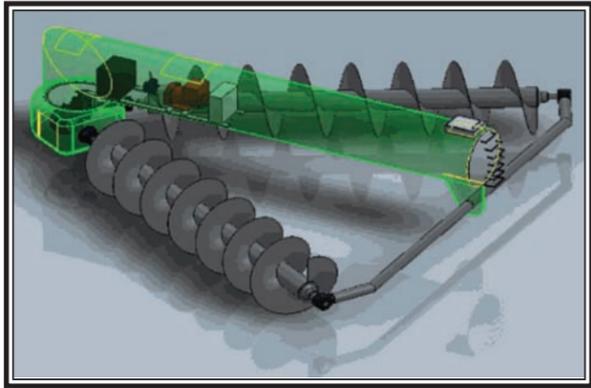


# Jupiter Hydro Coming to Bay of Fundy



Pictured above is Jupiter Hydro's 2EB7.5X34 unit which will function in a tidal deployment or as an in-stream river turbine designed to produce 300kW's of power at just under 4 m/s flow. It can be anchored in both directions and will make equal power whether the flow is into the point of the V-shape or the open part of the V. In river deployments, a simple single anchor is all that is required. It will produce high or low voltage grid ready power, whatever is required. (Submitted)

By Maurice Rees

Jupiter Hydro's vision is to create "Green Power" from tidal flows, rivers, canals and ocean currents is expected to be a major player in the Bay of Fundy once it has secured a 5MW site and a Power Purchase Agreement with Nova Scotia Power.

Although new on the Nova Scotia scene, Jupiter Hydro, an Alberta-based company, has developed a patented tidal and river technology that, like no other technology, can produce power at a rate lower than what the European Union has set as a price target to be met by 2030. Jupiter's first major effort was to have a booth in the European Marine Energy Conference 2016, in Edinburgh, Scotland and was looking for a major investor. Following the 2016 trade show, Jupiter linked up with Hatch Engineering, a large global engineering company, which has head offices in Toronto.

As soon as Bay of Fundy was mentioned, the Shoreline Journal reached out to FORCE for their input. Matt Lumley responded with the following statement. "We regularly talk to small and large-scale technology developers, from across the globe. And we've heard increased interest from a number of companies following the province's announcement in October that up to 10 megawatts may be available in Nova Scotia under new demonstration permits".

Lumley on behalf of Tony Wright, general manager continued, "It's not really for us to comment on which companies. Several have been public about their interest in Nova Scotia - best to speak to them directly. We'd like to see a diversity of technology tested here - we have the infrastructure and monitoring programs to support it".

"We have no say over whether any of this new potential

demonstration activity may be located at FORCE - ultimately that will be a decision of the Minister", Lumley concluded.

Realizing Nova Scotia was wanting to develop tidal power in the Bay of Fundy, but all five berth holders at the FORCE site in the Minas Channel are occupied by European technologies Jupiter and Hatch Engineering met with officials at the provincial Department of Environment. They anticipate the "all Canadian" content - patented, engineered, developed and manufactured in Canada will be a boost to sales locally, as well as, and acceptance in the global marketplace.

Two things have helped push Jupiter Hydro forward. First Nova Scotia announced amendments to the Marine Renewable-energy Act to make it easier to assess innovative, lower-cost tidal energy technologies and help developers bring them to market faster. The amendments will allow demonstration permits of up to five megawatts and allow companies to sell the electricity they generate at a lower price than existing tidal feed-in-tariffs. With the consent of the Natural Resources Minister, the energy minister (Jeff MacLellan) will be able to issue permits for up to five years. Permits can be renewed for up to five years, but not longer than a total of 18 years. Performance will be a consideration for renewal.

The energy minister will also have the authority to negotiate and issue power purchase agreements for up to 15 years and hold operators accountable. No more than 10 megawatts of total power will be authorized under the amendment and operators are still required to have all applicable permits and environmental approvals.

The second factor was in November the Federal Government

at the Marine Renewables Canada 2017 Conference in Ottawa on November 8 and 9 announced a new support package for tidal projects. Sinclair expects Jupiter's Bay of Fundy 5 MW site will be at the top of the list to receive 50% of all its costs to fully deploy two 2.5 MW 4EB1672 Turbines. These turbines, (see adjacent graphic) will have four Archimedes' screws measuring 16 feet in diameter and 72 feet long.

It is designed to generate equally as well with flows in either direction. It generates whether the water is flowing into the point of the "V" or into the opening in the "V". The unit is anchored in place from both front and back and need not swivel like many of the competitor's models require.

Sinclair and Hatch Engineering believe there are five reasons why rapid acceptance of the Jupiter technology is expected:

We are at least 2 times less costly than the most established competitors.

We deploy our technology either on the surface or buoyantly submerged.

We use hydraulics with standard off-the-shelf generators which are 1/6th the weight and 1/6th the cost. No other technology is doing this. Others are using huge variable speed generators with gearboxes which have proved to be very problematic in the wind industry. In the turbulent salty conditions of the ocean, this will prove to be a bigger concern than it is in the wind industry.

We actually have less to prove than any technology as all our components are long since proven.

Our deployments are more environmentally friendly and our technology can handle debris better than any other technology.

The South Cumberland News will continue to keep in contact with the province, FORCE and Jupiter Hydro to report on ongoing activities.

## Worldwide Market For In-Stream River Power Turbines

Written by Ross Sinclair, CEO & Founder of Jupiter Hydro Inc.

The worldwide market for power made from flowing rivers has been estimated by some sources to be very high. This is quite subjective and unsure at this point. There are just too many variables involved. Atlantis Resources, the largest tidal developer in the world has made inroads for commercial sized river projects in many parts of the world. They are in discussion with officials in Indonesia, the Philippines and some other East Asian countries. They are also working at a high level with a South American country which is looking at a project which will be up to 500 MW's. The most imminent project is a 500 MW project in Africa. Due to an NDA with Atlantis, we at Jupiter, are not at liberty to divulge which country in Africa this is. The funds are in place for this and it will be proceeding. Atlantis is of the opinion that the Jupiter technology is the best idea they have seen for river projects, in particular, because they feel it will handle debris better than any technology and it will economically make grid ready power inside the protected environment of its

central pontoon. If you look at the technology page of the Jupiter website, you will see a picture of what Atlantis developed for rivers many years ago in Australia. This is far more costly than the Jupiter technology and clearly very prone to damage from debris. After we build and test the 2EB7.5X34 unit shown below in the tidal flows at EMEC, Atlantis has said they will ship it to Africa to demonstrate at their new project there. This will lead to Jupiter supplying the first major river project in the world.

Since the signing of the Paris agreement on Climate Change, countries all over the world are looking at sustainable power solutions and companies like Atlantis Resources and many others are working with governments and other organizations such as the Asian Development Bank and the UN to fund projects like this in developing nations worldwide. In many of these developing countries there is a very limited power grid, especially in remote areas. As people everywhere build communities on rivers and in a lot of cases they are depending on diesel generators, it is only a matter of time that they will

increasingly be looking to get sustainable power right from the rivers flowing through their communities. This power is predictable and, as such, can be more valuable than wind or solar. Jupiter's river technology is poised to be the leading technology in this whole new green power field.

This is the 2EB7.5X34 unit (seen above). It will function in a tidal deployment by being anchored in both directions and will make equal power whether the flow is into the point of the V-shape or the open part of the V. In river deployments, a simple

single anchor is all that is required. It will produce high or low voltage grid ready power, whatever is required. In a remote river application it has the advantage of not needing any infrastructure on land as do many other technologies. It also is the technology most able to handle debris.

This unit is designed to produce 300kW's of power at just under 4 m/s flow. In faster flowing situations, the generators can be upsized to suit and in a predominantly slower river application, the screws can be upsized to suit the particular resource.

## Annapolis Royal Turbine Resumes Generation

By Maurice Rees

In an email on Friday, January 26th, Tiffany Chase Nova Scotia Power's Senior Communications Advisor confirmed the Annapolis Royal tidal turbine has resumed electricity generation. The turbine had been shut down last summer for repairs for repairs to the generator.

When contacted by email on January 25th, Chase replied, "This morning we initiated testing of all systems at the Annapolis Tidal Plant to ensure safe, reliable electricity generation can resume". Based upon the tide cycle, water is passing through the sluice gates, fish passages and the turbine (on the outgoing tide), however we do not plan to resume regular operations (electricity generation) until Friday, pending today's systems testing.



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