Introduction to the tool

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1 Introduction to DRIVES

Motors represent the most common electrical load for industries and public utilities (gas, water, etc.). A significant part of these motors work at variable speed, and are controlled by means of electronic drives.

CLUI promoted a research on drive-based applications for pumping systems, (together with the most important Italian water and sewerage companies). The document N° M3981X11 published by Exera in October 2011 summarizes the results of this activity. The software tool DrIlveS "Driver Specification Maker" is a practical application of these results.

DrIlveS helps engineers in the process of definition of the technical characteristics of a drive for the given application, and produces the technical specification of the drive. DrIlves helps avoiding misunderstandings between customers and producers. DRIVES has a web-based approach (see Figure 1), and allows a user define (save, load and edit) his own projects from different PCs (an internet connection is required).

Figure 1: web homepage of DRIVES

How does DrIIveS work?

The target of the tool is to give to the producer all the information necessary to identify a drive that fulfill the customer requirements. DrIIveS guides the customer in the definition of the features of the drive (tailored for the considered application) using the following tools:

- ✓ variable structure of the data (only necessary information requested with different levels of detail),
- ✓ menu (or checkboxes) to select among standardized values,
- ✓ default values (given by international standards),
- ✓ assisted fulfillment of the fields,
- ✓ availability of different standards (i.e. ATEX or NEC),
- ✓ identification of the desired features on the basis on simple questions,
- ✓ guided identification of required performances,
- ✓ availability of a free detailed definition of requested parameters (for expert users),
- ✓ free text fields for specific requirements of the customer.

DrIIveS identifies all the features related with the following field:

- ✓ general identification of the drive and the application,
- ✓ electrical system (supply systems, protection, back up, etc.),
- ✓ motor (rated values for existing motors in case of revamping or requested performances for the design of new installations),
- ✓ drive characteristics (control solutions, performance, architecture),
- ✓ interface (HMI, signals and solutions for fieldbus solutions),
- ✓ EMC (gives all the data necessary to the seller to evaluate the best solution for the customer),
- ✓ requirements for installation and shipping with different level of detail (for different applications).

The final structure of data is available in HTML or in Microsoft Word format.

DrIIveS provides an additional tool for calculating the energy saving that is obtained by replacing a throttling control (valve and constant speed motor) with a drive–based control for a pumping application.

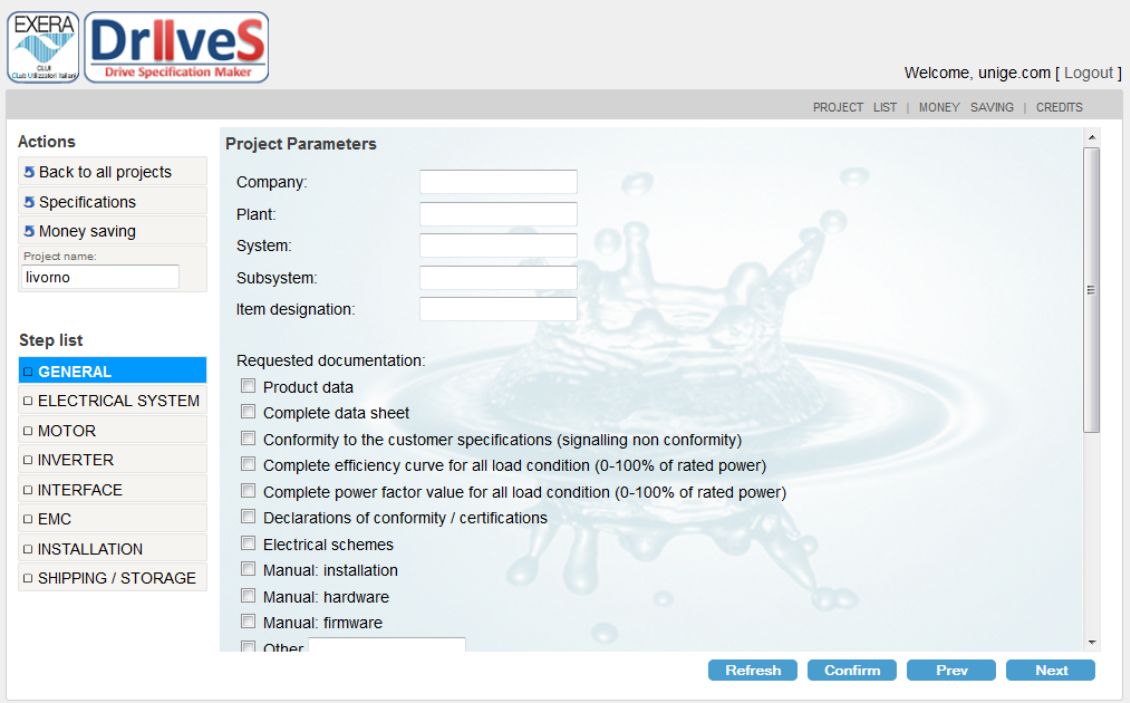


Figure 2: General identification of the system and main classifications (check box and free text field)

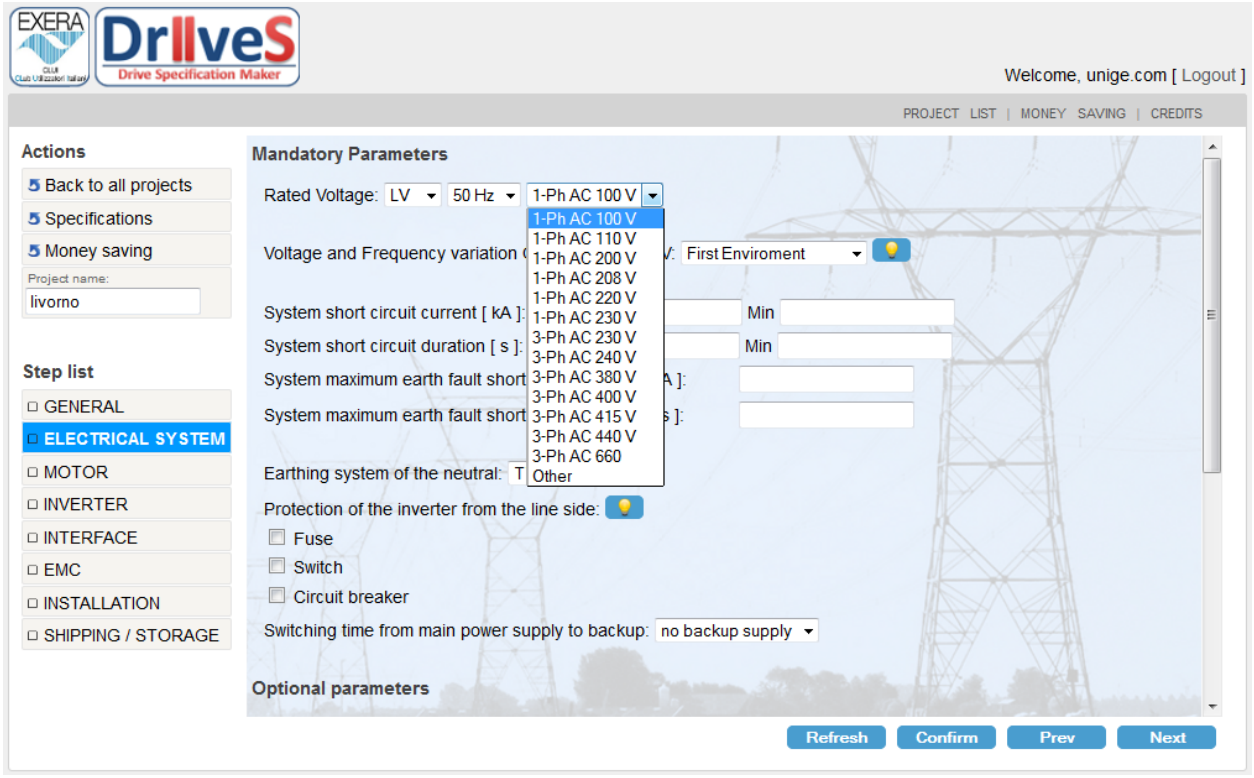


Figure 3: Definition of the electrical system – pop-down menus with standardized values

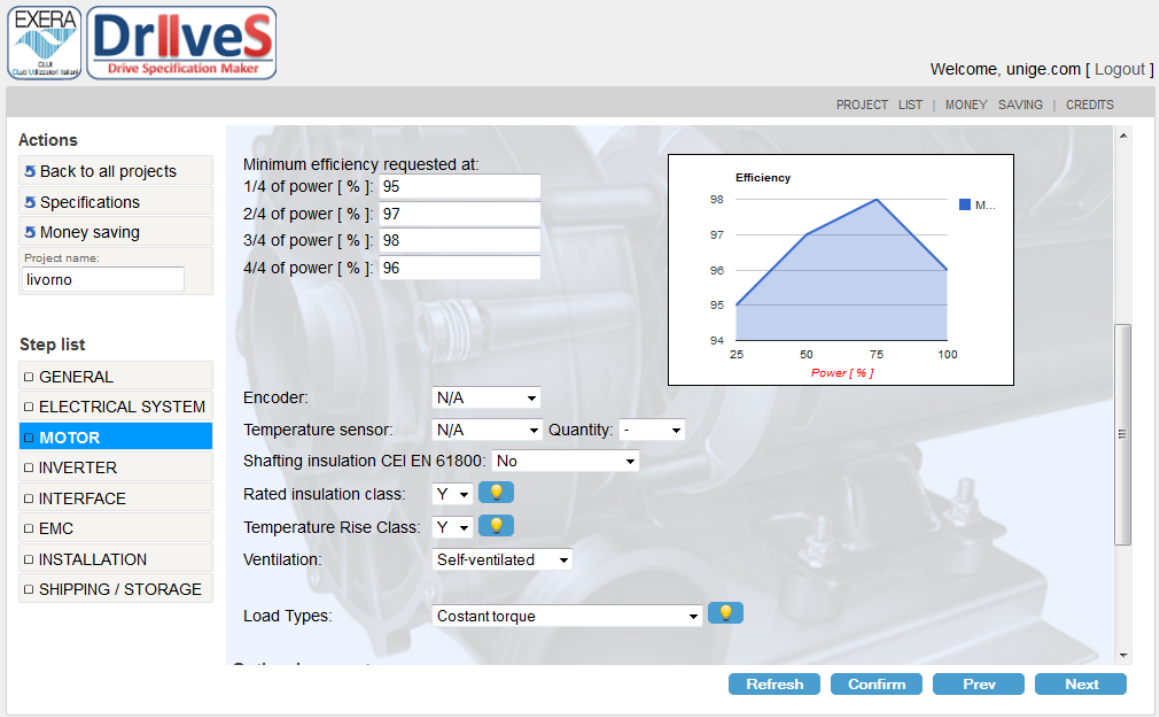


Figure 4: Guided identification of desired performances of the motor (including efficiency)

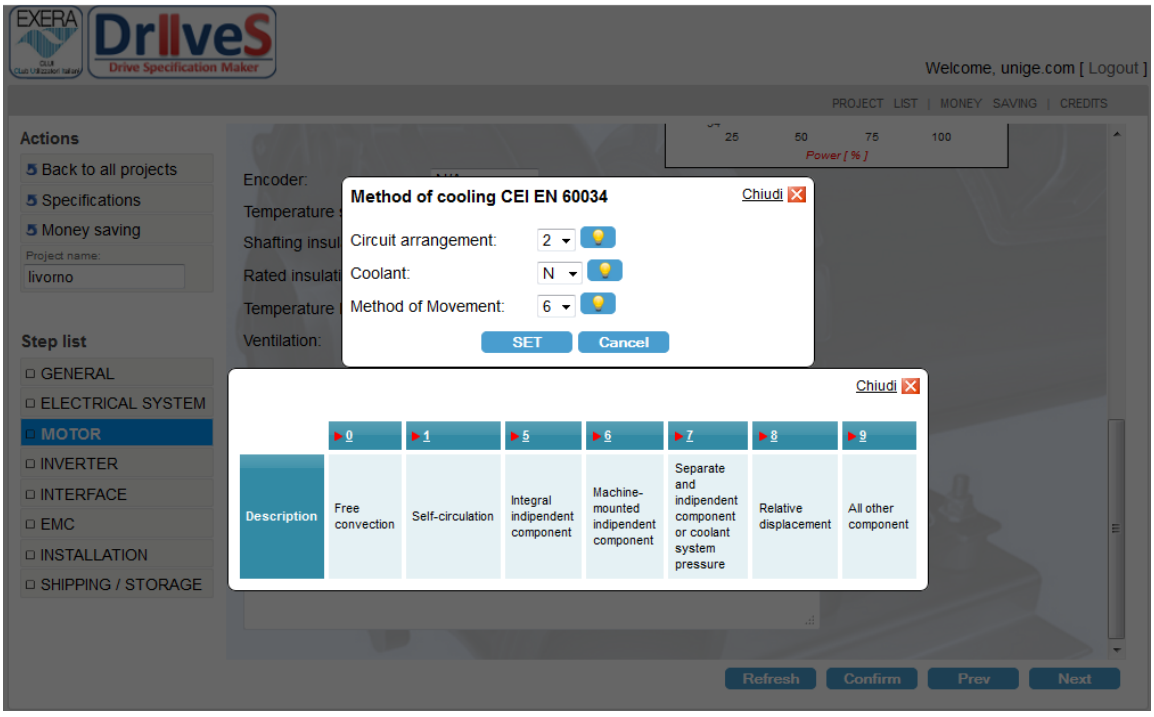
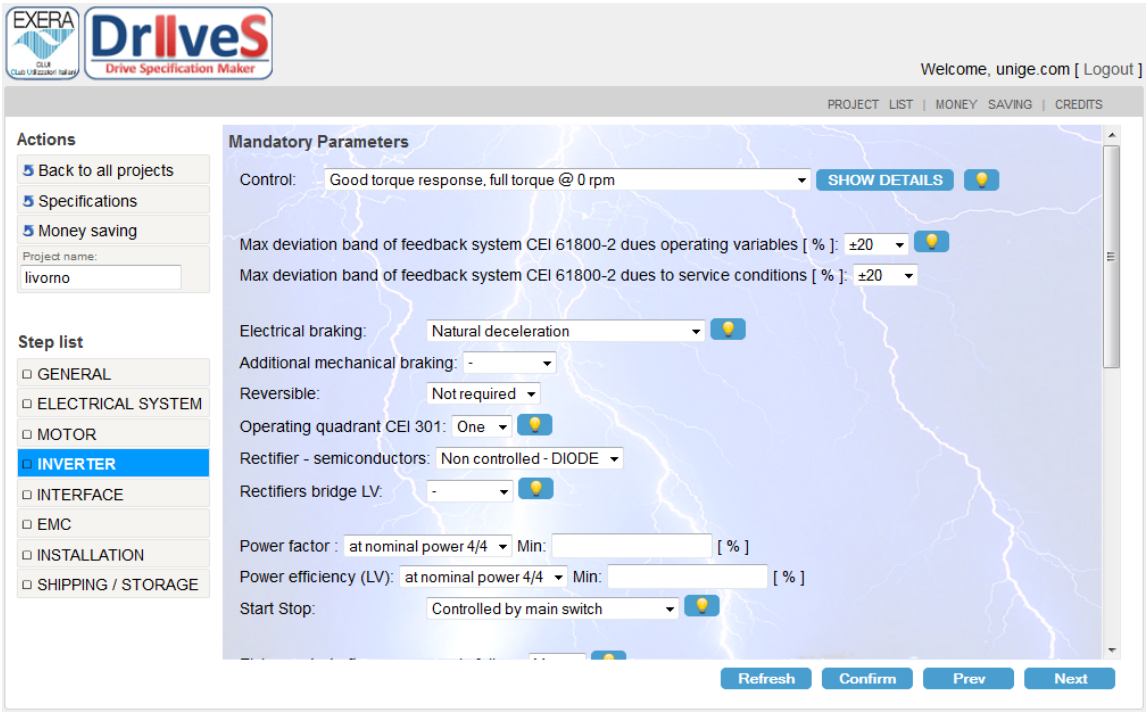
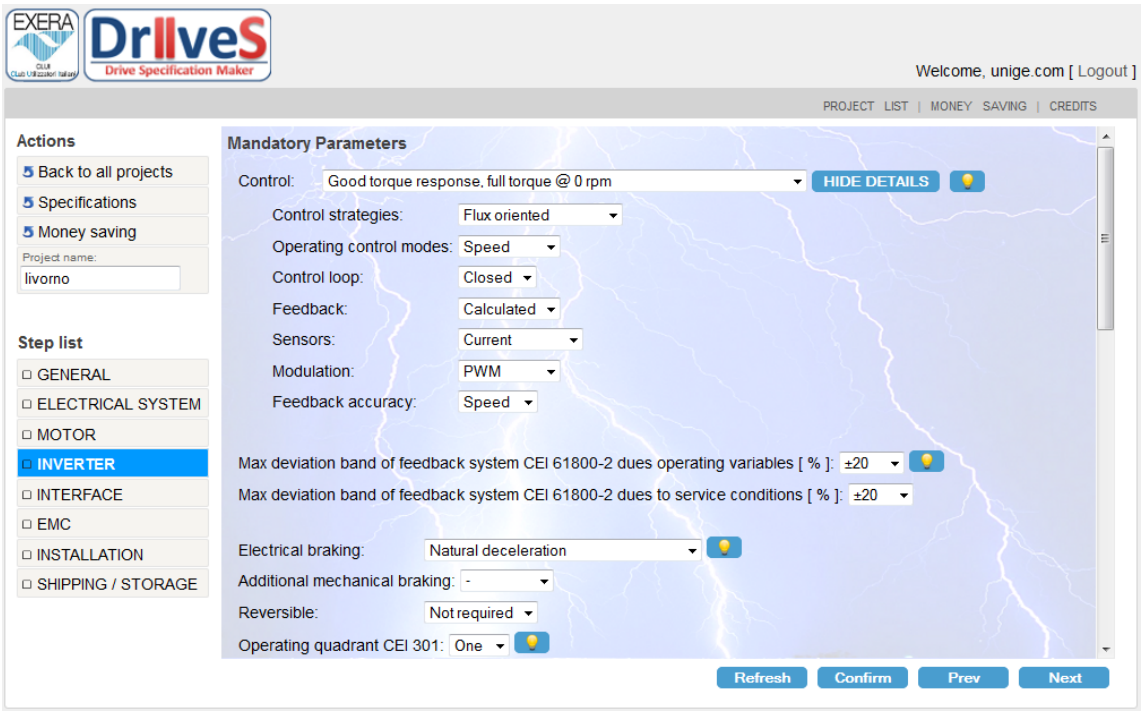


Figure 5: Definition of the parameters of the motor – pop-out menus for the selection



a)



b)

Figure 6: Identification of the desired features of the inverter based on simply question with drop-down menues (a) or based on a detailed definition of all the parameter by the customer (b).

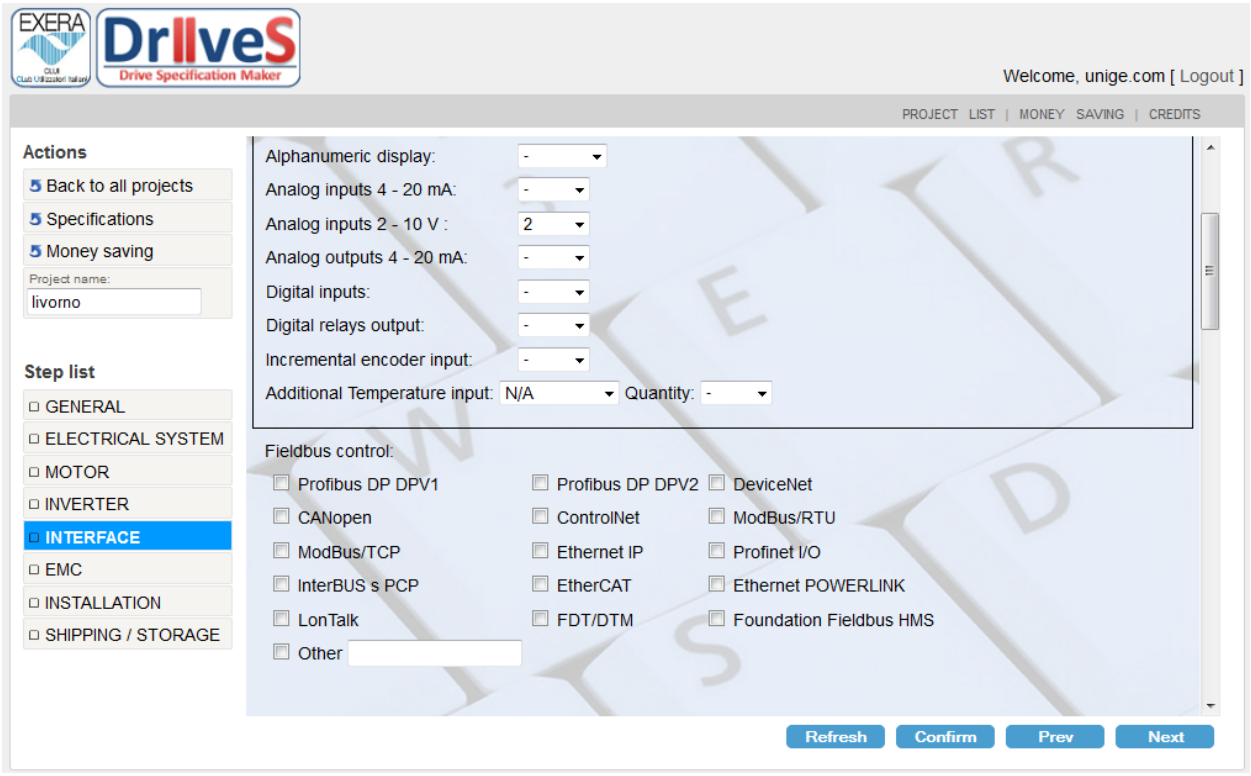


Figure 7: Interface definition - free text field for additional features

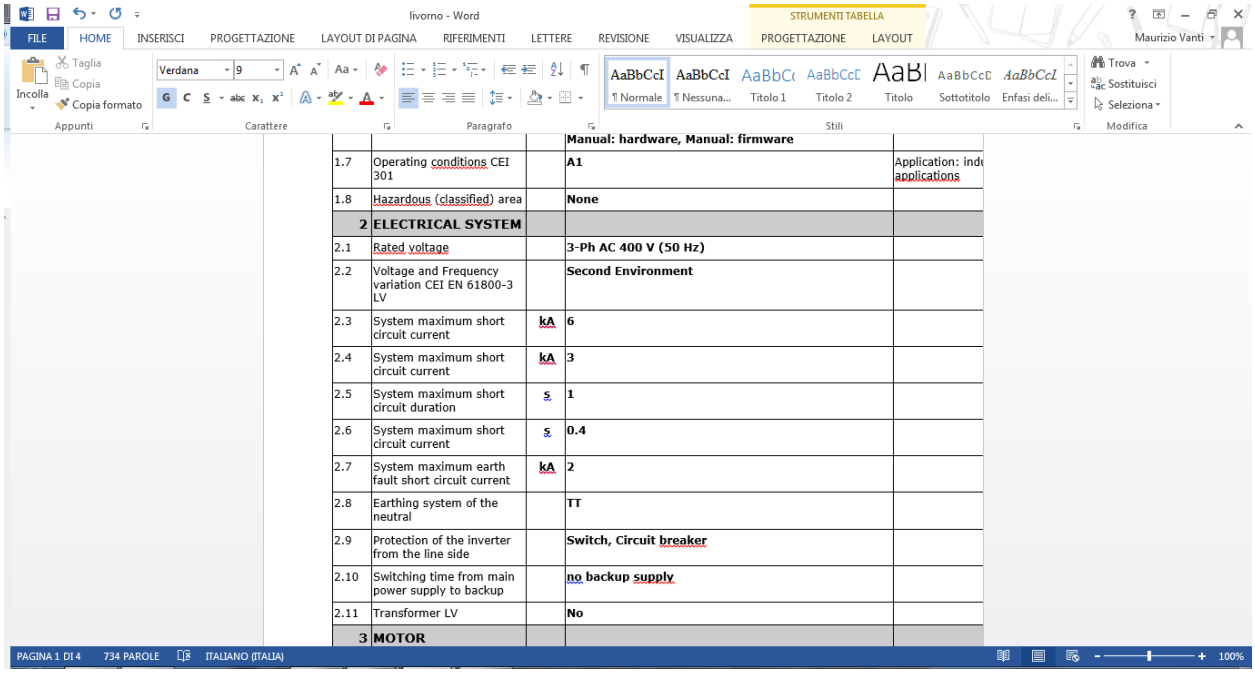
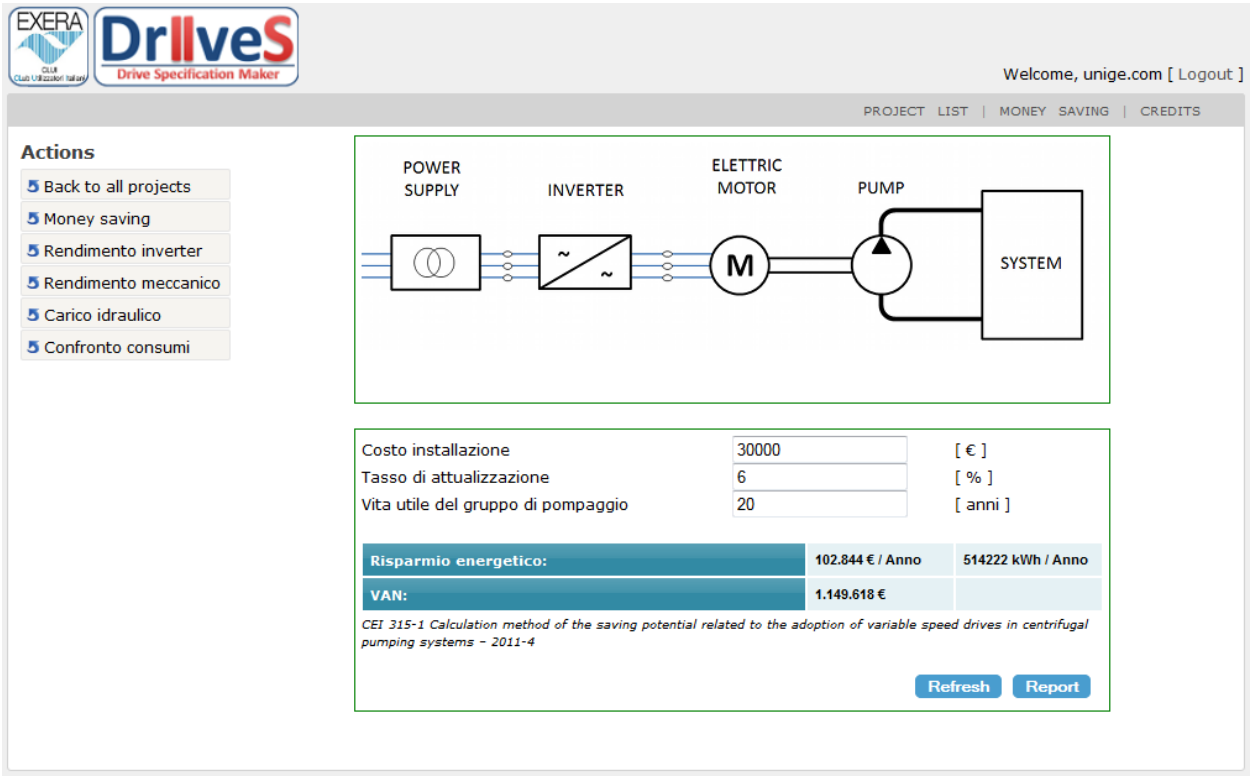


Figure 8: Specification output in Microsoft Word format



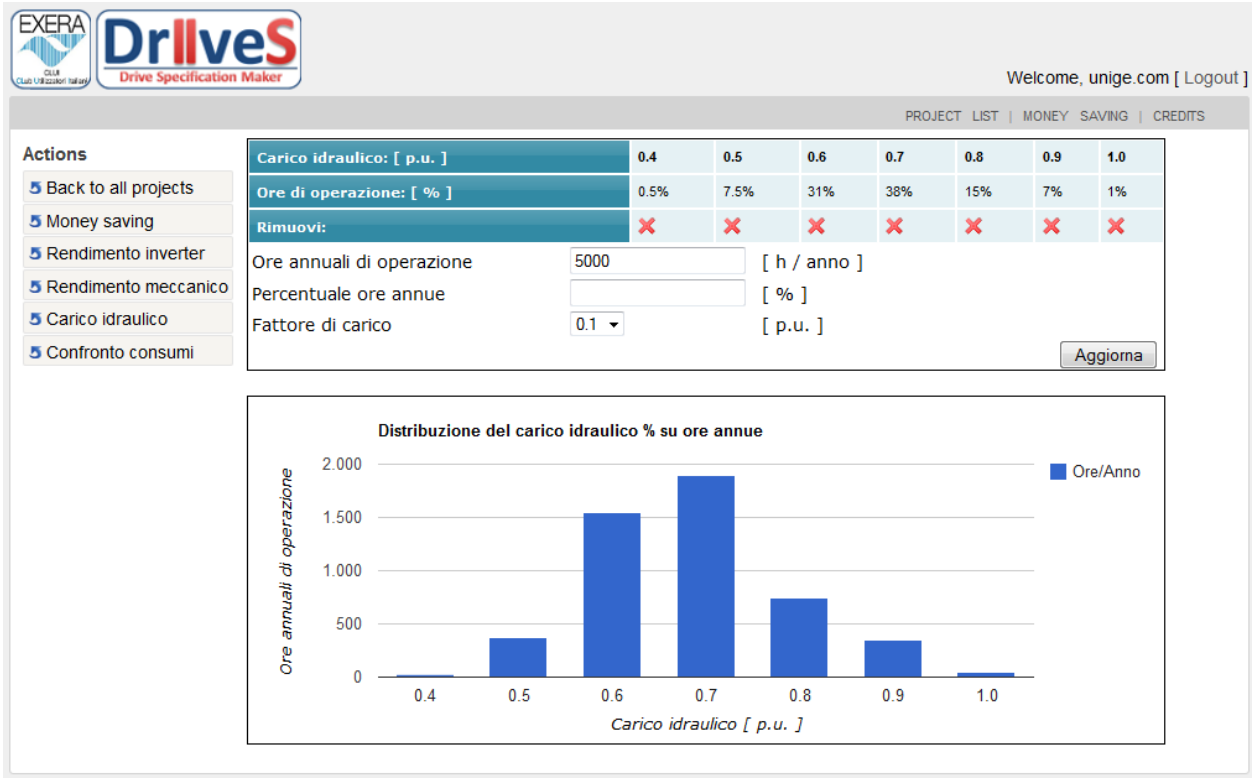


Figure 9: Tool for energy saving calculation in a pumping station