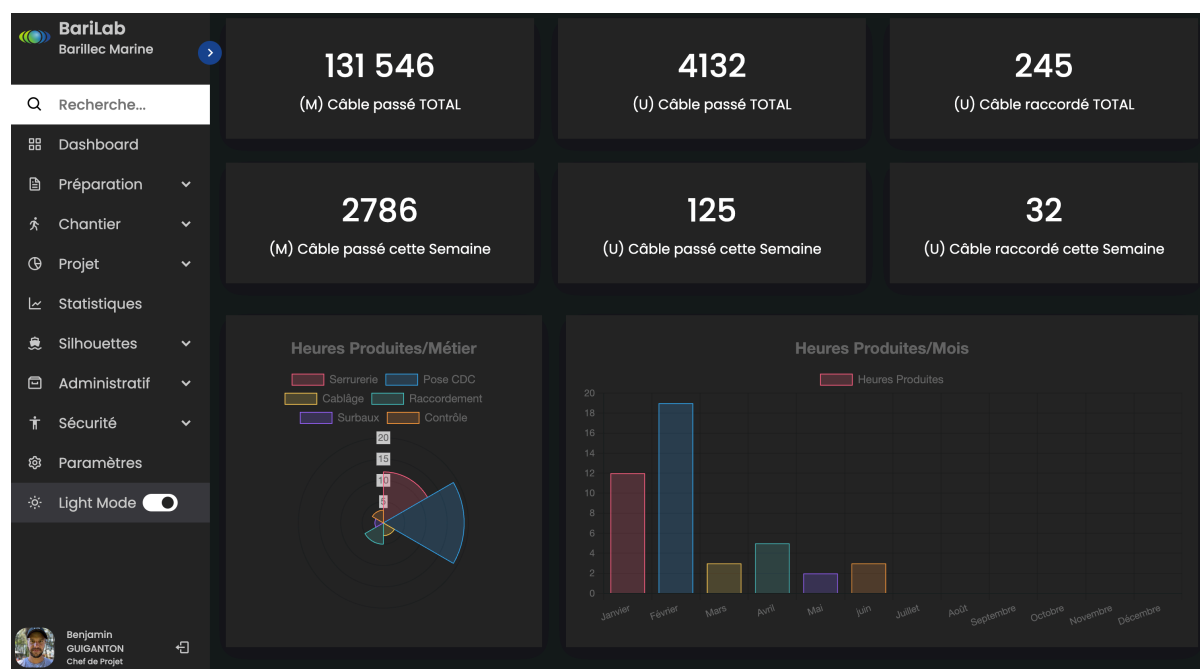Benjamin GUIGANTON

Introduction

Construction site management base

T he purpose of the site management base is to create an easy-to-use site management interface (API) for site managers and preparers and a tool for visualizing site indicators for project managers and business managers. It makes it possible to gather all the necessary data from the Electricity specialty for the management and monitoring of the site.

This interface will be linked to a database. One for each new project. It will not be necessary to access the database to fill it in manually. This will be completely transparent to the user. The interface will allow it to exploit the data in this DB in an intuitive way without knowing how it works. The tools available on this interface will be multiple and will allow good management and better visualization of the site.

Statistical page of the future version of the site management database

Summary

USER

22

Preamble

This document aims to briefly summarize the site management base that I have put in place on the Gowind EAU project and to present its future version with a view to a significant improvement in the way in which electricity specificity yards are managed in the field of shipbuilding.

This document is not intended to be a detailed record of the database developed for the project in VBA in Excel for the mentioned project. Some concepts are really specific to the profession and can be difficult to understand for the uninitiated. The lines of code and the details of each function will also not be described in this document.

Cable book & databases

████████ Marine carries out the study and installation of the entire electrical part on board ships of all types. The main entry data for any electrical site nevertheless remains the same every time: it is the Cable Book where we will find the reference of each cable of the ship and all the information related to it, i.e.:

• A list of each electrical equipment of the ship
• A list of all the premises on board
• A list of all the sections used
• A list of penetration from the cable routings created

From a single Excel file containing the cable book, it is therefore possible to retrieve all the necessary information and deploy the tool that will allow the management of the construction site. From this same data source, it is therefore possible to set up the tool that will allow its best management.

There is a Master base and two other independent bases. One base per ship. The master database makes it possible to make the link between customer data (████████████) and our data (████████), it is on this basis that we will inform the scales, constrained lengths or routines. It is this base that is at the center of the others. It is only accessible by one user.

On large projects such as corvettes, the electricity profession is broken down according to the different professions below:

• Welding
• Cable path laying and locksmithing
• Installation of devices
• Cable cut
• Cable pull
• Connection
• Checks
• Filling penetration

Current version: VBA & Excel interface

INTERFACE
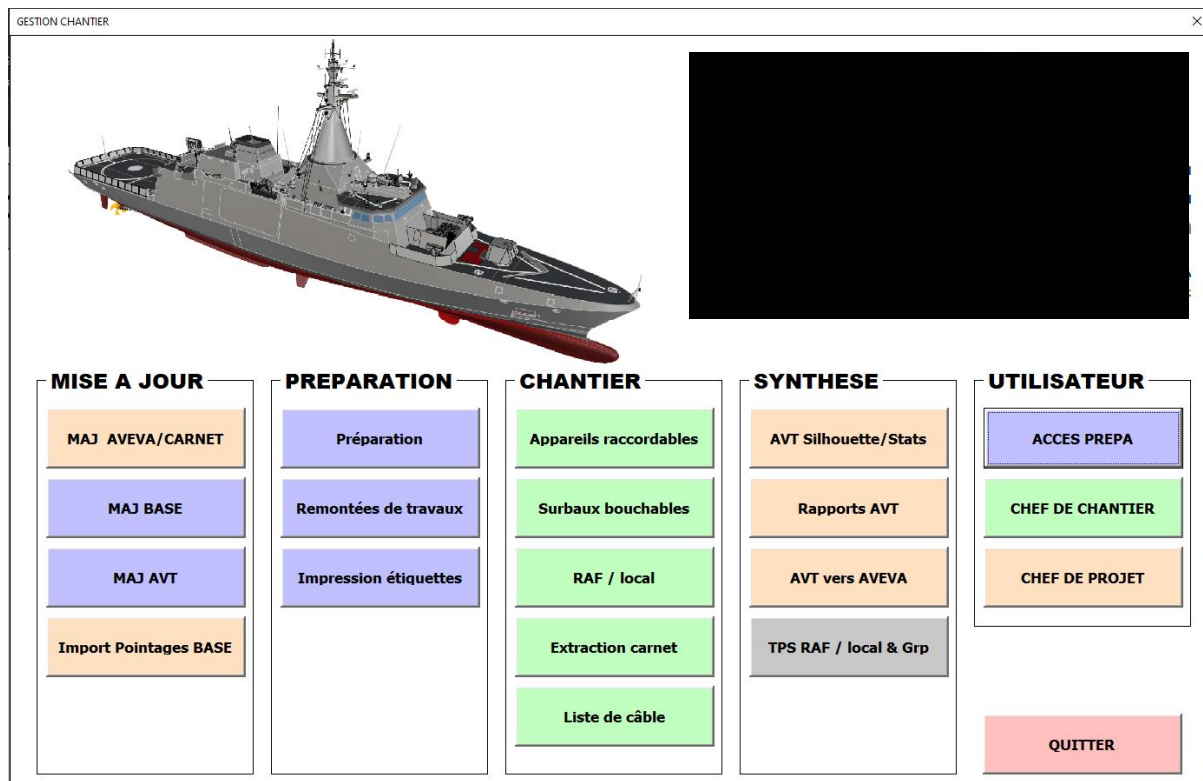
The interface of the site management base

The user interface is as follows (see image above). There are several possible accesses depending on the users who use it such as the site manager (in green), the preparation (in blue) and the project manager (in salmon).

Accesses make it possible to avoid user errors and to offer only the necessary tools per post. Site manager access is accessible without a password. Preparer and user access are accessible by password. The password is known only by user functions.

The lines of VBA code (macros) are behind each of the buttons on the interface to perform an action.

UPDATE AVEVA/CARNET

This function makes it possible to make a comparison between two databases: the AVEVA database where each system (customer) fills in information on the cables or equipment of his system and the ▮▮▮▮▮▮▮ database that traces all the changes that may have been made to the cables and thus be able to process the cable indices. A cable changes its index when there is a modification that has an impact on it.

For example: a cable with index A was cut and pulled. The system decides to change the section of the cable or its holder/ending. The cable passed to index B and must therefore be cut and pulled on board. The cable with index A must be removed from the edge because it is obsolete.

This comparison of the base is made once a week. The function will scan all the lines in the cable book and notify all deviations that have an impact: Change of devices holding or ending, change of room, change of section, change of sensitivity, change of routing (constrained or not).

Once this function has scanned all the lines and notified all the changes then it stores them in the "CABLE MODIFICATIONS" tab. This tab allows you to have a history of all the changes to the cable book and therefore all the indices of obsolete cables. All cable indices have been saved in the MASTER database since the beginning of the construction site, whether or not there has been an impact on the cable. The MASTER base does not take into account site progress reports, namely whether a cable has been cut, pulled, etc... The FOC and FOS bases, they only take into account modifications that have an impact on their respective sites.

For example: on FOC, if a modification has taken place on a cable when it has not yet been cut, the cable will remain at index A in the cable book and there will then be no trace of this modification in the FOC database. However, it will be possible to find this modification in the MASTER database.

UPDATE BASE

This function allows you to update a quantitative state on a good number of columns in the different tabs of the database such as:

- Cable scales and characteristics (unit time of drawing and bounding)
- Cable characteristics (constrained lengths, routings, cable diameter, cable weight, NGD)
- The calculation of automatic meters and routings
- The calculation of the number of hours per cable according to their lengths
- The number of cables per overstruses and the total area taken by them in order to be in line with BV standards on the filling rate of oversles
- The number of cables per device
- The number of cables and the length per system
- The number of cables and the length per local
- The number of cables and the length per group

PROGRESS UPDATE

This function allows you to update a progress report on many columns in the different tabs of the database such as:

- The progress in number of cables by penetration and the percentage of filling of the penetration
- The progress as a percentage of the draw, installation and connection per device
- Progress in number and percentage of cable and length by systems
- Progress in number and percentage of cable and length per room
- Progress in number and percentage of cable and length by group

Automatic information according to the following rules:
- If a cable is passed and connected on one side then it is cut
- If a cable is connected to the holder and to the end then it has passed
- If a cable is controlled then it is connected to the holder and the end

This automatic information must be done according to two criteria in order to apply a double verification.

Benjamin GUIGANTON

PREPARATION

This function makes it possible to generate the escalation sheets by profession. These sheets will be used on the construction site to raise progress. These sheets are generated differently according to the profession:

• Cable cutting: sheets are generated by cable group
• Cable draw: sheets are generated by cable group
• Connection: sheets are generated by devices
• Filling penetration: the leaves are generated by decks

After clicking on the "Preparation" button, we click on the job on which we want to prepare the sheets:
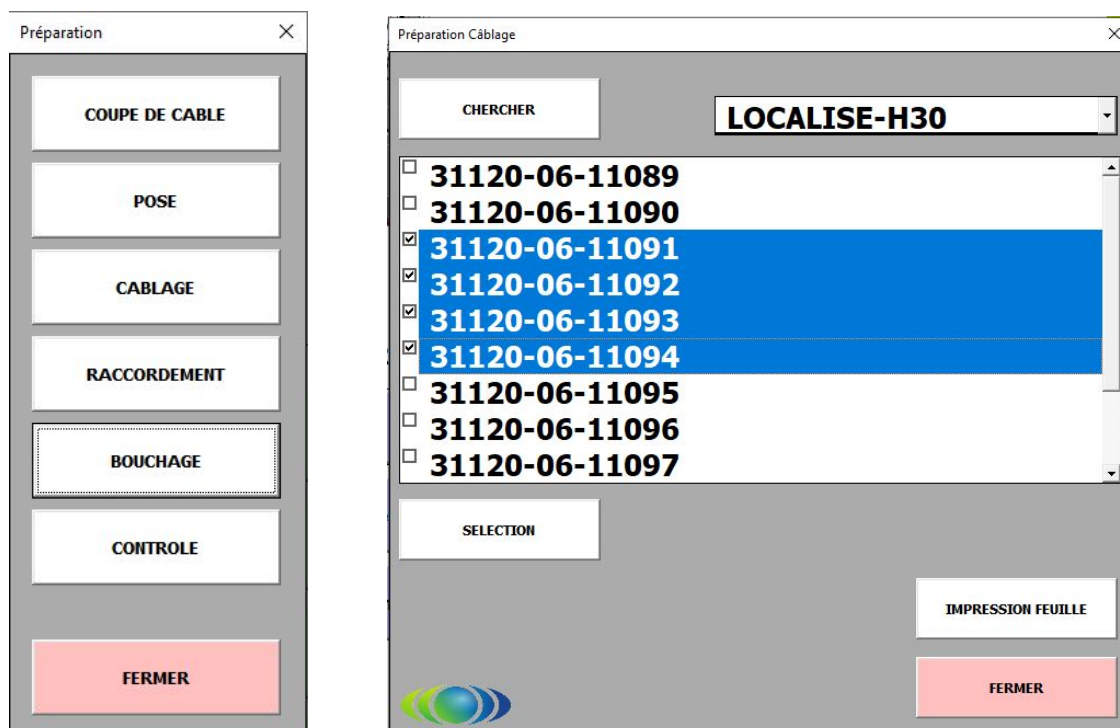
Example of preparation for
generated the lift sheets for the cable pull of the "LOCALISE-H30" group

All the sheets of the group will be generated in PDF and stored in a "LOCALISE-H30" folder. The binders are then prepared by group by editing a cable list and each escalation sheet.

Each time, a unique number is incremented and corresponds to a profession, a cable and its index. This number is indicated on the "CABLE CART" tab in the blue columns on the view below.

N° FEUILLE	DATE EDITION FEUILLE TIRAGE	AVT TIRAGE CABLE	DATE DE TIRAGE DU CABLE	NOMDU/ DES TIREURS	REMARQUES TIRAGE	CODE SEMAINE TIRAGE
T5462	23/07/2021	1	28/10/2021	KILLIAN_DEPARPE		2021-S43
T5465	23/07/2021	1	28/10/2021	ALEX_PIRAUD		2021-S43
T5210	23/07/2021	1	10/09/2021	CLARISSE_LUCAS		2021-S36
T5211	23/07/2021	1	10/09/2021	CLARISSE_LUCAS		2021-S36
T6634	06/09/2021	1	08/03/2022	ESTELLE_DEVOUARD		2022-S10
T4868	21/07/2021	1	06/08/2021	ADRIEN_ROBIC		2021-S31
T6635	06/09/2021	1	08/03/2022	ESTELLE_DEVOUARD		2022-S10
T5221	23/07/2021	1	01/09/2021	OLIVIER_SILVA		2021-S35
T5226	23/07/2021	1	01/09/2021	OLIVIER_SILVA		2021-S35
T4869	21/07/2021	1	06/08/2021	ADRIEN_ROBIC		2021-S31
T4870	21/07/2021	1	06/08/2021	ADRIEN_ROBIC		2021-S31
T4871	21/07/2021	1	06/08/2021	ADRIEN_ROBIC		2021-S31
T5229	23/07/2021	1	01/09/2021	CLARISSE_LUCAS		2021-S35
T5230	23/07/2021	1	10/09/2021	CLARISSE_LUCAS		2021-S36
T21319	18/03/2022	1	07/04/2022	THIERRY_LE NY		2022-S14

DAILY TASK UPDATE

This function allows you to inform the progress of the site with the work sheets that are returned from the site (lift sheet).

For each profession, the rule is as follows: A lift sheet (depending on its profession) = a cable.

We indicate the number indicated on the escalation sheet, click on "search" and then check that it is the right cable. We enter the name of the person who carried out the work, a possible remark and then on "enter AVT" which will have the effect of informing the status of the cable in the "CABLE BOOK" tab with the date of the day of the information and its week code (example: 2022-S24). This week code will allow you to have statistics per week.

N° FEUILLE	DATE EDITION FEUILLE TIRAGE	AVT TIRAGE CABLE	DATE DE TIRAGE DU CABLE	NOMDU/ DES TIREURS	REMARQUES TIRAGE	CODE SEMAINE TIRAGE
T5462	23/07/2021	1	28/10/2021	KILLIAN_DEPARPE		2021-S43
T5465	23/07/2021	1	28/10/2021	ALEX_PIRAUD		2021-S43
T5210	23/07/2021	1	10/09/2021	CLARISSE_LUCAS		2021-S36
T5211	23/07/2021	1	10/09/2021	CLARISSE_LUCAS		2021-S36
T6634	06/09/2021	1	08/03/2022	ESTELLE_DEVOUARD		2022-S10
T4868	21/07/2021	1	06/08/2021	ADRIEN_ROBIC		2021-S31
T6635	06/09/2021	1	08/03/2022	ESTELLE_DEVOUARD		2022-S10
T5221	23/07/2021	1	01/09/2021	OLIVIER_SILVA		2021-S35
T5226	23/07/2021	1	01/09/2021	OLIVIER_SILVA		2021-S35
T4869	21/07/2021	1	06/08/2021	ADRIEN_ROBIC		2021-S31
T4870	21/07/2021	1	06/08/2021	ADRIEN_ROBIC		2021-S31
T4871	21/07/2021	1	06/08/2021	ADRIEN_ROBIC		2021-S31
T5229	23/07/2021	1	01/09/2021	CLARISSE_LUCAS		2021-S35
T5230	23/07/2021	1	10/09/2021	CLARISSE_LUCAS		2021-S36
T21319	18/03/2022	1	07/04/2022	THIERRY_LE NY		2022-S14
T20355	14/03/2022	1	15/06/2022	SEBASTIEN_GOARDOU		2022-S24
T20357	14/03/2022	1	15/06/2022	LEO_QUITTOT		2022-S24
T20358	14/03/2022	1	15/06/2022	LEO_QUITTOT		2022-S24

CONNECTABLE DEVICES

In order to avoid making the too early connection of a device (on board the cables coiled to an equipment can give the impression that all the cables are in shifts when it has none), this function makes it possible to establish a list of all the devices whose all the cables are in the position and can therefore be connected 100% and thus avoid having to return to an equipment several times.

SEALABLE CABLE PENETRATION

This function makes it possible to establish a list of all the overs that can be blocked, which therefore means that all the cables that pass through this crossing have been pulled.

This function requires that all routings be entered in the database.

REMAINS TO BE DONE BY LOCAL

This function makes it possible to establish a list of all the work to be carried out in a given room:

• Cable still to be pulled
• Device still to be installed
• Cable still to be connected

CABLE LIST

This function makes it possible to establish a list of cables according to different possible parameters:

The room will be highlighted in blue if the filter is carried out on it.

The device will be highlighted in blue if the filter is carried out on it.

ADVANCE SILHOUETTES/STATISTICS

This function makes it possible to update the silhouettes of ships by trade in order to show the progress reports by deck segment, the progress curves and the overall progress percentage of the trade.

There are two silhouettes, one with a percentage of advancement showing with a color code the advancement by bridge section. This view allows you to quickly view the areas that are advancing and those that are blocking.
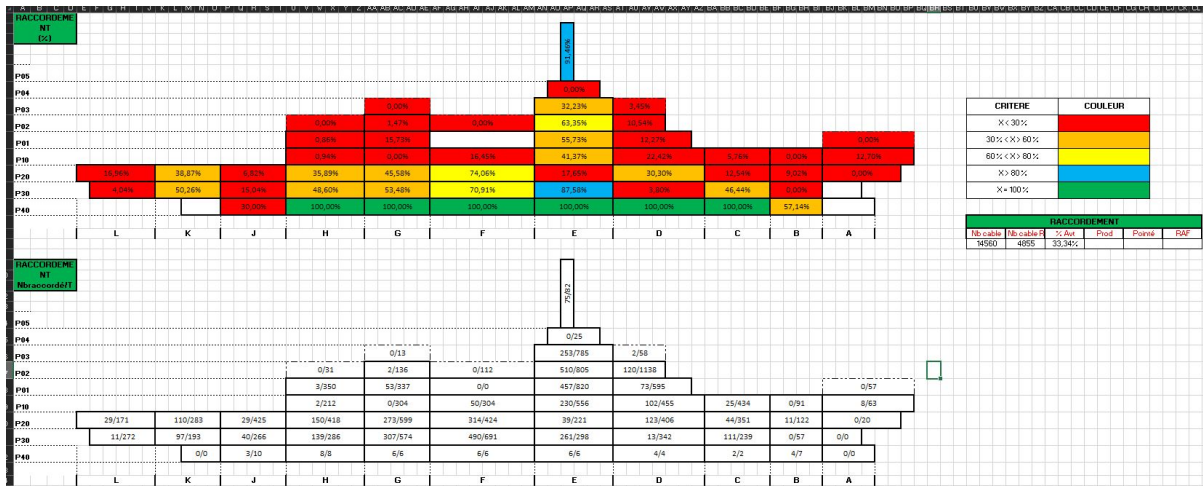
The color code is as follows:

CRITERE	COULEUR
X < 30%	(red)
30% < X > 60%	(orange)
60% < X > 80%	(yellow)
X > 80%	(blue)
X = 100%	(green)
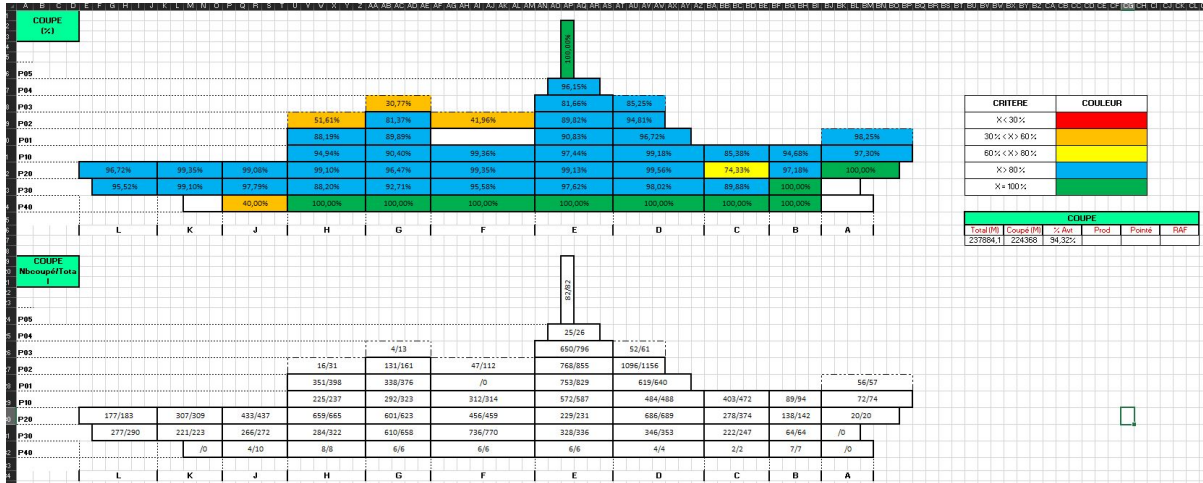
Silhouette of the ship on the cable cutting loom
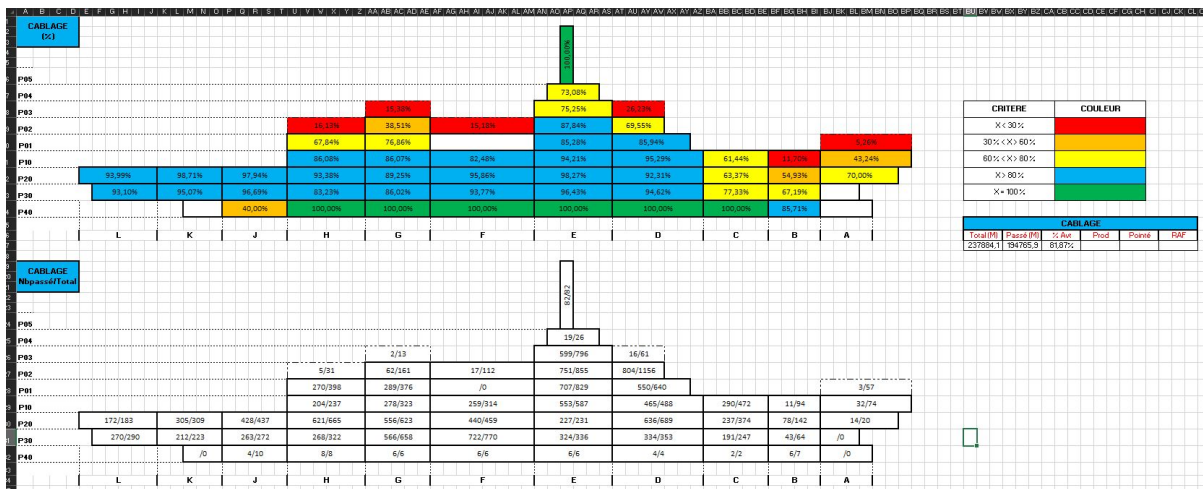
Silhouette of the ship on the cable pulling loom

Silhouette of the ship on the connection loom

On the trade tabs of the ship silhouettes, we also find the progress curves (2), the overall progress percentage (1) of the trade and the results per week as well as the forecast curve (3).
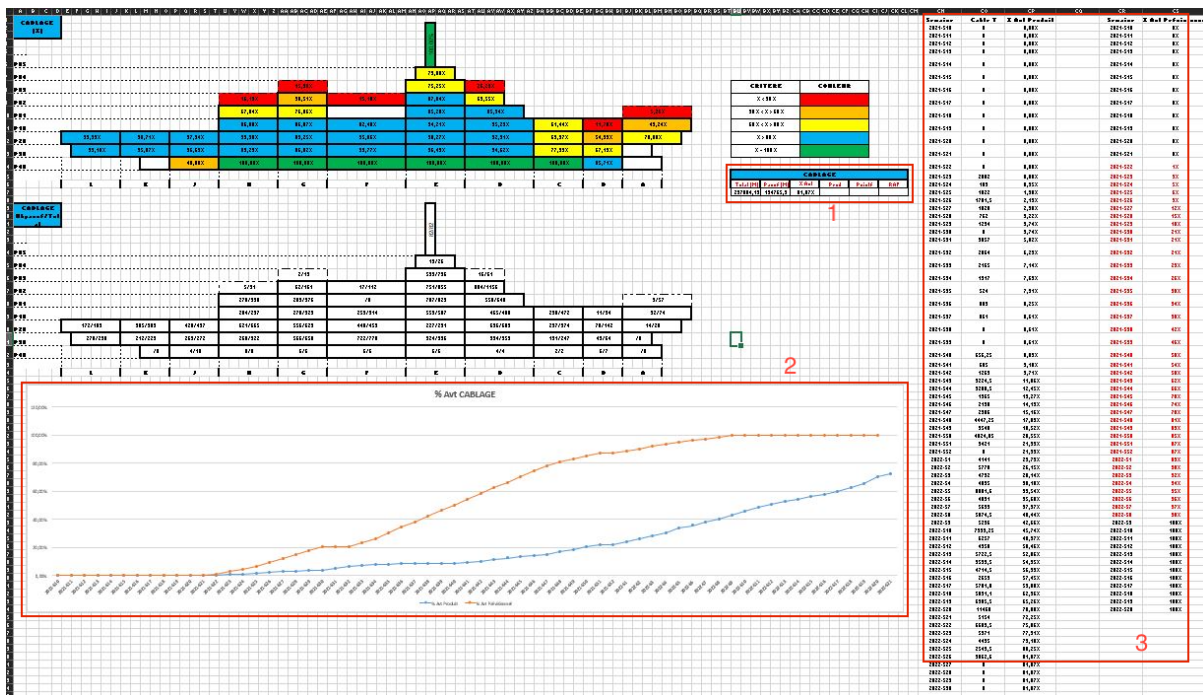
PROGRESS REPORTS

This function makes it possible to generate a PDF showing all the progress of the ship silhouettes by profession and which can thus be transmitted to the customer.

PROGRESS TO AVEVA

This function allows you to generate an Excel extraction of the cable book with the cable progress reports, the system progress tab, the device progress tab and the penetration progress reports tab.

This extraction makes it possible to send the progress reports to the customer according to his criteria. The ▮▮▮▮▮▮▮ database is large and has a certain amount of information that is not to be transmitted to the customer such as efficiency scales, the names of people, etc.
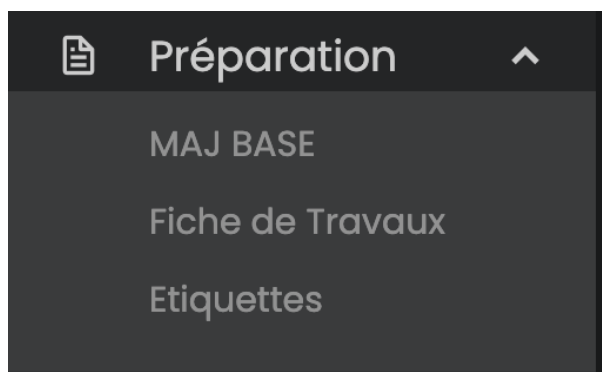
Future version: WEB interface, Excel API Javascript

DASHBOARD

This page will contain the shortcuts of the available tools and will allow the user quick access to them:
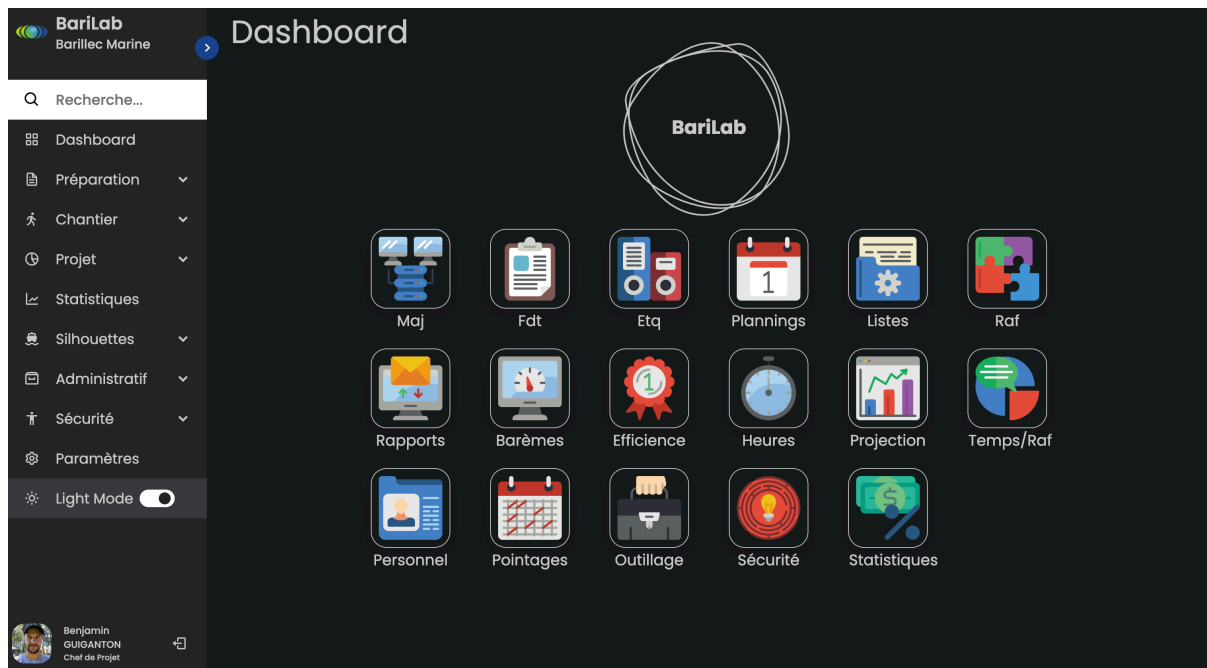

PREPARATION

This section will be used mainly by the preparation team and will contain all the necessary tools that are described in the previous chapter and that will take up the same principles of logic and operation with improvements following the feedback on using the first-generation interface.

This section will therefore contain basic updates, the editing of work sheets, the printing of labels.
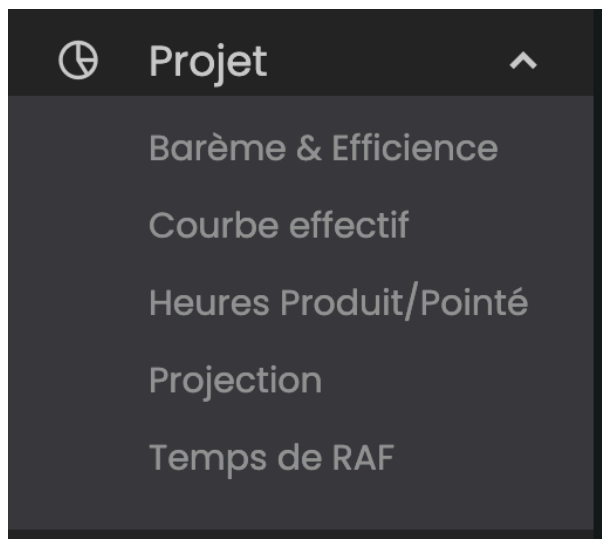
SITE
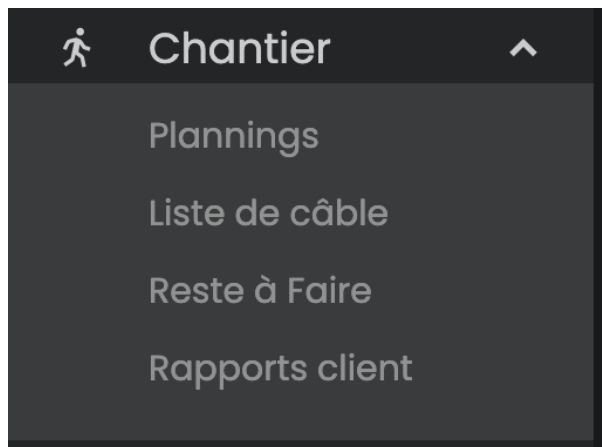
This section will contain the necessary tools for site managers or team leaders and will be mainly adapted for use for the production and management of the site.

This section will therefore contain the personnel management schedules, the edition of cable lists according to several criteria, all the rest to be done so that the construction site knows where they are and that it can project itself. It will also include editing the progress so that the site manager can know where he is on his site and transmit it to the customer.

PROJECT

This section is intended for the project manager and business managers so that they can best understand the progress of the construction site/project and thus stay as close as possible to the actual developments, having a clear and factual understanding of the site's status.

They will then be able to redefine the scales according to the professions, anticipate the rest to be done to project themselves financially, know the hours produced and compare them to the hours set and visualize projection curves.

This section will therefore contain the following elements: Scales & efficiency, workforce curves, hours produced/pointed, projections and remaining times to be done.
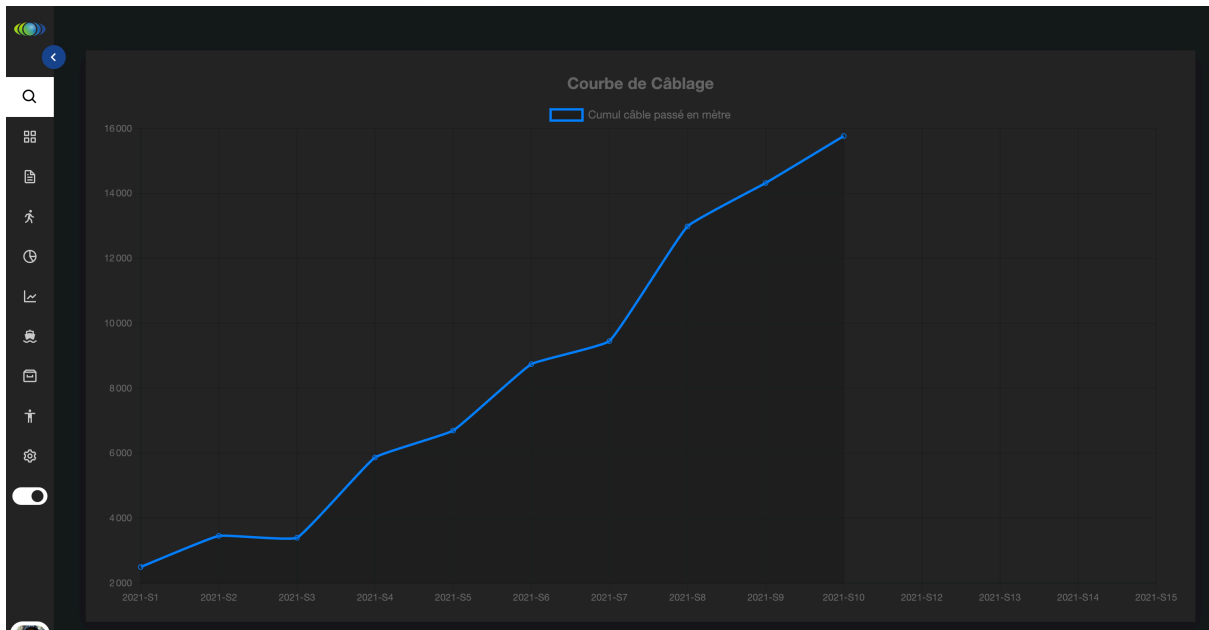
STATISTIQUES

This section will be accessible to all users and will allow them to know at a glance the important figures of the project they are working on. All the actors in the project will have the figures in mind and the progress of the project and the volume it represents will then no longer be a secret to anyone.
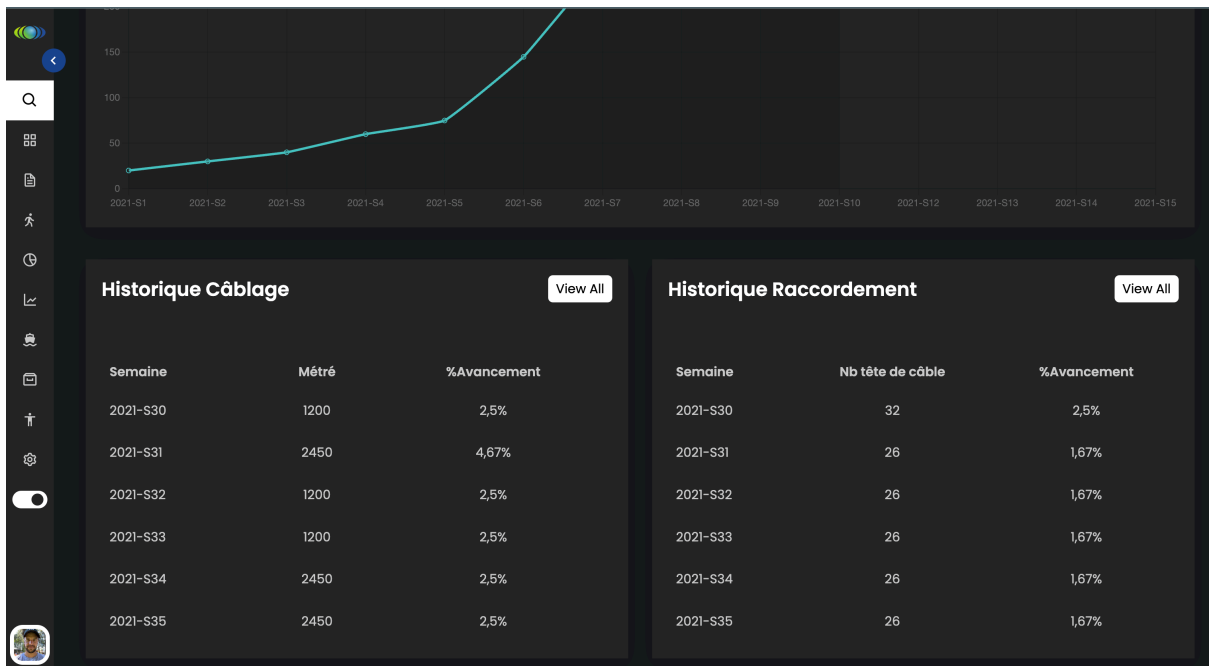

The figures that show the volume of the project and what has been achieved.

*The volume of hours to be produced and what has been pointed out so far.*

The wiring progress curve (one of the two main professions in the electricity industry)

Historique Câblage				Historique Raccordement		
Semaine	Métré	%Avancement		Semaine	Nb tête de câble	%Avancement
2021-S30	1200	2,5%		2021-S30	32	2,5%
2021-S31	2450	4,67%		2021-S31	26	1,67%
2021-S32	1200	2,5%		2021-S32	26	1,67%
2021-S33	1200	2,5%		2021-S33	26	1,67%
2021-S34	2450	2,5%		2021-S34	26	1,67%
2021-S35	2450	2,5%		2021-S35	26	1,67%

The figures made per week of the two main professions of the electricity specialist

SILHOUETTES
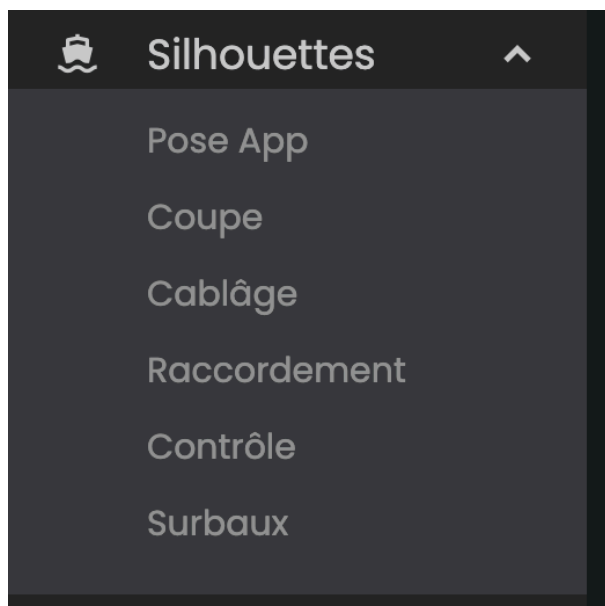
This section will allow you to visualize the silhouettes by profession.
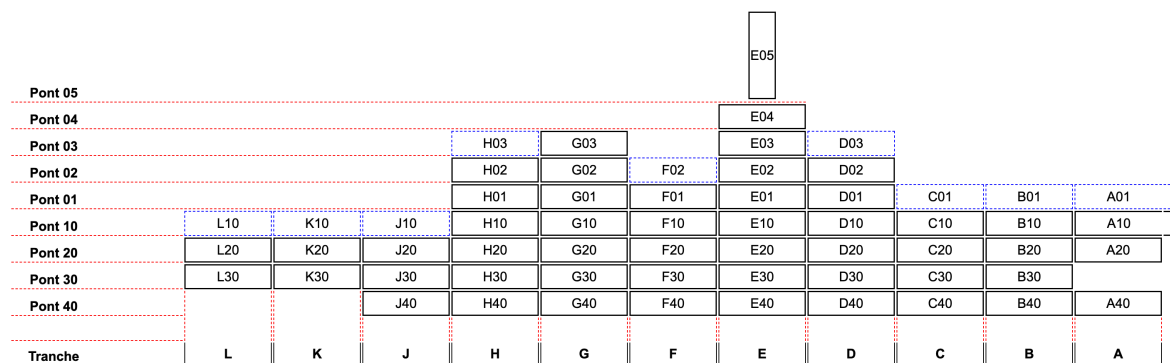
To use the same principle as the old version of the database described above, the user will be able to view the advancements by profession with two ship silhouettes: a silhouette with the percentage of overall advancement per area with a color code and another silhouette with the number of achieved on the total to be achieved.
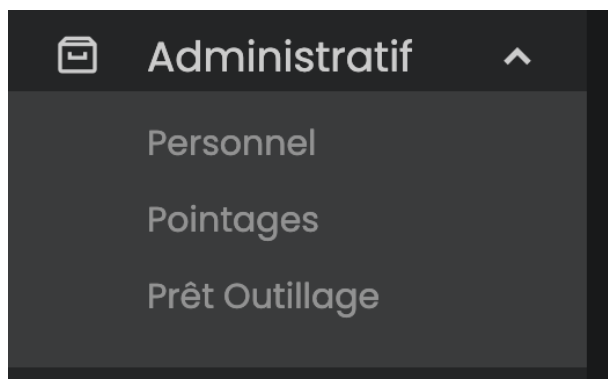
Total	Réalisé	% Avts
250 000	125 000	50 %

| Avts < 30 % | Avts >= 30 % | Avts >= 50 % | Avts >= 80 % | Avts = 100 % |

% Avancement par tranche pont

	L	K	J	H	G	F	E	D	C	B	A
Pont 05											
Pont 04							E04				
Pont 03				H03	G03		E03	D03			
Pont 02				H02	G02	F02	E02	D02			
Pont 01				H01	G01	F01	E01	D01	C01	B01	A01
Pont 10	L10	K10	J10	H10	G10	F10	E10	D10	C10	B10	A10
Pont 20	L20	K20	J20	H20	G20	F20	E20	D20	C20	B20	A20
Pont 30	L30	K30	J30	H30	G30	F30	E30	D30	C30	B30	
Pont 40			J40	H40	G40	F40	E40	D40	C40	B40	A40
Tranche	L	K	J	H	G	F	E	D	C	B	A

(E05 appears above E04 at the top of the silhouette.)

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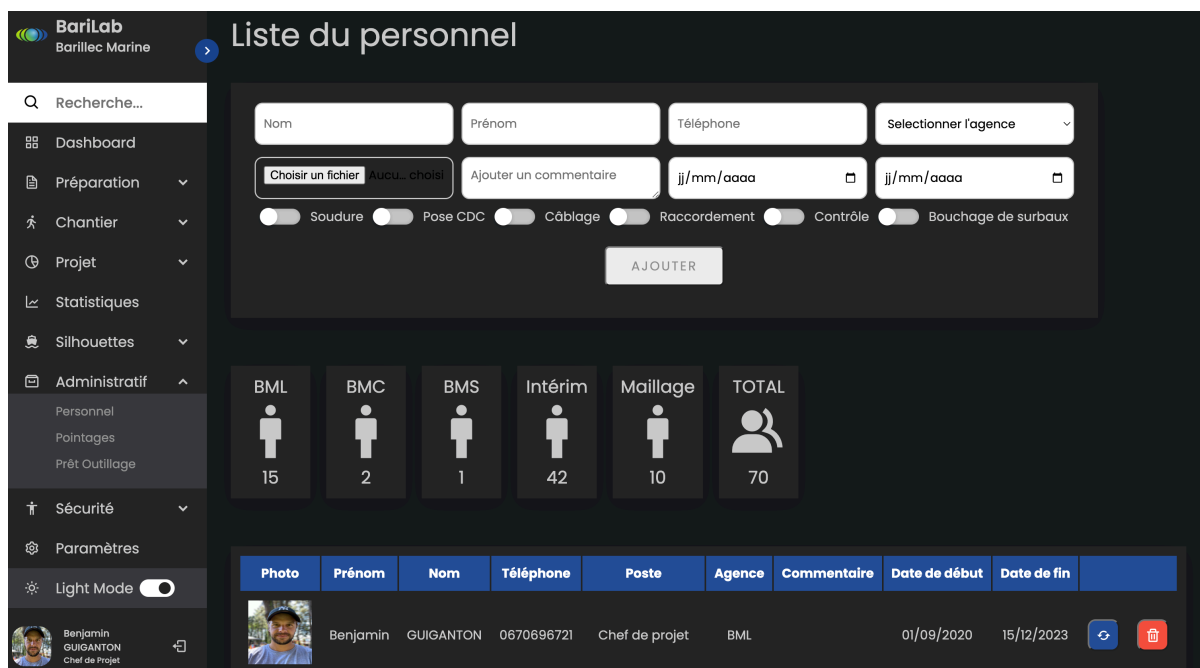
ADMINISTRATIVE

This section will include the management of staff, their scores and possibly the management of tools that may have been made available and assigned to a person.


This tab allows you to inform all the staff present on the current site, to inform each new person and their essential information.

It also allows you to visualize the number of people present and differentiate them according to their categories and the type of profession they carry out.

This makes it possible to establish a list of staff and to know the date on which they began their mission or their end date of missions, to have a trombinoscope, to identify their position on the current project.

SECURITY
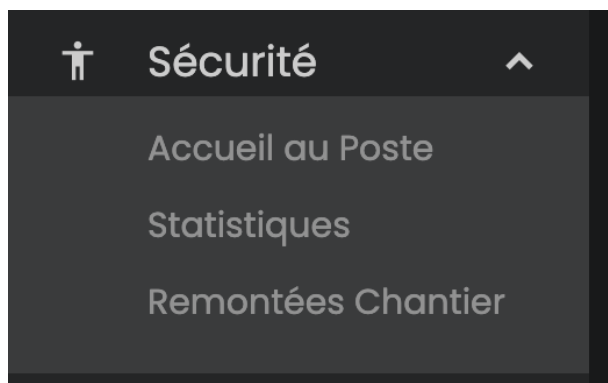
This section will include the reception at the station of each newcomer. It will be presented in the form of a presentation video and a quiz and will make it possible to judge on the newcomer's knowledge in terms of safety and thus be able to develop the aspects he will not master before starting work. This also makes it possible to trace the history of all the people who have passed on the site.

This section will also contain site reports on anomalies they may have encountered or incidents/accidents that have occurred and will thus make it possible to highlight statistics to gauge the level of danger of a site.

PARAMETERS

The settings page will allow the user to choose the font and display in order to customize the use of the tool and improve its comfort.

LIGHT/DARK MODE

The tool will have a light and dark mode to improve the user experience.

USER

The use of the tool will be done by connecting under its session. The tool therefore allows user management and its use is personalized.