

# Energy Decision Support System

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# Energy Decision Support System

- Web Based Solution that aggregates all information about energy (production and consumption) in a dam
  - HOW: Dashboards Views
  - OBJECTIVE: Help the dam manager to take decisions about energy management – namely production schedules



# Energy Decision Support System

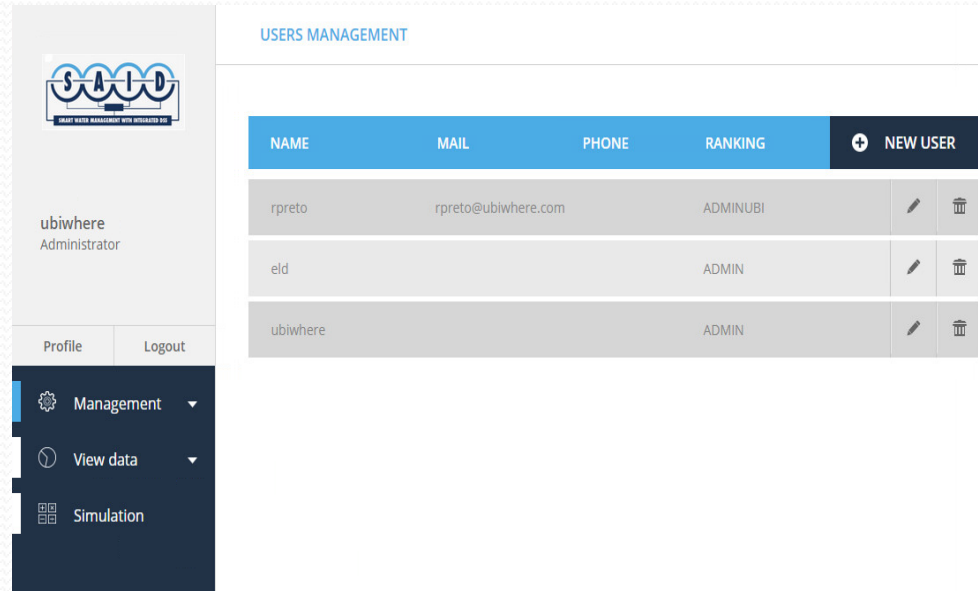
## Main Features:

- User management
- Device Management
- Variable variation chart visualization (Custom period of time)
- Schedule production
- Simulation environment
- Periodically imports measurements from SAID Sensors Network









# User Management

- Users are able to list all users that have access to the Energy DSS
- Admin users are able to view and edit other users' information

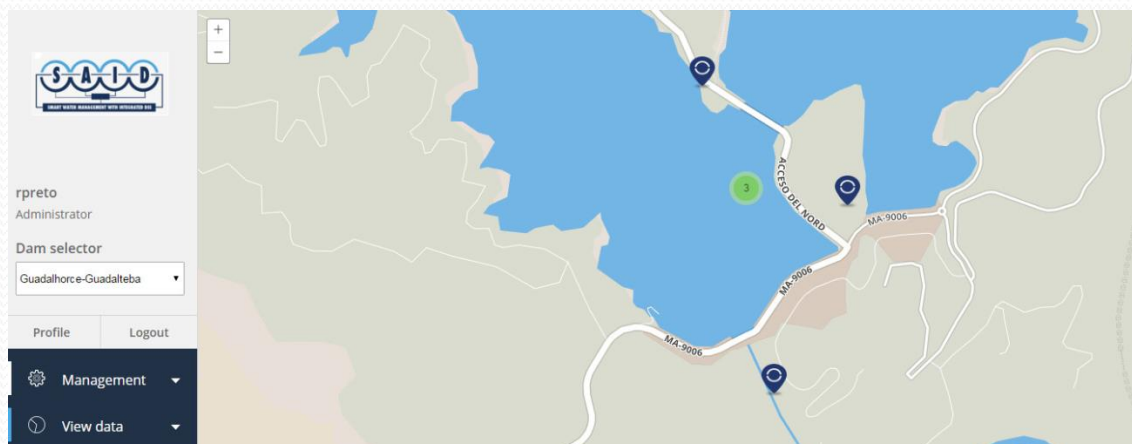


**USERS MANAGEMENT**

NAME	MAIL	PHONE	RANKING	NEW USER
rpreto	rpreto@ubiwhere.com		ADMINUBI	 
eld			ADMIN	 
ubiwhere			ADMIN	 

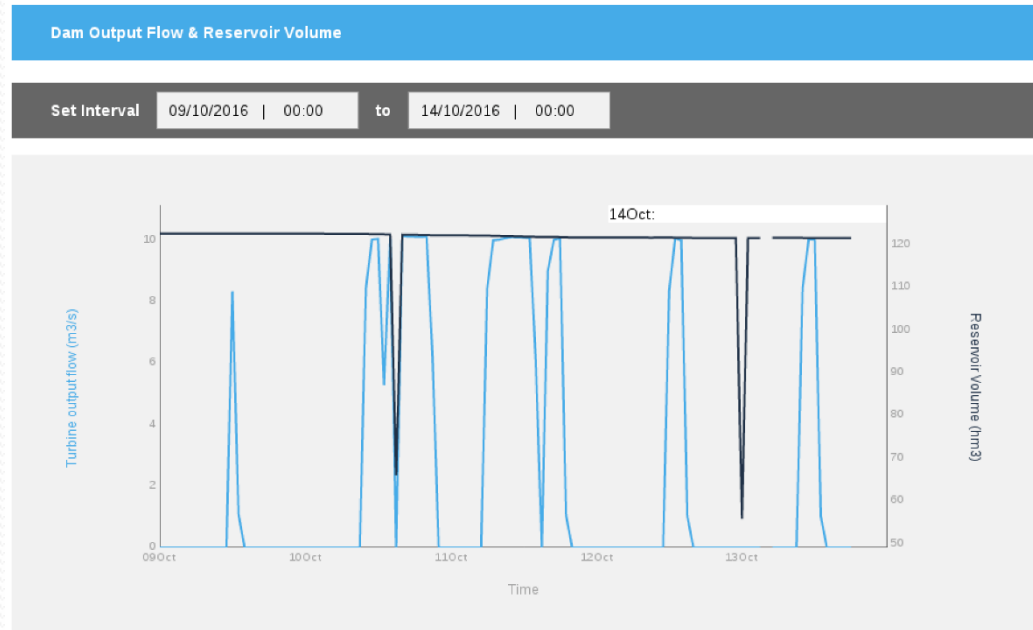
# Device Management

- Users can list all the devices of a dam registered in the solution
- Users can edit or remove a device



DEVICE	COORDINATES	NEW DEVICE		
12BR02		± UPLOAD DATA	✎	🗑
04GR01		± UPLOAD DATA	✎	🗑
020Q05		± UPLOAD DATA	✎	🗑
031E01		± UPLOAD DATA	✎	🗑
020Q04		± UPLOAD DATA	✎	🗑
019E01		± UPLOAD DATA	✎	🗑
029E01		± UPLOAD DATA	✎	🗑
038R02		± UPLOAD DATA	✎	🗑

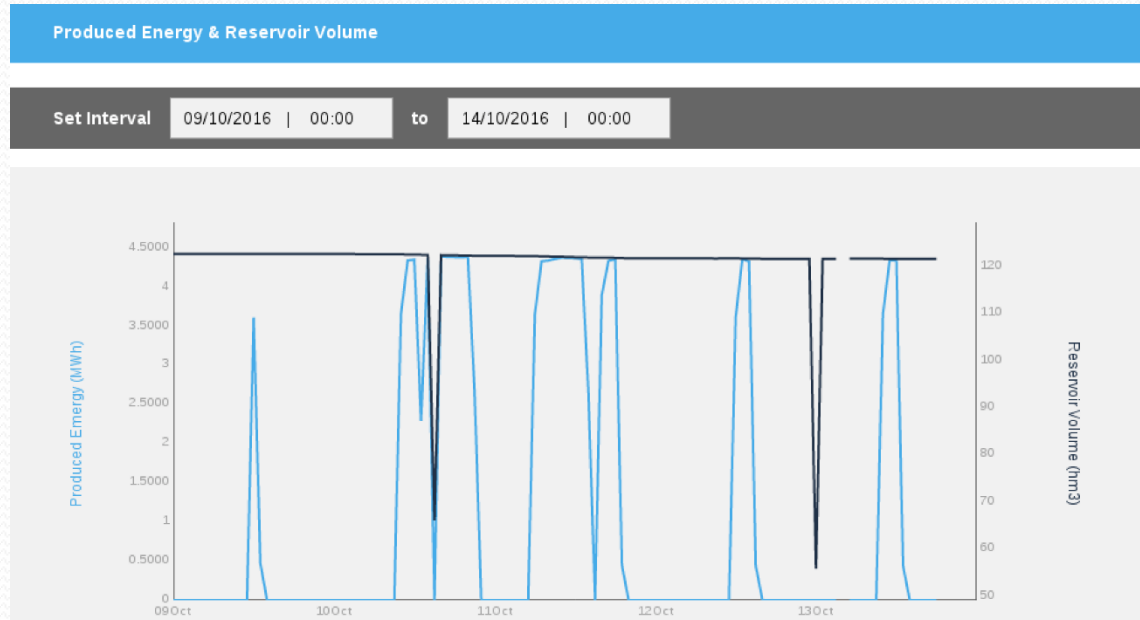
# Dam Output Flow



- The current chart provides a complete view of the aggregated measures of Reservoir Volume and Dam Output flow.
- A dual chart view is provided allowing to instantly view any correlations between the variations of both these variables.
- User is able to define the period of time to analyze



# Produced Energy

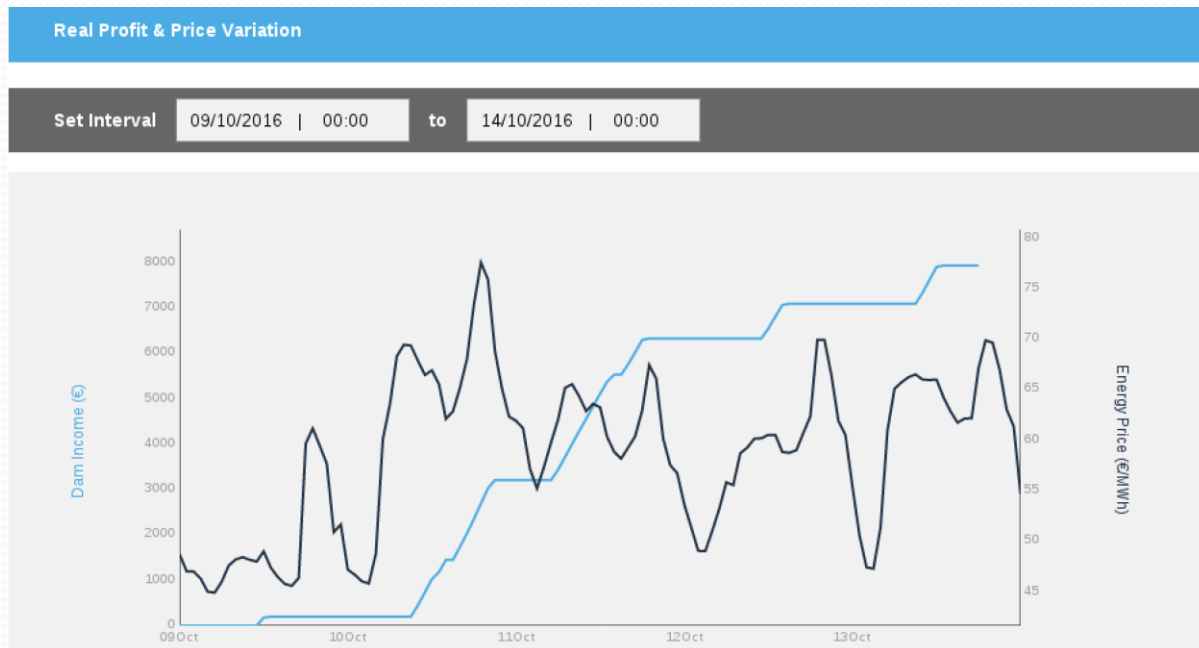


- The current chart provides a complete view of the aggregated measures of Reservoir Level and Produced Energy.
- A dual chart view is provided allowing to instantly view any correlations between the variations of both these variables.
- User is able to define the period of time to analyze



Co-funded by the seventh framework programme (FP7), under grant agreement no. 619132, within the Water Inno & Demo-1

# Profit



- The current chart provides a complete view of the aggregated measures of the expected generated price and energy price variation.
- A dual chart view is provided allowing to instantly view if the production was well aligned with energy price variations.
- User is able to define the period of time to analyze





# Production Schedule

Given the production target and the reservoir current volume, Energy DSS is able to schedule productions for the next week in order to meet the production target using the most valuable energy price hourly slots.

[VIEW DATA](#)

## Schedule Production

DEFINE PRODUCTION TARGET (KWH)

RESERVOIR VOLUME (hm3)

START

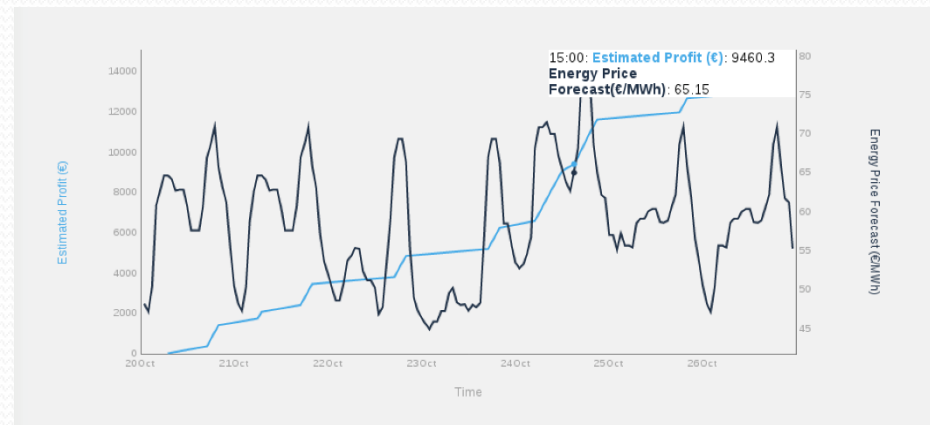
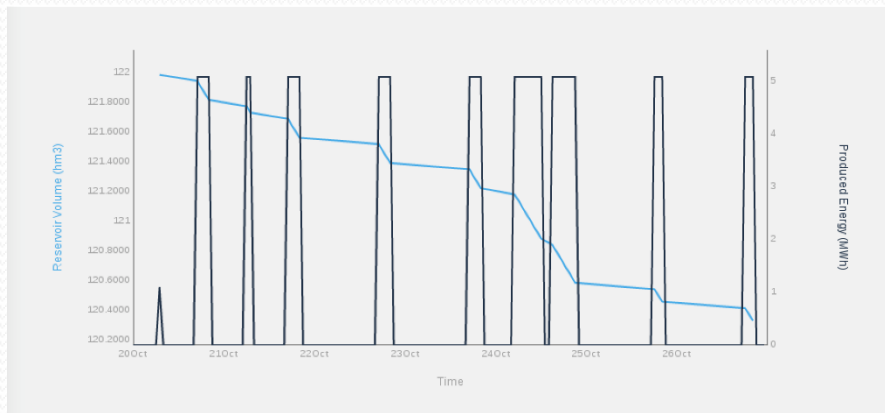


# Production Schedule

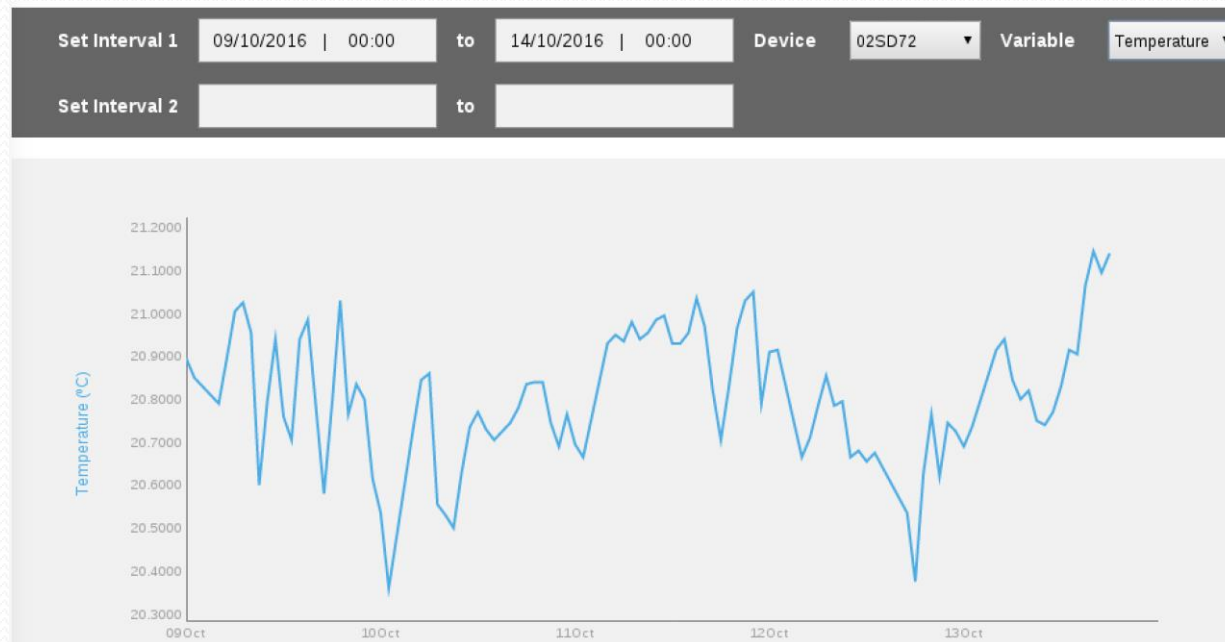
The production schedule report provides:

- Schedule production proposal by day/hour
- Reservoir Volume vs Produced Energy variation
- Estimated Profit vs Energy Price Forecast variation

20 OCT 2016	21 OCT 2016	22 OCT 2016	23 OCT 2016	24 OCT 2016	25 OCT 2016	26 OCT 2016
07:00   08:00 2.57 m3/s	06:00   08:00 11.80 m3/s	17:00   21:00 11.80 m3/s	17:00   21:00 11.80 m3/s	05:00   13:00 11.80 m3/s	18:00   21:00 11.80 m3/s	18:00   21:00 11.80 m3/s
17:00   21:00 11.80 m3/s	17:00   21:00 11.80 m3/s			15:00   22:00 11.80 m3/s		



# Single Sensor Variation




Current option allows user to define period of time, sensor and the sensor's variable to visualize. All sensors (of the selected dam) and correspondent variables currently registered on the Energy DSS are able to be visualized.

# Simulation

Energy DSS allows to create a simulation environment and analyze possible outcomes of this environment.

Currently the solution allows the user to provide the historic values of energy prices (these values can either be real or hypothetical), the initial reservoir volume and a production target for the next week.

Simulation

Insert energy price variation file 

RESERVOIR VOLUME (hm3)

DEFINE PRODUCTION TARGET (KWH)

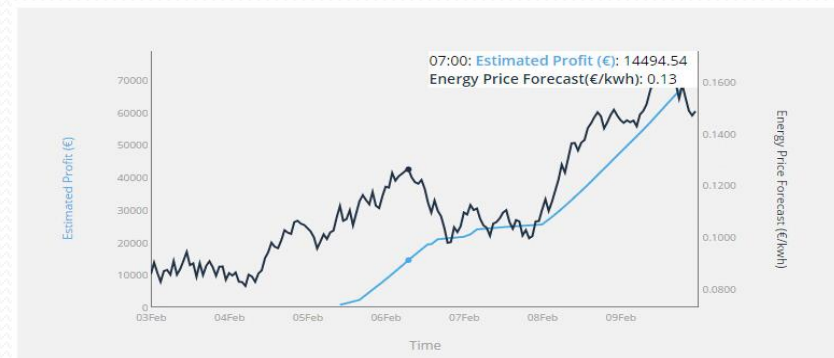
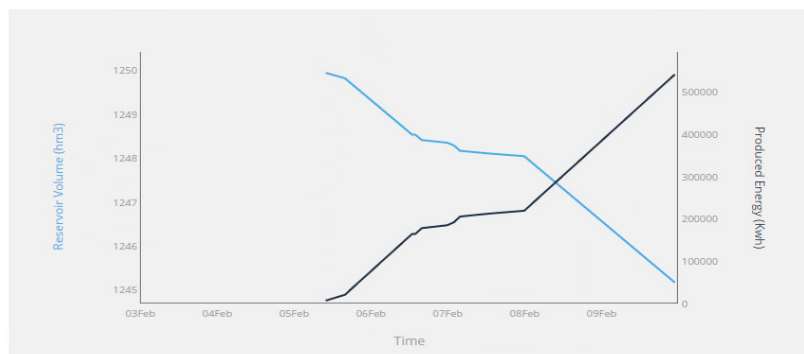
SIMULATE

# Simulation

The simulation report provides:

- Schedule production proposal by day/hour
- Reservoir Volume vs Produced Energy variation
- Estimated Profit vs Energy Price Forecast variation

20 OCT 2016	21 OCT 2016	22 OCT 2016	23 OCT 2016	24 OCT 2016	25 OCT 2016	26 OCT 2016
07:00   08:00 2.57 m3/s	06:00   08:00 11.80 m3/s	17:00   21:00 11.80 m3/s	17:00   21:00 11.80 m3/s	05:00   13:00 11.80 m3/s	18:00   21:00 11.80 m3/s	18:00   21:00 11.80 m3/s
17:00   21:00 11.80 m3/s	17:00   21:00 11.80 m3/s			15:00   22:00 11.80 m3/s		



# Thank you for your attention

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