

LAUNCHING OF THE INDUSTRIAL VERSION OF THE VLH

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Our website will be updated shortly. We will add a lot of information thereto, so do consult it



www.vlh-turbine.com

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Dear Friends and Partners,

2008 has been a successful year for MJ2 Technologies.

We have indeed delivered and commissioned the VLH of Moulin de La Roche on the Mayenne river for the SHEMA (100% subsidiary of EDF - French Electricity). This new VLH has



Inauguration of the La Roche plant

benefited, for its design, from the experience acquired in the manufacturing and operation of the Millau VLH.

This industrial version of the VLH is the initial unit of a series of 8 units for which we have confirmed orders and that are under production. (See pages 3 and 4)

In page 5, we will take a look at the new projects and the orders received.

The La Roche project has also forced us to implement an idea that we have had for many years: installing the VLH by flotation (See p. 2).

We have further completed our fish passing test campaign. We now have final official results. They have enabled us, by accurately locating the area where fish get smashed, to de-

sign a distributor and a discharge ring with increased fish-friendliness. (See page 5)

This new concept will be manufactured this year and tested again. This time, we aim at a survival rate for eels ranging from 97 to 99%. (See page 6)

2009 will be the year of MJ2's industrial manufacturing launch. Indeed, in addition to the 7 machines under production and deliverable this year, we aim at filing orders for 12 machines. The first export orders should also arrive from Belgium, Italy, Germany, Spain, and possibly Canada.



From left to right: Marc Leclerc, Matteo Beggio, Jacques Fonkenell, Francis Maury, Franck Edmond and Anthony Garrigues

The MJ2 team has grown. It now comprises 6 members (4 Engineers, 1 Technician and the Manager) and will further expand in 2009.

Marc Leclerc
Manager

THE LA ROCHE VLH

The harnessing of the La Roche site has required the development of several new functionalities for the VLH, such as the installation by flotation.



The unit is loaded on a barge



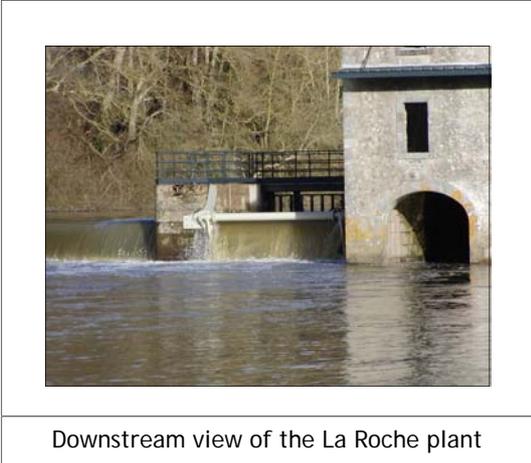
The barge enters the location

This unit paves the way for the harnessing

Due to the distance from the river bank, the La Roche VLH was installed by means of barges.

The barge was moved to the location of the VLH. At that time, the VLH was vertically winched to its final position.

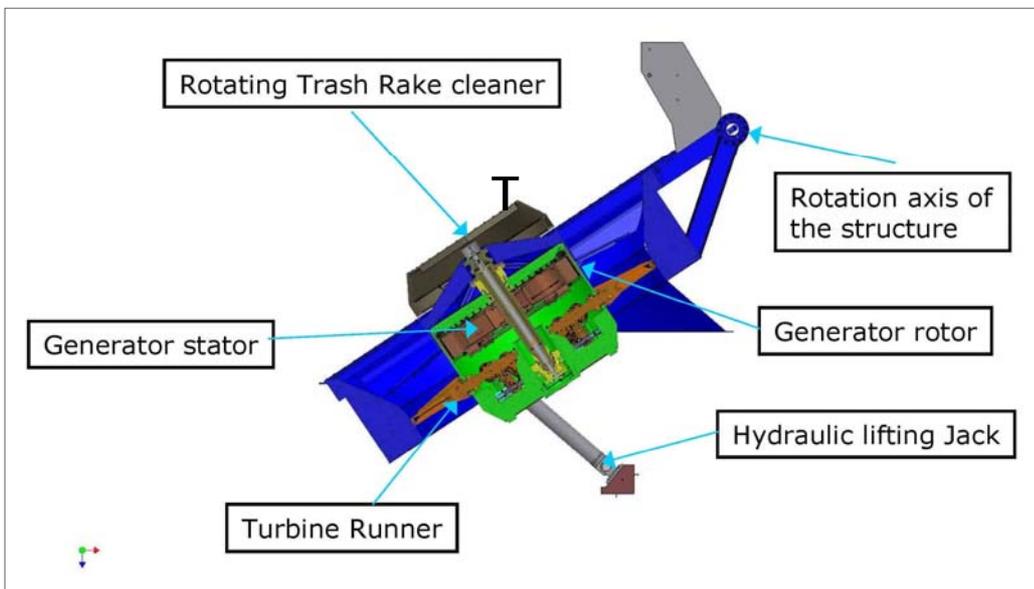
In addition, this has given us the opportunity to design a reinforced lifting system enabling to pivot the machine upwards without requiring any upstream cofferdamming. This feature paves the way for lifting the machine under the water head, which is necessary for applications on navigable rivers or to help the flood discharge on control works.



Downstream view of the La Roche plant with VLHs of the 14 other Mayenne locks and dams exploited by the SHEMA.

Finally, the SHEMA has renewed its confidence in us by ordering a VLH for the Arne plant on the Mayenne river.

«Reinforced structure for the lifting from the water and installation by flotation»



THE INDUSTRIAL VLH

As the result of 10 months of specific development, MJ2 presents the industrial version of the VLH.

Conceptually, with respect to the prototype, nothing has really changed. Details and sub-units have only been adapted to enable the VLH to enter an industrialization phase.

On the outside, it is barely different from the old version. It still is a monoblock unit with a structure that can pivot upwards, incorporating a rotating bar screen and an immersed bulb with a direct-drive variable-speed permanent magnet generator. The hydraulic profile has also been kept, since it has met its performance expectations at Millau.

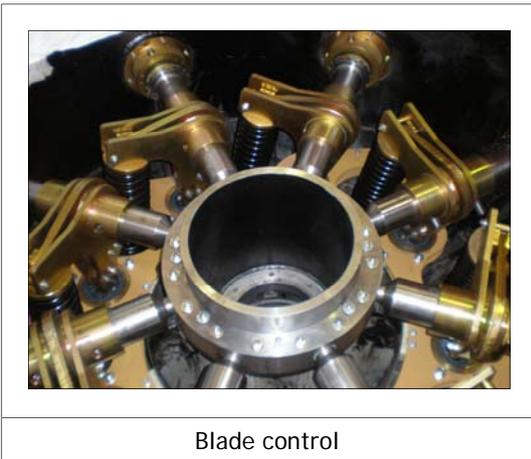
The bulb simplification has been stressed. The bulb now consists of a single tight envelope. The bulb is guided to rotate around a fixed spindle. Power can thus be extracted and oil and air pressures can be injected through an easily-accessible point located in the upper part.

Thereby, the generator construction has been inverted. The stator now is in the center and

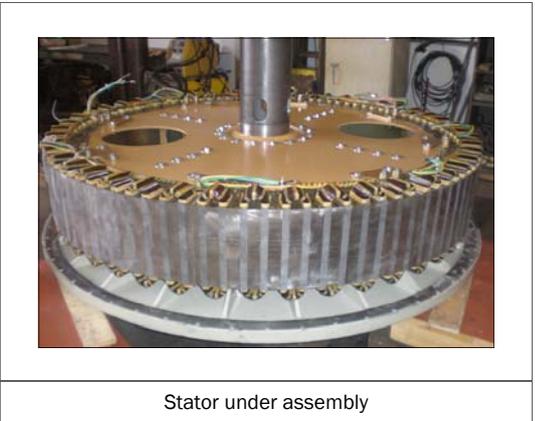
without having to repair the entire stator and send it back to the factory.

The hydraulic blade-control mechanism is located at the bottom of the bulb rotor. It is driven by hydraulic jacks actuating a regulating ring which, by means of levers, simultaneously rotates the 8 blades.

Each blade control is provided with a spring enabling for a blade to remain open in case a detritus should get stuck.



Blade control



Stator under assembly

the magnets of the rotor are attached on the inner wall of the runner, forming the outer rotating envelope of the bulb (in green in the diagram on page 2).

The stator is formed of vacuum-impregnated prefabricated coil elements, assembled on the fixed central rim. They can be individually dismantled and can thus be substituted in case of a problem



Prefabricated coils

Further, to take advantage of the series effect, more and more parts are foundry-made. This enables us to lower our manufacturing costs and obtain complex shapes, which are better adapted to our needs.

Thus, the spindle, the upper lid, and the sole plates of jacks are made of high-yield nodular cast iron. In the future, we shall extend this



Head of the cast iron spindle

manufacturing mode to other parts.

The hydraulic lifting system of the unit has also been modified. It is now formed by jacks solidly attached to the structure, permitting a lifting of the unit by a simple push on sole plates arranged in the civil works floor.

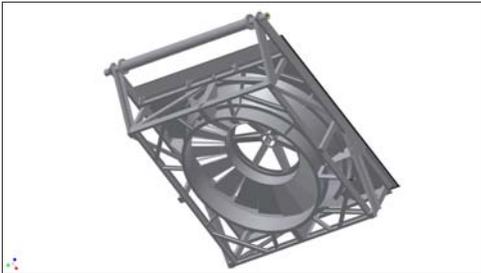
«Single bulb, inverted generator and reinforced structure for the new VLH»

THE INDUSTRIAL VLH (CONTINUED)



Unit in lifted position

The structure, reinforced for the needs of the La Roche application, now enables to lift the unit from the water. It can thus be "liftable" in high-water periods, where it is deemed necessary to facilitate the flow.



Distributor reinforced by standard profiles

This new functionality will enable the VLH to be more conveniently positioned for the harnessing of navigation or flood-control locks and dams. (see p. 6, "last minute")

To avoid putting an unnecessary strain on manufacturing costs, the reinforced distributor will remain an option, and will only be applied where it is necessary.



Shipment of the La Roche VLH

Finally, our attention has been drawn towards power electronics equipment and control equipment.

From now on, frequency converters come from ABB's ACS 800 industrial converter line. We thus have a line of tried-and-tested industrial products which enable us to finely modulate the electronic equipment according to the power generated by the VLH.

The control system has also been modified to integrate a conventional structure based on a standard programmable logic controller. We have however kept the touch-screen man-machine interface and all the functionalities of the first version.



New version of the control screen

The VLH can now be produced in series.

«Cast parts, industrial frequency converters, the VLH is ready to be industrialized»

VLH PROJECTS UNDER CONSTRUCTION AND ONGOING ORDERS

At the beginning of 2009, we have started the implementation of 4 projects.

The next units to be delivered will be the two units for the Huningue project in Alsace. They are meant to harness two locks no longer used for navigation.



Huningue before and after implantation of the VLH

The electric and auxiliary equipment will be housed in prefabricated containers, covered with natural pine for a better integration in the landscape.

The containers will be implanted just downstream of the units in the actual locks. They will only protrude from the openings by a few tens of centimeters.



Huningue container equipment room

This solution enables factory assembly and connection of all electric equipment and of the auxiliary equipment. This provides a considerable time saving for the on-site assembly and a greater reliability of the connections.

The next project will be the Clairvaux plant, located on the Aube river in the Champagne area. Works started at the beginning of October 2008. They have now reached the final phase of the basic structure.

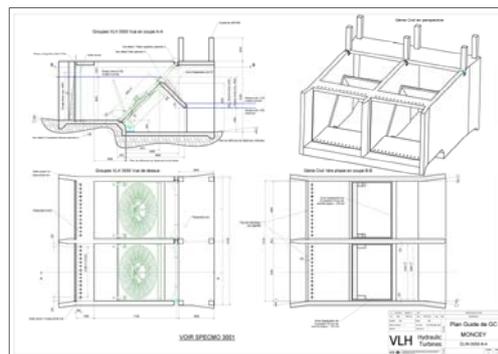
The sheet metal work parts are ready and



Clairvaux plant

the assembly has already started.

Next in line will be the two tandem-assembled units of the Aulx Les Cromary (or Moncey) project on the Ognon river, in



Moncey design directive drawings for civil works

Franche-Comté.

In the summer, we shall deliver the DN 3550 VLH of the Barrets project on the Garonne river close to St Martory.

Then, in autumn, the DN 3550 VLH of the Frouard project on the Moselle river close to Nancy will be delivered.

At the end of the year, we shall deliver the DN 3550 VLH of the l'Ame plant on the Mayenne river, its order having been recently confirmed by the SHEMA (see page 2).

«4 projects under execution ,

8 ordered VLH units to be delivered this year

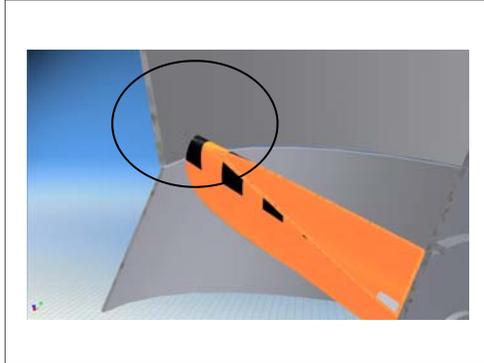
Project for reharnessing all locks and dams on the Mayenne river with VLHs»

NEW FISH FRIENDLY PROFILE FIRST CONTRACT IN BELGIUM

«A new profile of the VLH, more fish-friendly than ever»

«First contract on a navigable river in Belgium»

At the end of the fish-passing tests, despite very satisfactory results in terms of survival rate, we have wanted to do more. Once the factor and the area causing mortality have been identified, we have tried



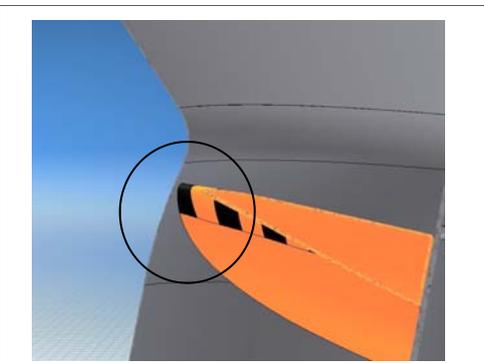
Blade-end pinching area on the Millau VLH

to further improve the fish-friendliness of the VLH.

We have first raised the discharge ring of all VLHs so that the blade in the fully open position does not protrude from the upstream crest of the discharge ring.

Now, our goal is to decrease the space between the end of the open blade and this discharge ring. We shall achieve this by giving a spherical shape to the transition area between the inlet cone and the discharge ring. **We aim to bring the mortality rate down to between 1 and 3% for eels and close to 0% for more common species, of smaller size.**

The industrial manufacturing of this new

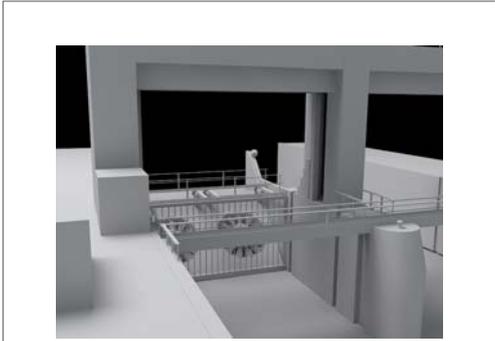


New profile with an upwards-extended discharge ring and a spherical shape

profile will start in the second trimester of 2009. It will be incorporated, as an option, to the machines deliverable at the end of the year.

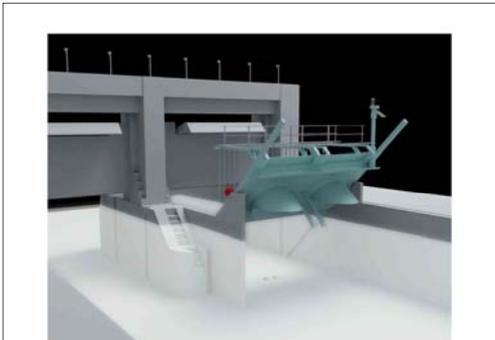
Last Minute:

Mérytherm Company, MJ2's representative in Belgium has just been awarded the contract following the bidders solicitation issued by the Walloon Department of Transportation for the harnessing of the navigation locks and dams of the Sambre river.



Upstream view of the project of installation of 2 VLHs in Marcinelle on the Sambre river

Within the framework of this agreement, 2 VLHs will be installed on this river. The Marcinelle site on the Sambre will serve as a pilot for the tandem installation of 2 VLHs assembled on a liftable mechanically welded structure.



Downstream view of the 2 VLHs of the Marcinelle project in lifted position

Once the Marcinelle VLHs are accepted, the contract provides for the installation of similar solutions on 5 other navigable locks and dams on the Sambre river. We are further waiting for the decision relative to the harnessing of the Ourthe river.

This contract gives MJ2 and Mérytherm the opportunity to perfect an original unit lifting system, which is particularly well adapted to navigable rivers.

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