D4.4 Guidelines for the implementation of the H2OLock solution (WP4).

Project 101074546 — LIFE21-ENV-ES-LIFE H2OLOCK

DEMONSTRATION OF AN EFFICIENT COST SOLUTION TO PREVENT WATER LOSS BY EVAPORATION, GUARANTEE WATER QUALITY AND PRODUCE RENEWABLE ENERGY IN AGRICULTURAL WATER RESERVOIRS

With the contribution of the LIFE Programme of the European Commission

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ARADA
Created by: J. M. Gimeno

H2OLOCK

Project acronym:	**LIFE H2OLOCK**
Full title of the project:	**DEMONSTRATION OF AN EFFICIENT COST SOLUTION TO PREVENT WATER LOSS BY EVAPORATION, GUARANTEE WATER QUALITY AND PRODUCE RENEWABLE ENERGY IN AGRICULTURAL WATER RESERVOIRS**
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[1] **Nature of the service: P**=Prototype**, R**=Report, **S**=Specification**, T**=Tool**, O**= Other

[2] **Level of dissemination: PU** = Public, **SEN**= Sensitive, only for members of the Consortium (including Commission services).

Index

1. Introduction

1.1. Objective

This document constitutes the final report that reflects the work of developing guidelines for the implementation and management of the H2Olock solution aimed primarily at users of the agricultural sector, especially farmers and technicians of agricultural companies.

Therefore, its format, and language is adapted so that the transfer of knowledge is simple and useful, and the proposed tools are practical and friendly.

1.2. Intended hearing / Classification

The nature of this benefit is PUBLIC, as described in the grant agreement.

1.3. Past Experiences and Trials

Not applicable.

1.4. Reference documents

Not applicable.

2. Why H2Olock?

As a farmer or agricultural technician, you have often wondered how much water evaporates on your pond. Do you have an idea? Well, if you live in the southeast of Spain or in the south of Andalusia, you can easily exceed 1.6 cubic meters for every square meter you have of pond. In the rest of Spain and Portugal about 1.3... and every year we get worse.

The climate warming we are addressing presents scenarios of water scarcity and drought increasingly recurrent, the execution of ponds grows by 15% every year because farmers like you, need the guarantee that their crops receive the water they need. The way of thinking is changing and many of these new ponds are already running with some type of cover that protects them from evaporation, but what about the almost 100,000 that already exist in the Iberian Peninsula?

On the other hand, if you think about managing your pond, what is your main concern? And your most important expense? Exactly! the fight against algae. The high temperatures together with the source of the water make it increasingly difficult to control the quality of the water inside the pond. The consequence? Continuous treatments with increasingly aggressive chemicals, increasingly frequent cleaning of filters, revision of the irrigation installation and replacement of drippers, irregular irrigation... a real headache... Have you ever thought about how much time you spend on these tasks?

3. What is H2Olock?

H2OLock is an innovative system, which aims to solve all these problems in a simple, effective and economical way. A system designed especially for agricultural ponds.

This is not spam, not even advertising, what we tell you before we have tried it, we have subjected it to winds of more than 100 km / h, we have analyzed the water quality monthly for more than 2 years, and we have evaluated it with the most expert independent technicians of the most prestigious universities ... and hundreds of farmers agree with us.

The product is validated to reduce 80% of the evaporation of your pond and guarantees to have the algae under control. Can you imagine more clean and transparent water without chemical treatments, without worries and without work?

No matter how your pond, deep, geometry, accessible, old is... it does not matter if it is full or empty, if you use it a lot or little, if it has floating or fixed elements inside. It doesn't matter. The system is as simple as throwing enough hexagonal modules of polyethylene resistant to the sun and the inclement weather inside the pond, and the wind and the movement of the water are responsible for organizing them so that 99% of the pond is covered in a few hours and automatically.

And what if you want to empty the pond to clean it or make any repairs? Something as intuitive as the modules will simply rest on the bottom and slopes, manually you can separate them so that they do not interfere with your task.

But there is even more, in addition to all that, the system allows you to generate solar electricity from the pond itself. As much as you need. A floating production system specially designed for your self-consumption.

In this 3 minute video you will learn everything you need about H2OLock without realizing it. It's that easy. Scan or click on this QR and see!

4. What regulations affect H2Olock?

Currently there is no European or national legislation in Spain or Portugal that obliges users of ponds to cover them. Climate change scenarios looming over the horizon indicate that it does not make much sense to expose large amounts of increasingly scarce water to unprotected solar radiation, so it is reasonable to expect that sooner rather than later, it will be regulated in this regard.

At the moment, all that exists are aid programs and incentives for the adoption of this environmental measure, which annually or biannually appear in different national and regional calls.

In addition to these, and within the European Common Agricultural Policy, Regulation (EU) 2021/2115 requires that the operational programmes of the members of an OP/HPO (cooperatives, marketing companies, etc.) allocate at least 15% of their investments financed in those programmes to environmental actions (such as A.ii.20 covering ponds) with a usual co-financing of 50% EU + 50% OP/HPO.

So, if you are a member of a cooperative or business association for the marketing of fruits or vegetables, and you want to cover your pond, contact your cooperative and find out!

5. How much does H2Olock cost?

We know that since we started telling you how great our solution is a question has been hanging around your

head. And how much does that cost? As an agricultural professional you are always pressured by the costs necessary for your production, and this economic variable is fundamental for decision-making.

From the beginning of the project, the objective was to achieve innovation that quickly penetrated the market and this was only possible if the sales price target was acceptable to the agricultural sector.

In less than a year and a half since we tested innovation, we've already covered more than 85 ponds from farmers like you. The result is that each of them is delighted with the decision, an experience of 100% satisfaction in the effect obtained on their ponds. If you don't trust them yet, scan or click on these QRs and you'll be able to listen to their testimonials.

Do you want to know how much it would cost you to install H2OLock on your pond? Do you want to calculate how long it would take to amortize the investment? Scan or click on this QR and with very little data of your pond you can calculate it yourself.

Instructions: 1 locate your raft to extract the evaporation data. 2 complete in the table only the values in black

CHARACTERIZATION OF CUBRITION SYSTEM OF BALSA AGRICOLA	
Model Coverage	H2Olock Floating Modules
Maximum reservoir size (m2)	9.233,00
Estimated efficiency	80,00%
Coverage percentage (%)	100,00%
Average exposed raft area (% of total)	100,00%
Estimated unit water evaporation (m3/m2)	1,56
Direct annual savings in non-evaporated water (m3)	11.522,78
Direct savings in filtration costs (€/m2 exposed estimated RM*)	0,33 €
Water value (average net margin m3 in the area under difficult replenishment scenario) (€/m3)	0,00 €
Water price – Year 0 (includes average transport, lifting and royalty costs) (€/m3)	0,67 €
Annual increase in water sales price (%)	0,50%
Annual Operating Expenditure (€/year)	- €
Expected operational life (years)	25

AMORTIZATION PERIODS	
Modular system amortization	10 years

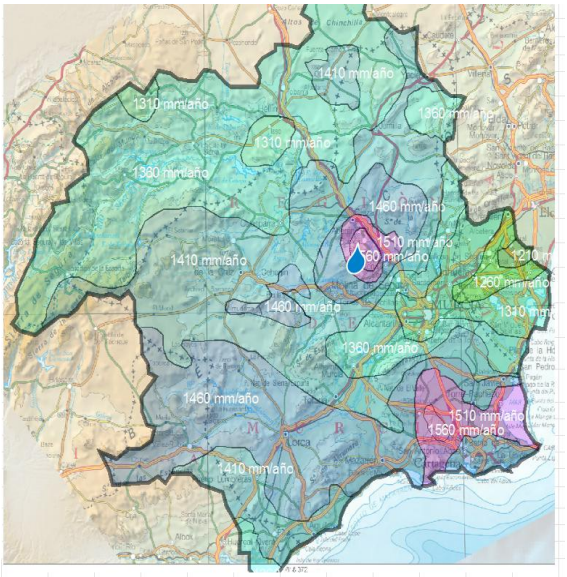
FINANCING	
Support to Operational Funds (%)	50,00%
Need for external financing (%)	0,00%

Projection based on estimated data without contractual validity

TOTAL COSTS	
Cost Acquisition Modules	53.089,75 €
Cost Transport and Installation Modules	4.616,50 €
Civil Works + Miscellaneous	- €
Initial investment	57.706,25 €
Residual value	- €

PRICES INDEX (€/m2 installed)	
Acquisition unit cost	11,50 €
Unit Cost Transport and Installation	1,00 €
Civil works	- €
Price Index Installation	6,25 €

H2OLOCK



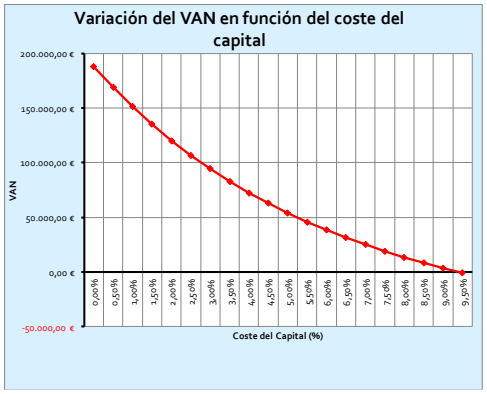
* Meanvalue extracted from : Comparative Analysis of on-Farm Réservoir Management Techniques and Their Effect on Filtering Requirements for Irrigation V. Martínez-Alvarez & J. F. Maestre-Valero UPCT 2014. Based on our experience it varies between 0,37 and 1,18 €/m3 depending on the geometry of the raft, source of water, management of raft and irrigation network)

ECONOMIC INDICATORS

				Profit and loss account													
Year	Investment	Water saving	Water price	Water saving	Saving filtration	Total savings	Expenditure (inc. G. general)	Gross Operating Margin	Financial costs	Amortization modules (15 years)	BAI	Tax Fee (25%)	Net profit after tax	Depreciation of fixed assets	Net Flow Box	FNC Updated (VAN calculation)	Net Flow Accumulated Box	
	Euros	m3	€/m3	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	n
2025	57.706,25	11.522,78	0,67	7.720,27	3.046,89	10.767,16	0,00	10.767,16	0,00	3.847,08	6.920,07	0,00	6.920,07	3.847,08	-46.939,09	-46.939,09	-46.939,09	0
2026		11.522,78	0,67	7.758,87	3.046,89	10.805,76	0,00	10.805,76	0,00	3.847,08	6.958,67	0,00	6.958,67	3.847,08	10.805,76	10.593,88	-36.345,22	1
2027		11.522,78	0,68	7.867,49	3.046,89	10.914,38	0,00	10.914,38	0,00	3.847,08	7.067,30	0,00	7.067,30	3.847,08	10.914,38	10.490,56	-25.854,65	2
2028		11.522,78	0,69	7.977,64	3.046,89	11.024,53	0,00	11.024,53	0,00	3.847,08	7.177,44	0,00	7.177,44	3.847,08	11.024,53	10.388,66	-15.466,00	3
2029		11.522,78	0,70	8.089,32	3.046,89	11.136,21	0,00	11.136,21	0,00	3.847,08	7.289,13	0,00	7.289,13	3.847,08	11.136,21	10.288,14	-5.177,86	4
2030		11.522,78	0,71	8.202,57	3.046,89	11.249,46	0,00	11.249,46	0,00	3.847,08	7.402,38	0,00	7.402,38	3.847,08	11.249,46	10.188,99	5.011,13	5
2031		11.522,78	0,72	8.317,41	3.046,89	11.364,30	0,00	11.364,30	0,00	3.847,08	7.517,22	0,00	7.517,22	3.847,08	11.364,30	10.091,17	15.102,30	6
2032		11.522,78	0,73	8.433,85	3.046,89	11.480,74	0,00	11.480,74	0,00	3.847,08	7.633,66	0,00	7.633,66	3.847,08	11.480,74	9.994,68	25.096,98	7
2033		11.522,78	0,74	8.551,93	3.046,89	11.598,82	0,00	11.598,82	0,00	3.847,08	7.751,73	0,00	7.751,73	3.847,08	11.598,82	9.899,48	34.996,46	8
2034		11.522,78	0,75	8.671,65	3.046,89	11.718,54	0,00	11.718,54	0,00	3.847,08	7.871,46	0,00	7.871,46	3.847,08	11.718,54	9.805,55	44.802,01	9
2035		11.522,78	0,76	8.793,06	3.046,89	11.839,95	0,00	11.839,95		3.847,08	7.992,86	0,00	7.992,86	3.847,08	11.839,95	9.712,88	54.514,89	10
2036		11.522,78	0,77	8.916,16	3.046,89	11.963,05	0,00	11.963,05		3.847,08	8.115,97	0,00	8.115,97	3.847,08	11.963,05	9.621,44	64.136,33	11
2037		11.522,78	0,78	9.040,99	3.046,89	12.087,88	0,00	12.087,88		3.847,08	8.240,79	0,00	8.240,79	3.847,08	12.087,88	9.531,21	73.667,54	12
2038		11.522,78	0,80	9.167,56	3.046,89	12.214,45	0,00	12.214,45		3.847,08	8.367,37	0,00	8.367,37	3.847,08	12.214,45	9.442,17	83.109,70	13
2039		11.522,78	0,81	9.295,91	3.046,89	12.342,80	0,00	12.342,80		3.847,08	8.495,71	0,00	8.495,71	3.847,08	12.342,80	9.354,30	92.464,00	14
2040		11.522,78	0,82	9.426,05	3.046,89	12.472,94	0,00	12.472,94			12.472,94	0,00	12.472,94	0,00	12.472,94	9.267,58	101.731,58	15
2041		11.522,78	0,83	9.558,01	3.046,89	12.604,90	0,00	12.604,90			12.604,90	0,00	12.604,90	0,00	12.604,90	9.181,99	110.913,56	16
2042		11.522,78	0,84	9.691,83	3.046,89	12.738,72	0,00	12.738,72			12.738,72	0,00	12.738,72	0,00	12.738,72	9.097,51	120.011,08	17
2043		11.522,78	0,85	9.827,51	3.046,89	12.874,40	0,00	12.874,40			12.874,40	0,00	12.874,40	0,00	12.874,40	9.014,13	129.025,21	18
2044		11.522,78	0,86	9.965,10	3.046,89	13.011,99	0,00	13.011,99			13.011,99	0,00	13.011,99	0,00	13.011,99	8.931,83	137.957,04	19
2045		11.522,78	0,88	10.104,61	3.046,89	13.151,50	0,00	13.151,50			13.151,50	0,00	13.151,50	0,00	13.151,50	8.850,58	146.807,62	20
2046		11.522,78	0,89	10.246,07	3.046,89	13.292,96	0,00	13.292,96			13.292,96	0,00	13.292,96	0,00	13.292,96	8.770,37	155.577,99	21
2047		11.522,78	0,90	10.389,52	3.046,89	13.436,41	0,00	13.436,41			13.436,41	0,00	13.436,41	0,00	13.436,41	8.691,19	164.269,18	22
2048		11.522,78	0,91	10.534,97	3.046,89	13.581,86	0,00	13.581,86			13.581,86	0,00	13.581,86	0,00	13.581,86	8.613,02	172.882,20	23
2049		11.522,78	0,93	10.682,46	3.046,89	13.729,35	0,00	13.729,35			13.729,35	0,00	13.729,35	0,00	13.729,35	8.535,83	181.418,03	24

TIR (%)	24%	181.418,03 €
Pay-Back	4 años	
Interés VAN	2,00%	
VAN	181.418,03 €	

Analisis del VAN en función del Interés considerado		
Interes Inicial		0%
Intervalos crecimiento		0,50%
	Coste Capital	VAN
Caso 1	0,00%	187.990,53 €
Caso 2	0,50%	168.651,75 €
Caso 3	1,00%	151.008,91 €
Caso 4	1,50%	134.893,31 €
Caso 5	2,00%	120.154,57 €
Caso 6	2,50%	106.658,50 €
Caso 7	3,00%	94.285,24 €
Caso 8	3,50%	82.927,64 €
Caso 9	4,00%	72.489,77 €
Caso 10	4,50%	62.885,69 €
Caso 11	5,00%	54.038,33 €
Caso 12	5,50%	45.878,52 €
Caso 13	6,00%	38.344,06 €
Caso 14	6,50%	31.379,02 €
Caso 15	7,00%	24.933,05 €
Caso 16	7,50%	18.960,76 €
Caso 17	8,00%	13.421,18 €
Caso 18	8,50%	8.277,32 €
Caso 19	9,00%	3.495,75 €
Caso 20	9,50%	-953,79 €



6. How is H2Olock installed?

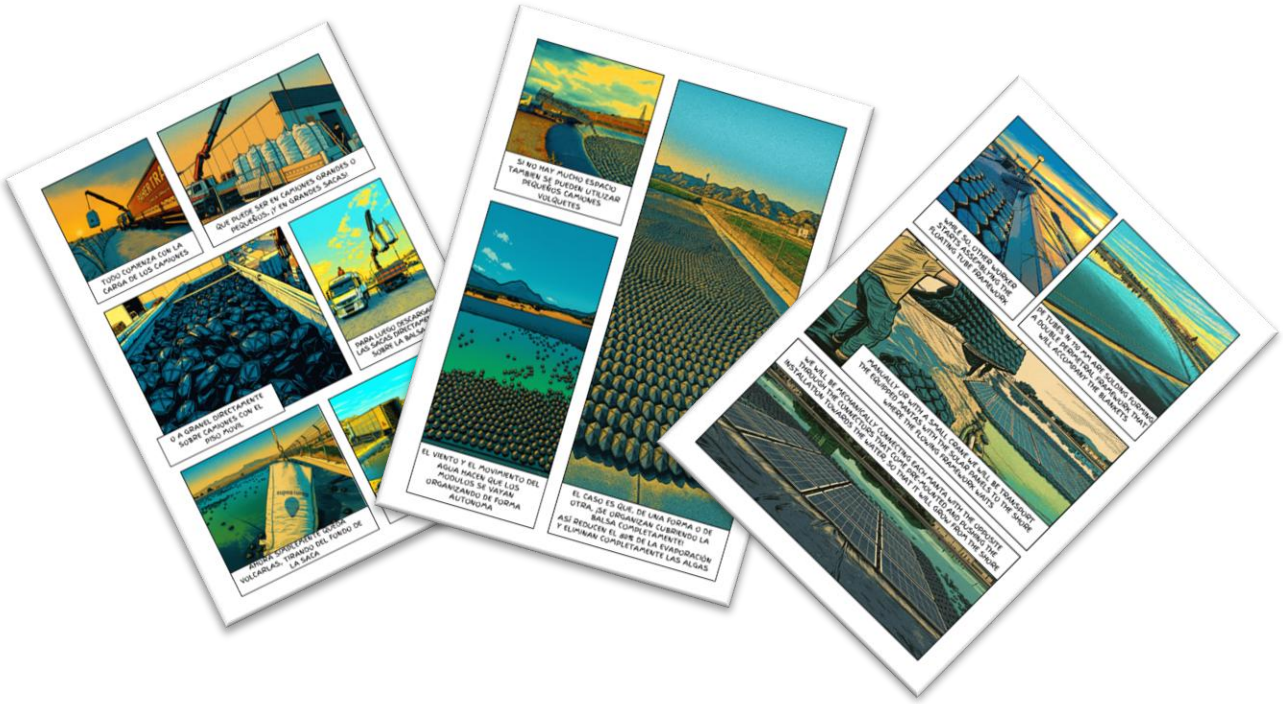
The best thing about H2OLock is that it is a system as simple as it is great, it is directly poured on the water and the wind and the movement of the water are responsible for organizing them so that 99% of the pond is covered in a few hours and automatically.

Achieving this apparently simple system is not as easy as it seems. If you have seen the previous video, you can see how every module turns around itself until it stays in its working position.

This is done thanks to an interior weighted chamber that hosts a certain proportion of water and air, and that makes the product with its 12.5 kg / m2 in the heaviest of the whole market, with a 40% difference over the next ... and all this using less than half of plastic. IIn addition to the geometrical design, the weight helps it to resist the most unfavorable winds.

We've seen how easy it is to install the H2OLock floating modular system, but what if you want to install an H2OLock solar production solution? The system is just as simple, since it is prepared so that, without greater knowledge in the field, it can be installed quickly. Just two people for 3 days will be able to mount a 35 kWp solar installation with the only help of a small telescopic crane.

You want to know how? Then read this comic and we will show you. Scan this QR.

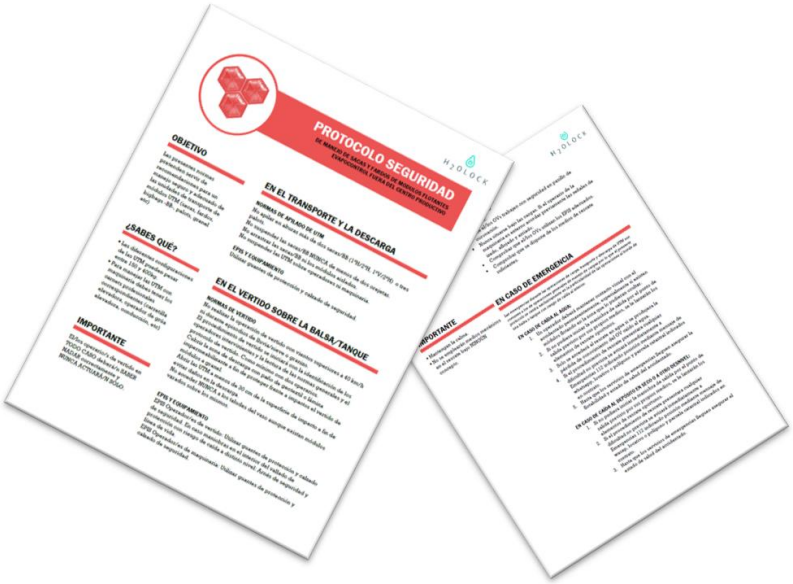


esp eng ptg

The electrical connection of the solar plant to the land systems such as the inverter and the main cabinet, must be made and approved by an electrical professional, in the same way as any installation on the ground.

Despite very simple systems to install, any approach to a full or empty water pond has its risks and requires its precautions. The personal risks of people who are maneuvering or supervising during the installation refer mainly to their fall into the water, so it is essential to have basic notions of swimming. The risks of the machinery associated with the installation are associated with its own movement (movements, suspension of loads, range of electrical lines, etc.), and therefore operators must be permanently attentive to this.

If you want to know more, check out these simple safety data sheets here:



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7. What environmental impact does H2Olock have?

At this point you will surely be considering whether H2Olock is suitable for your pond. Well, we're going to give you even more reasons. Although the environmental goodness of the product goes in its own purpose of fighting against the effects of climate change and water scarcity, we wanted to go a step further and evaluate what the real environmental impact of the product is and compare it with other solutions that exist in the market.

This work of deep analysis has involved dissecting each of the environmental variables of its manufacture and commissioning, from the genesis of the materials themselves, to the destination at the end of its life. This is called, Life Cycle Analysis (LCA), an Integral analysis, from cradle to grave.

The results could not be more satisfactory. Compared to the rest of the options to cover ponds, our solution does not reach even 50% of the environmental impact of the most ecological of the existing solutions on the market. A real giant step.

So you can boast about it, not only are you going to fight for a more sustainable environment, but you are going to do it with the most environmentally advanced tool in the whole market. If I were you, I'd let your customers know!

If you want to know our results click here.

esp/eng

8. Conclusions

We understand this document as an authentic training program designed to facilitate the adoption and implementation of the system in the real world and aimed at the farmer directly as if it were a conversation. We believe that with the document presented we managed to provide the project with a useful and complete tool for dissemination, training and instruction capable of reaching the target audience so that without further help they are practically self-sufficient for the understanding, evaluation and implementation of the system.

The means used and the tools made available to them are easily accessible and comprehensible, friendly and eminently practical.

For all these reasons, we consider the objective of this task to be fulfilled for the training of farmers and also of stakeholders to develop skills in water management, paying special attention to the new generations and young farmers.

9. Annexes

- **Annex I: H2Olock Price Sheet and Investment Amortization**
- **Annex II: H2Olock Floating Solar Installation Price Sheet**
- **Annex III: Floating Deck and Solar Plant Installation Comic**
- **Annex IV: Safety standards**

Annex I: H2Olock Price Sheet and Investment Amortization

Instructions: 1 locate your raft to extract the evaporation data. 2 complete in the table only the values in black

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Model Coverage	H2Olock Floating Modules
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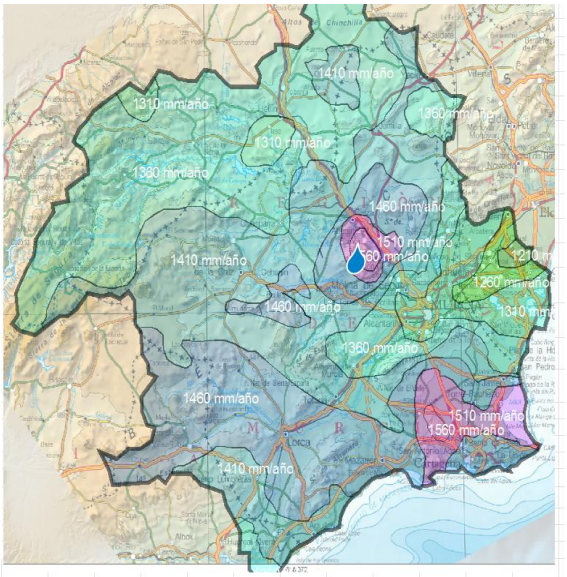
H2OLOCK



* Meanvalue extracted from : Comparative Analysis of on-Farm Reservoir Management Techniques and Their Effect on Filtering Requirements for Irrigation V. Martínez-Alvarez & J. F. Maestre-Valero UPCT 2014. Based on our experience it varies between 0,37 and 1,18 €/m3 depending on the geometry of the raft, source of water, management of raft and irrigation network)

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	Euros	m3	€/m3	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	Euros	n
2025	57.706,25	11.522,78	0,67	7.720,27	3.046,89	10.767,16	0,00	10.767,16	0,00	3.847,08	6.920,07	0,00	6.920,07	3.847,08	-46.939,09	-46.939,09	-46.939,09	0
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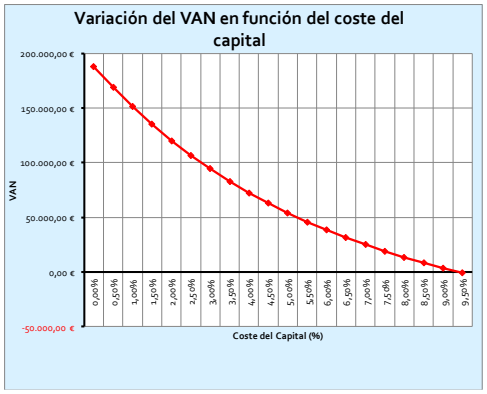
2028		11.522,78	0,69	7.977,64	3.046,89	11.024,53	0,00	11.024,53	0,00	3.847,08	7.177,44	0,00	7.177,44	3.847,08	11.024,53	10.388,66	-15.466,00	3
2029		11.522,78	0,70	8.089,32	3.046,89	11.136,21	0,00	11.136,21	0,00	3.847,08	7.289,13	0,00	7.289,13	3.847,08	11.136,21	10.288,14	-5.177,86	4
2030		11.522,78	0,71	8.202,57	3.046,89	11.249,46	0,00	11.249,46	0,00	3.847,08	7.402,38	0,00	7.402,38	3.847,08	11.249,46	10.188,99	5.011,13	5
2031		11.522,78	0,72	8.317,41	3.046,89	11.364,30	0,00	11.364,30	0,00	3.847,08	7.517,22	0,00	7.517,22	3.847,08	11.364,30	10.091,17	15.102,30	6
2032		11.522,78	0,73	8.433,85	3.046,89	11.480,74	0,00	11.480,74	0,00	3.847,08	7.633,66	0,00	7.633,66	3.847,08	11.480,74	9.994,68	25.096,98	7
2033		11.522,78	0,74	8.551,93	3.046,89	11.598,82	0,00	11.598,82	0,00	3.847,08	7.751,73	0,00	7.751,73	3.847,08	11.598,82	9.899,48	34.996,46	8
2034		11.522,78	0,75	8.671,65	3.046,89	11.718,54	0,00	11.718,54	0,00	3.847,08	7.871,46	0,00	7.871,46	3.847,08	11.718,54	9.805,55	44.802,01	9
2035		11.522,78	0,76	8.793,06	3.046,89	11.839,95	0,00	11.839,95		3.847,08	7.992,86	0,00	7.992,86	3.847,08	11.839,95	9.712,88	54.514,89	10
2036		11.522,78	0,77	8.916,16	3.046,89	11.963,05	0,00	11.963,05		3.847,08	8.115,97	0,00	8.115,97	3.847,08	11.963,05	9.621,44	64.136,33	11
2037		11.522,78	0,78	9.040,99	3.046,89	12.087,88	0,00	12.087,88		3.847,08	8.240,79	0,00	8.240,79	3.847,08	12.087,88	9.531,21	73.667,54	12
2038		11.522,78	0,80	9.167,56	3.046,89	12.214,45	0,00	12.214,45		3.847,08	8.367,37	0,00	8.367,37	3.847,08	12.214,45	9.442,17	83.109,70	13
2039		11.522,78	0,81	9.295,91	3.046,89	12.342,80	0,00	12.342,80		3.847,08	8.495,71	0,00	8.495,71	3.847,08	12.342,80	9.354,30	92.464,00	14
2040		11.522,78	0,82	9.426,05	3.046,89	12.472,94	0,00	12.472,94			12.472,94	0,00	12.472,94	0,00	12.472,94	9.267,58	101.731,58	15
2041		11.522,78	0,83	9.558,01	3.046,89	12.604,90	0,00	12.604,90			12.604,90	0,00	12.604,90	0,00	12.604,90	9.181,99	110.913,56	16
2042		11.522,78	0,84	9.691,83	3.046,89	12.738,72	0,00	12.738,72			12.738,72	0,00	12.738,72	0,00	12.738,72	9.097,51	120.011,08	17
2043		11.522,78	0,85	9.827,51	3.046,89	12.874,40	0,00	12.874,40			12.874,40	0,00	12.874,40	0,00	12.874,40	9.014,13	129.025,21	18
2044		11.522,78	0,86	9.965,10	3.046,89	13.011,99	0,00	13.011,99			13.011,99	0,00	13.011,99	0,00	13.011,99	8.931,83	137.957,04	19
2045		11.522,78	0,88	10.104,61	3.046,89	13.151,50	0,00	13.151,50			13.151,50	0,00	13.151,50	0,00	13.151,50	8.850,58	146.807,62	20
2046		11.522,78	0,89	10.246,07	3.046,89	13.292,96	0,00	13.292,96			13.292,96	0,00	13.292,96	0,00	13.292,96	8.770,37	155.577,99	21
2047		11.522,78	0,90	10.389,52	3.046,89	13.436,41	0,00	13.436,41			13.436,41	0,00	13.436,41	0,00	13.436,41	8.691,19	164.269,18	22
2048		11.522,78	0,91	10.534,97	3.046,89	13.581,86	0,00	13.581,86			13.581,86	0,00	13.581,86	0,00	13.581,86	8.613,02	172.882,20	23
2049		11.522,78	0,93	10.682,46	3.046,89	13.729,35	0,00	13.729,35			13.729,35	0,00	13.729,35	0,00	13.729,35	8.535,83	181.418,03	24

TIR (%)	24%	181.418,03 €
Pay-Back	4 años	
Interés VAN	2,00%	
VAN	181.418,03 €	

Analisis del VAN en función del Interés considerado		
Interes Inicial		0%
Intervalos crecimiento		0,50%
	Coste Capital	VAN
Caso 1	0,00%	187.990,53 €
Caso 2	0,50%	168.651,75 €
Caso 3	1,00%	151.008,91 €
Caso 4	1,50%	134.893,31 €
Caso 5	2,00%	120.154,57 €
Caso 6	2,50%	106.658,50 €
Caso 7	3,00%	94.285,24 €
Caso 8	3,50%	82.927,64 €
Caso 9	4,00%	72.489,77 €
Caso 10	4,50%	62.885,69 €
Caso 11	5,00%	54.038,33 €
Caso 12	5,50%	45.878,52 €
Caso 13	6,00%	38.344,06 €
Caso 14	6,50%	31.379,02 €
Caso 15	7,00%	24.933,05 €
Caso 16	7,50%	18.960,76 €
Caso 17	8,00%	13.421,18 €
Caso 18	8,50%	8.277,32 €
Caso 19	9,00%	3.495,75 €
Caso 20	9,50%	-953,79 €



Annex II: H2Olock Floating Solar Installation Price Sheet

FEATURES AND DATA

BLANKET FEATURES			
LONG BLANKET m	10,8	18	PROGRESS
NUMBER OF FOT PLATES PER BLANKET		4	
MAX POWER OF PANEL kWp		0,31	
SUP m2		10,49	
No YUXTAPOWERED EYES		6	2,7 m BETWEEN YES
No. of HDPE EYE REINFORCEMENTS		4	2 cm ESQUINA
NUMBER MOSQUET NYLON		10	
NUMBER OF BRIDGE		32	
BLOCK CHARACTERISTICS			
NUM BLANKETS PER BLOCK		12	
NUM BLOCKS PER INDEP FLOOR		1	
PIPE D110 bar 6m		16	
NUMBER OF CUTS PIPE		6	
LONG SHORT LATERAL CUT		10,74	4,74 m ADJUSTMENT
LONG LATERAL CUT LONG		11,932	5,932 m ADJUSTMENT
EMPALME D110 MANGUITS NUMBER		8	
TAPONES D110		4	
HDPE RINGS		50	
ROPE GUIA m		67	
MOSQUETON INOX		8	
RIOSTRA CORD m		80	
POWER MAX BLOCK kWp		14,88	
INDEPENDENT FLOOR CHARACTERISTICS			
WIDTH m		11,1	
LONG m		11,952	
OCCUPIED SURFACE m2		132,67	
NUMBER OF BLANKETS UD		12	
No YUXTAPOWERED EYES		72	
No. of HDPE EYE REINFORCEMENTS		48	
NUMBER MOSQUET NYLON		120	
NUMBER OF BRIDGE		384	
PIPE D110 bar 6m		16	
NUMBER OF CUTS PIPE		6	4,74 m ADJUSTMENT
LONG SHORT LATERAL CUT		10,74	5,932 m ADJUSTMENT
LONG LATERAL CUT LONG		11,932	
EMPALME D110 MANGUITS NUMBER		8	
TAPONES D110		4	
HDPE RINGS		50	
ROPE GUIA m		66,714	
MOSQUETON INOX		8	
RIOSTRA CORD m		80	
POWER MAX BLOCK kWp		14,88	

FEATURES COMPLETE INSTALLATION	
NUMBER OF INDEPEND PLANTS	1
MAX POWER OF PLANT kWp	**14,88**
POWER MAX INSTALLATION kWp	**14,88**
NUMBER OF BLANKETS UD	**12**

MATERIAL AND PRICES WORKSHOP

CONCEPT	UD		€/UD	TOTAL
SUPPORT BLANKETS	133	m2	16,52 €	2.191,37 €
BLANKET SUPPORT	133	m2	15	1.990,01 €
No. of HDPE EYE REINFORCEMENTS	48	ud	0,13	6,24 €
No. EYELET DRAWERS REINFORCED +YU	120	ud	0,3	36,00 €
NUMBER MOSQUET NYLON	120	ud	0,06	7,20 €
NUMBER OF BRIDGE	384	ud	0,28	107,52 €
No. OF BRIDA EYE SIZES	384	ud	0,1	38,40 €
ENROLLED/FLEXED BLANKET	12	ud	0,5	6,00 €
PERIMETER	46	ml	9,92 €	457,51 €
PIPE D110 bar 6m	16	ud	16,98	271,68 €
NUMBER OF CUTS PIPE	6	ud	0,5	3,00 €
EMPALME D110 MANGUITS NUMBER	8	ud	5,9	47,20 €
TAPONES D110	4	ud	14,17	56,68 €
HDPE RINGS	50	ud	0,6	30,00 €
ROPE GUIA m	67	m		- €
RIOSTRA CORD m	80	m		- €
TOTAL ROAD m	147	m	0,29	42,55 €
MOSQUETON INOX	8	ud	0,8	6,40 €
TOTAL MATERIAL AND PRICES WORKSH	**133**	**m2**	**19,97**	**2.648,88 €**

PERSONNEL

COMMISSION FOR SALE	2,0	%	26	52,98 €
DESIGN AND ENGINEERING	3,0	%	26	79,47 €
LOADING MATERIALS	1,0	h	12	11,94 €
TOTAL PERSONNEL	**133**	**m2**	**1,09**	**144,38 €**

TOTAL COST				
	133	**m2**	**21,05**	**2.793,26 €**
	14,88	kWp	187,72	2.793,26 €
	14880	Wp	0,19	2.793,26 €

INSTALLER COST

CONCEPT	UD	€/UD	TOTAL
MODULE POLICRIS FLEXIBLE SUNMAN	48	88 €	4.202,40 €
TRIF HUAWEI SUN2000/100KTL INVESTOR	0,5	4.895 €	2.447,50 €
ACCESSORIES ASSEMBLY, STRING TABLE, TAKE EARTH...	0,5	2.450 €	1.225,00 €
NON-MOUNTS OF PLANTS	0,5	1.550 €	775,00 €
No. MAT ELECT/PLANTAS (CABLE SOLAR STRINGS AND REJIB	0,5	1.820 €	910,00 €
ENGINEERING PROJECT	1	500 €	500,00 €
TOTAL INSTALLATION COST			**10.059,90 €**

MECHANICAL INSTALLATION	133	**m2**	5,84	**775,00 €**
	15	kWp	52,08	775,00 €
ELECTRICAL MATERIAL	133	**m2**	69,99	**9.284,90 €**
	15	kWp	623,99	9.284,90 €

TOTAL INSTALLATION COST				
	133	**m2**	75,83	10.059,90 €
	15	kWp	676,07	10.059,90 €
	14880	Wp	0,68	10.059,90 €

OTHER COSTS

TRANSPORT	133	**m2**	9,80	**1.300,00 €**
	15	kWp	87,37	1.300,00 €
	UD		**€/UD**	**TOTAL**
AUX MEDIA. MOUNTING CRANE	24	h	45	1.080,00 €

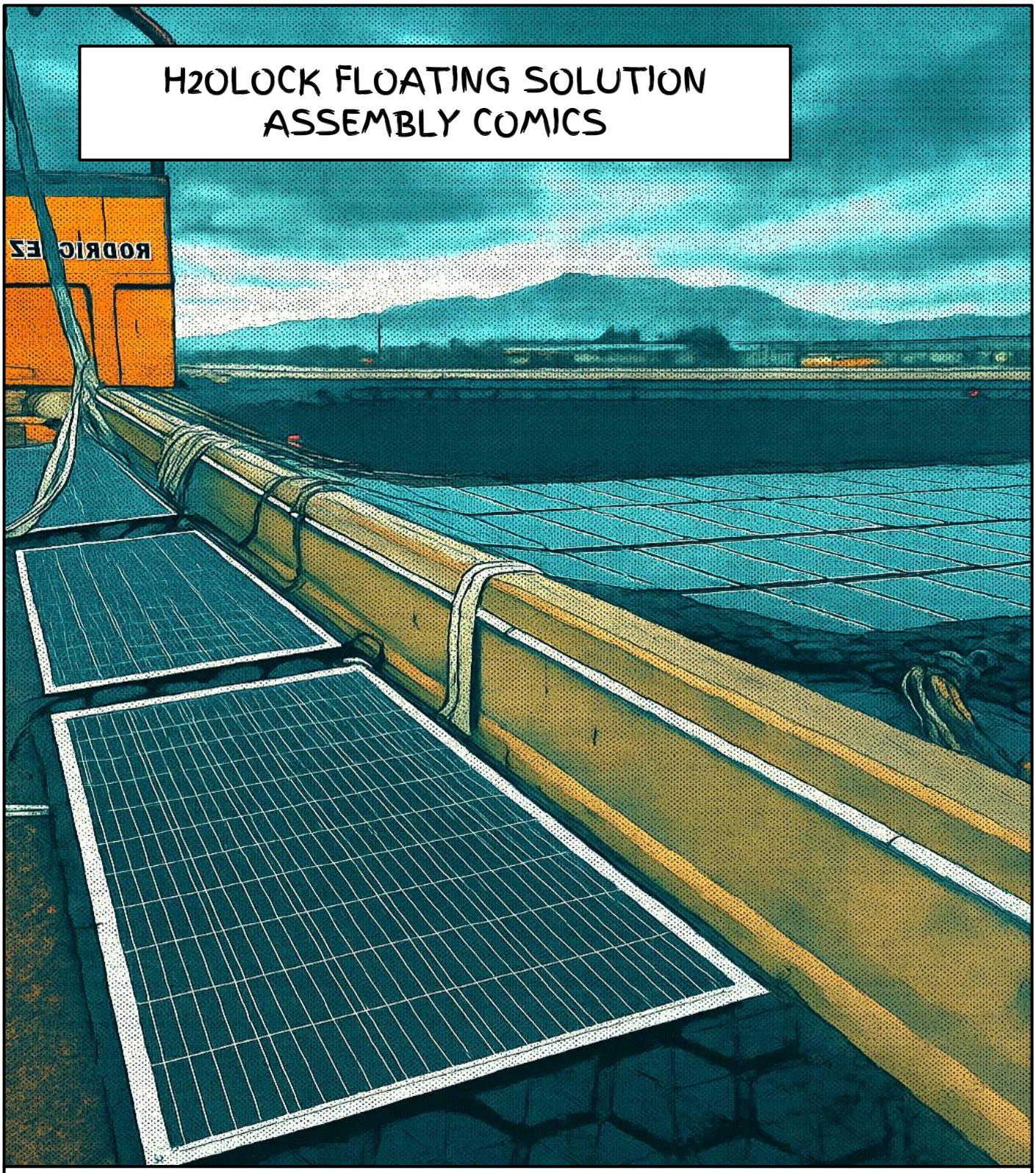
SUBTOTAL	14880	Wp	1,02	15.233,16 €
IMPREVISES	3	%		456,99 €
BI	15	%		2.353,52 €
FINANCIAL AND INSURANCE EXPEN	0	%		- €
TOTAL PRICE SALE	133	**m2**	136,01	**18.043,68 €**
	15	kWp	1212,61	18.043,68 €
	14880	Wp	1,21	18.043,68 €

Kwp

7

Annex III: Floating Deck and Solar Plant Installation Comic

H2OLOCK FLOATING SOLUTION ASSEMBLY COMICS



H2OLOCK

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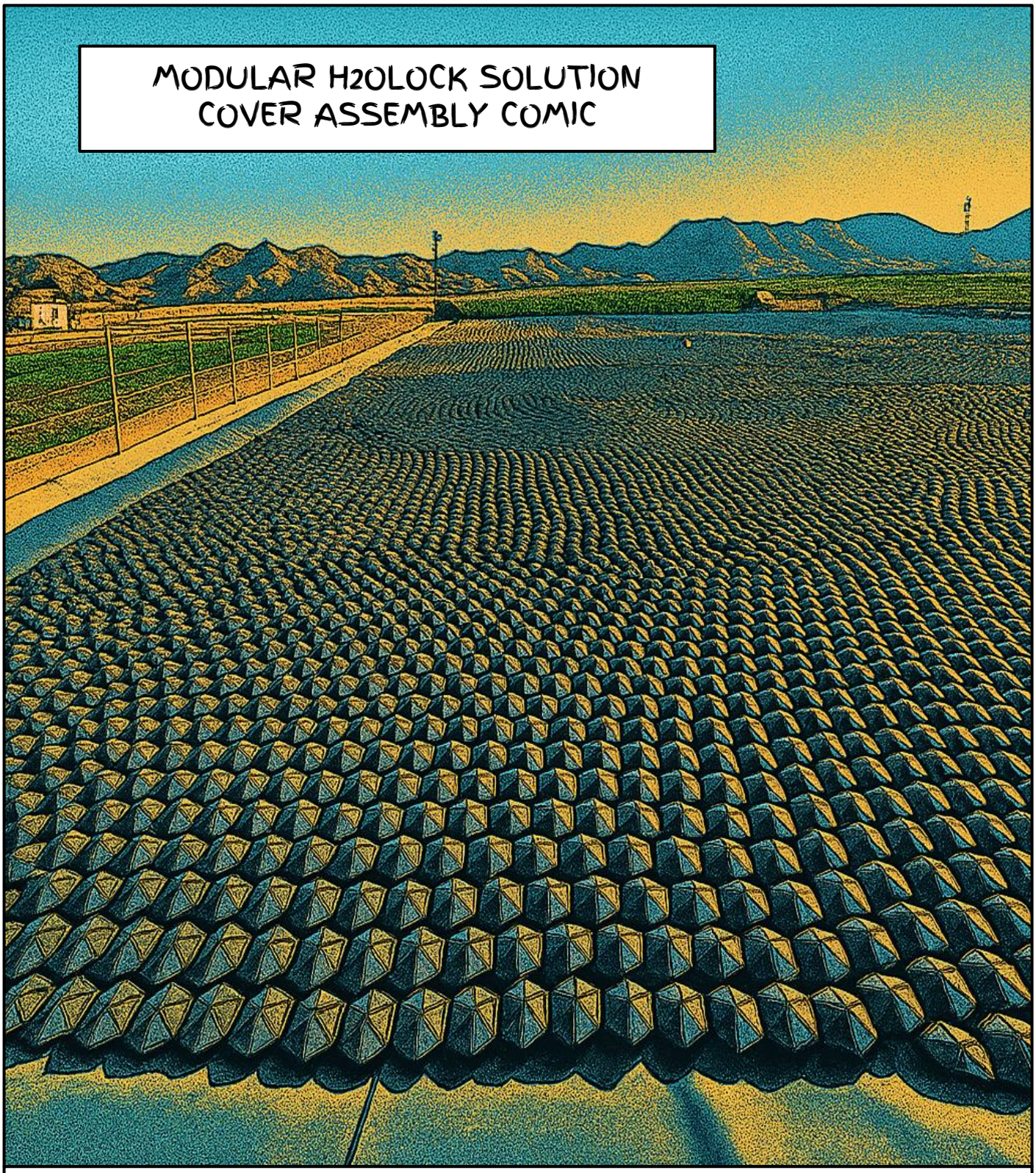
MODULAR H2OLOCK SOLUTION COVER ASSEMBLY COMIC



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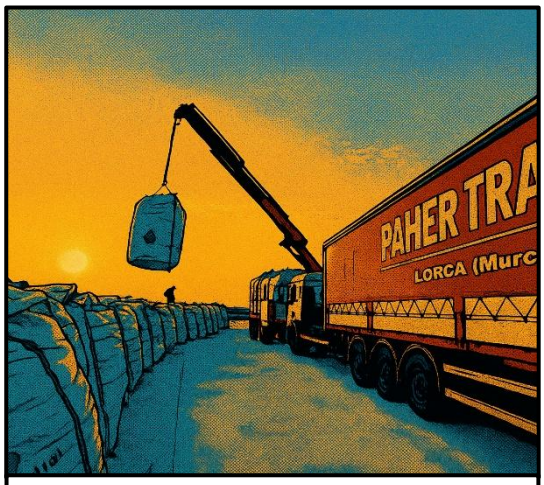


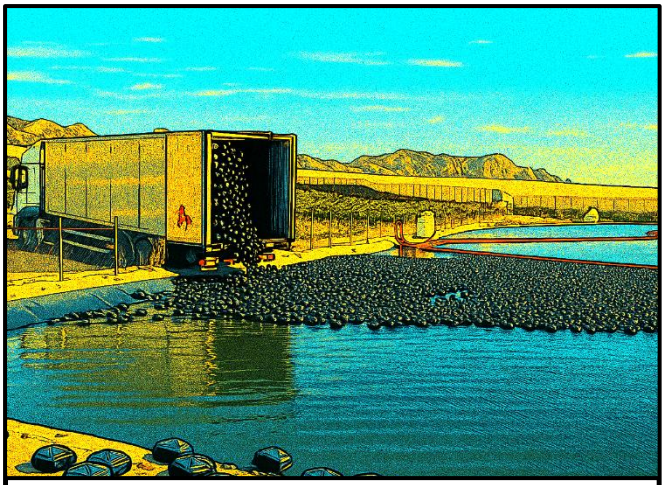
EVERYTHING STARTS WITH THE CHARGING OF THE TRUCKS

THAT CAN BE IN BIG OR SMALL TRUCKS, AND IN GREAT BIG-BAGS!

OR LARGE DIRECTLY ON MOBILE FLOOR TRUCKS

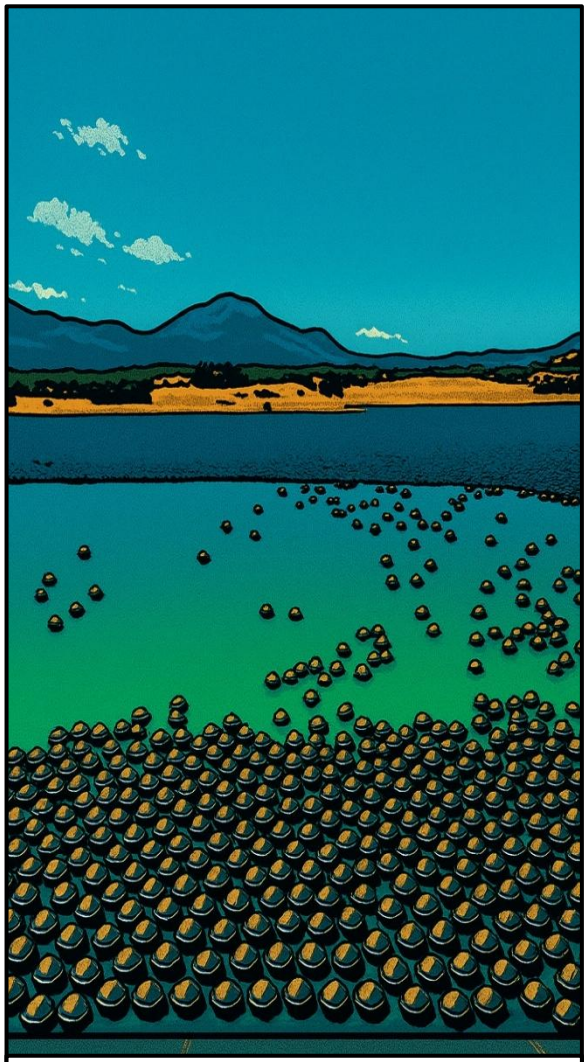
TO THEN DOWNLOAD THE BIG-BAGS DIRECTLY ON THE BASE...

NOW YOU JUST HAVE TO DOWN THEM, TAKING THE FUND OF THE BIG-BAG

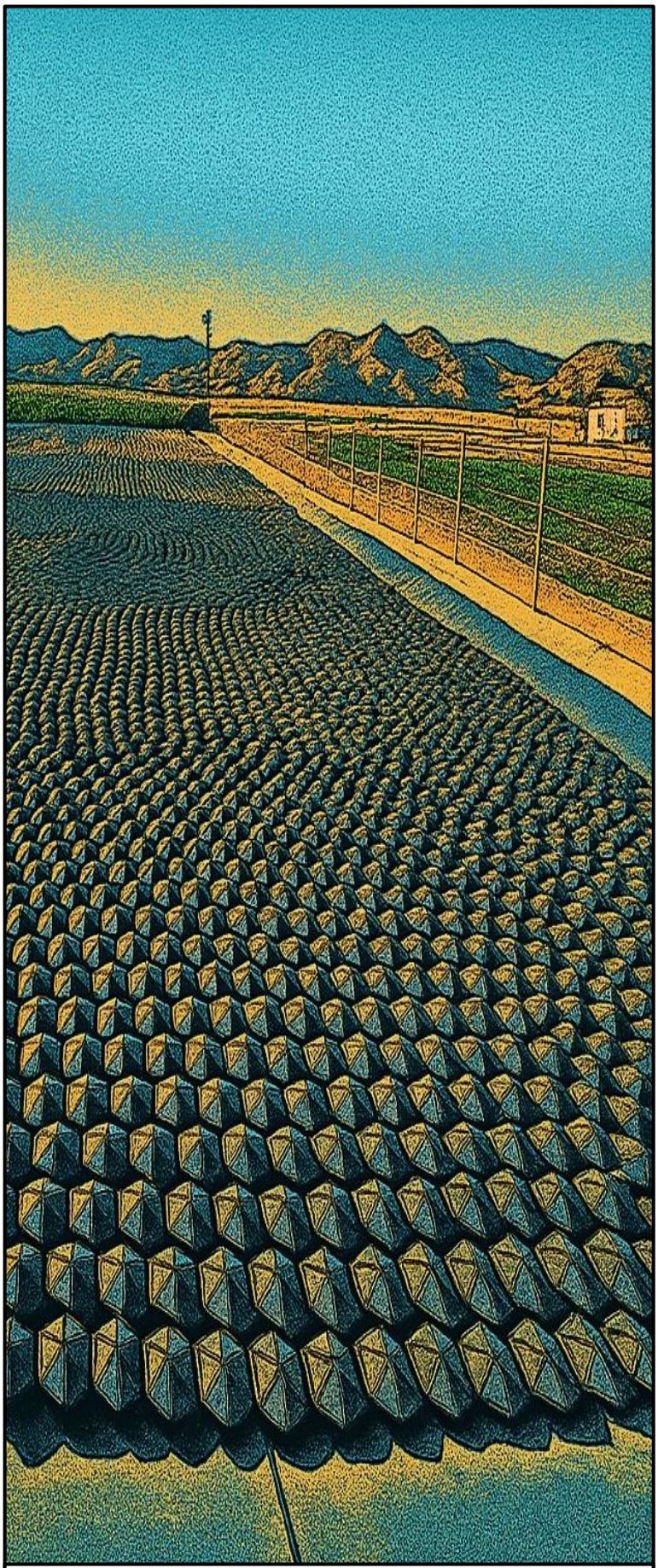


IF THEY DON'T COME IN BIG-BAGS BUT IN BULK, THEN YOU JUST HAVE TO PUSH A BOTTON... AND READY...

IF THERE IS NOT A LOT OF SPACE YOU CAN ALSO USE SMALL VOLQUET TRUCKS

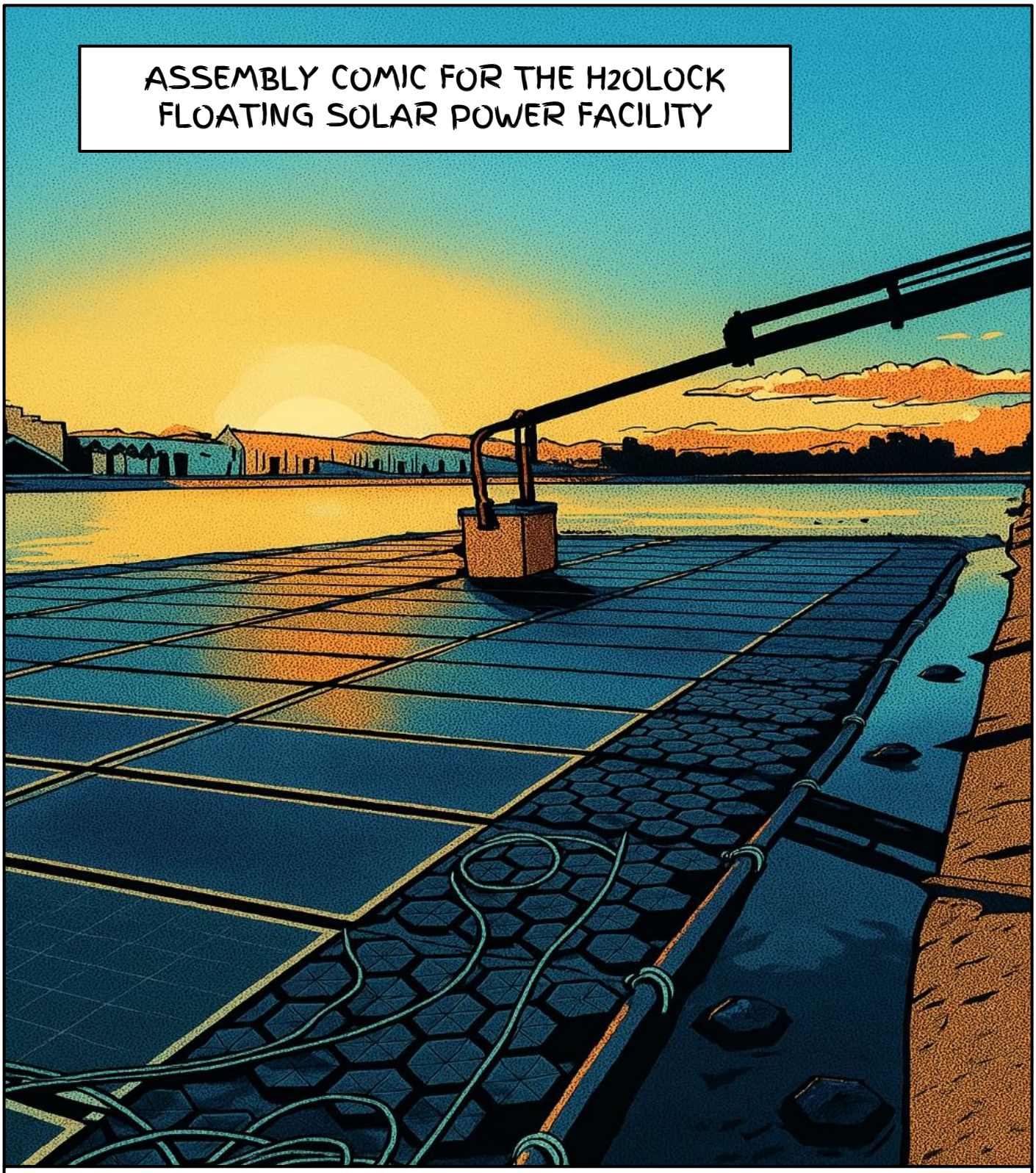


WIND AND WATER MOVEMENT MAKE MODULES ORGANIZE AUTONOMOUSLY. IT IS CONVENIENT TO KEEP A COUPLE OF BIG-BAGS FOR THE FINAL ADJUSTMENT.



THE CASE IS THAT, ONE WAY OR ANOTHER, THEY ORGANIZE THE RESERVOIR COMPLETELY!
THEY REDUCE 80% OF THE EVAPORATION AND COMPLETELY ELIMINATE THE ALGAE

ASSEMBLY COMIC FOR THE H2OLOCK FLOATING SOLAR POWER FACILITY



H2OLOCK

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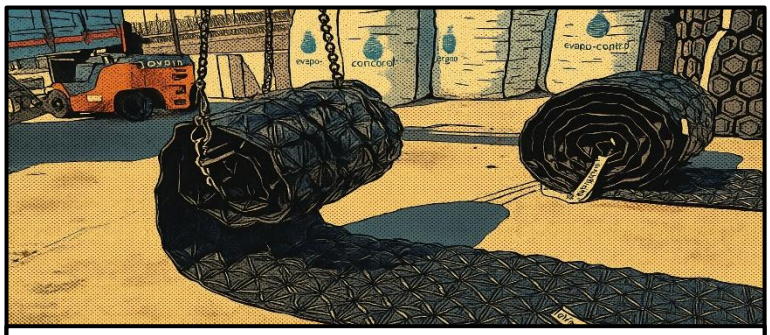
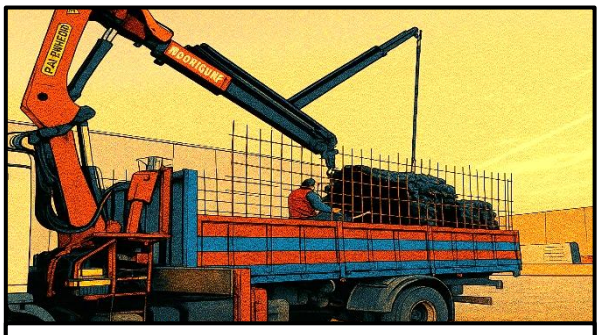
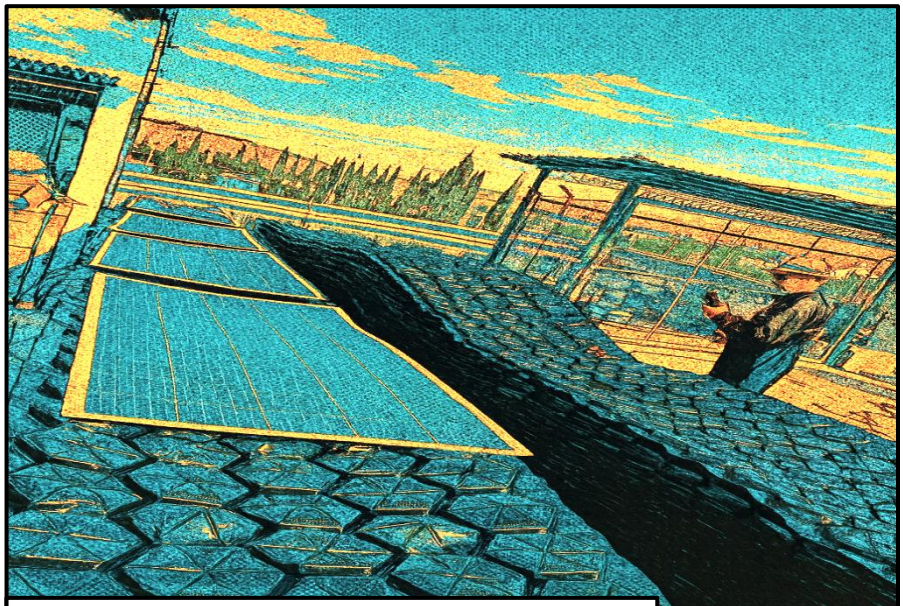


WE ROLL FLOATING BLANKETS

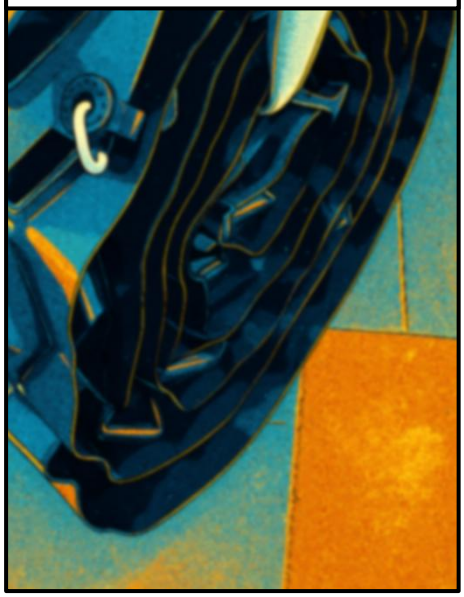


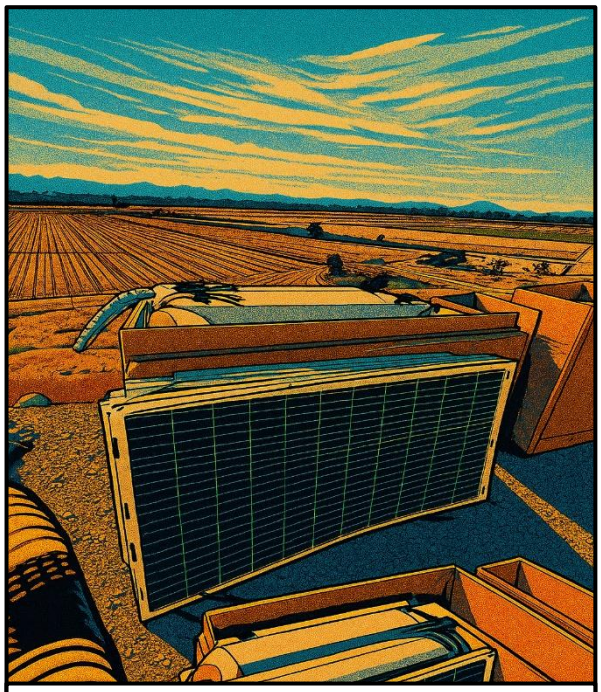
WE LOAD THEM IN THE ROAD



WE EXTEND THEM ON THE SOIL IN A COMFORTABLE POSITION FOR PUTTING THA INTO THE RESERVOIR

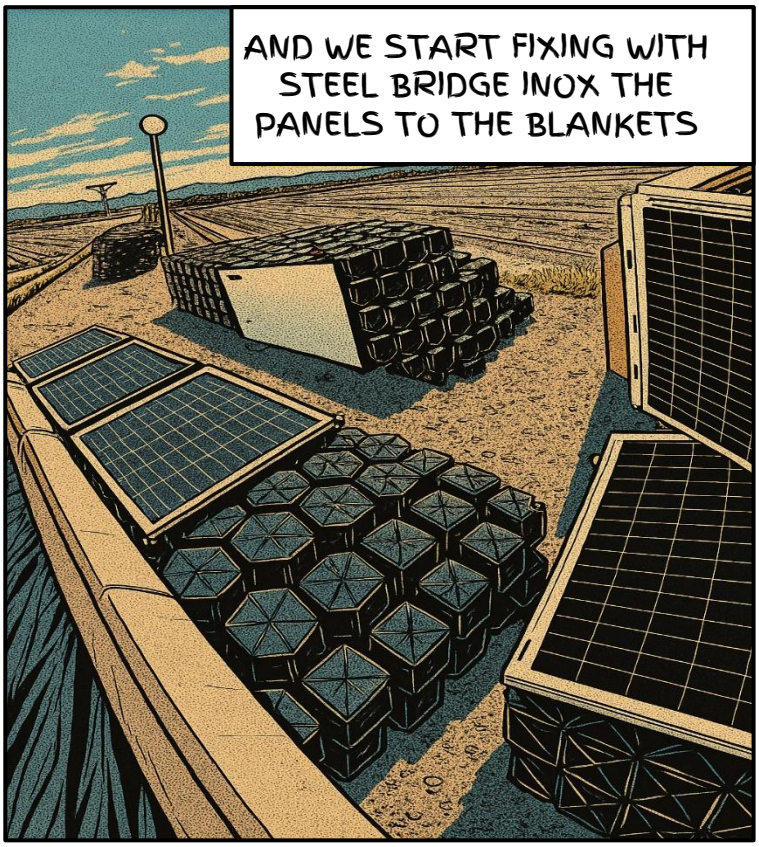
BLANKETS ALREADY COME EQUIPPED WITH THEIR STRENGTHS AND CLIPS



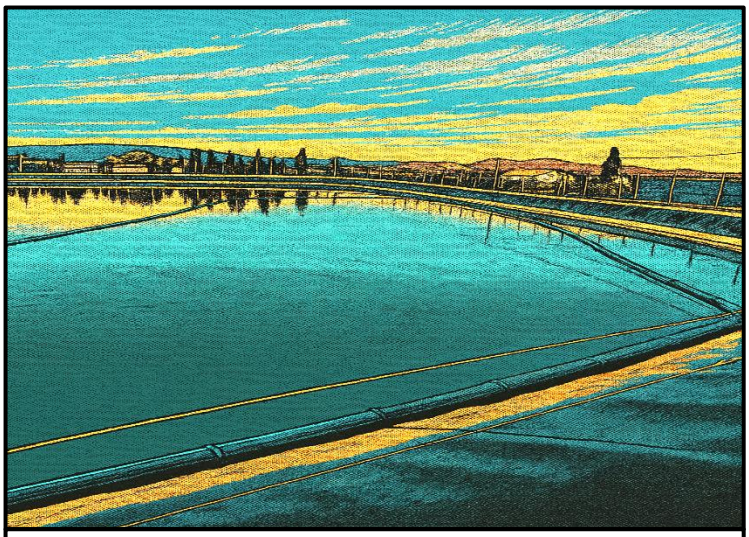


TOGETHER WITH THEM WE HAVE ALREADY COUPLED THE FLEXIBLE SOLAR PANELS

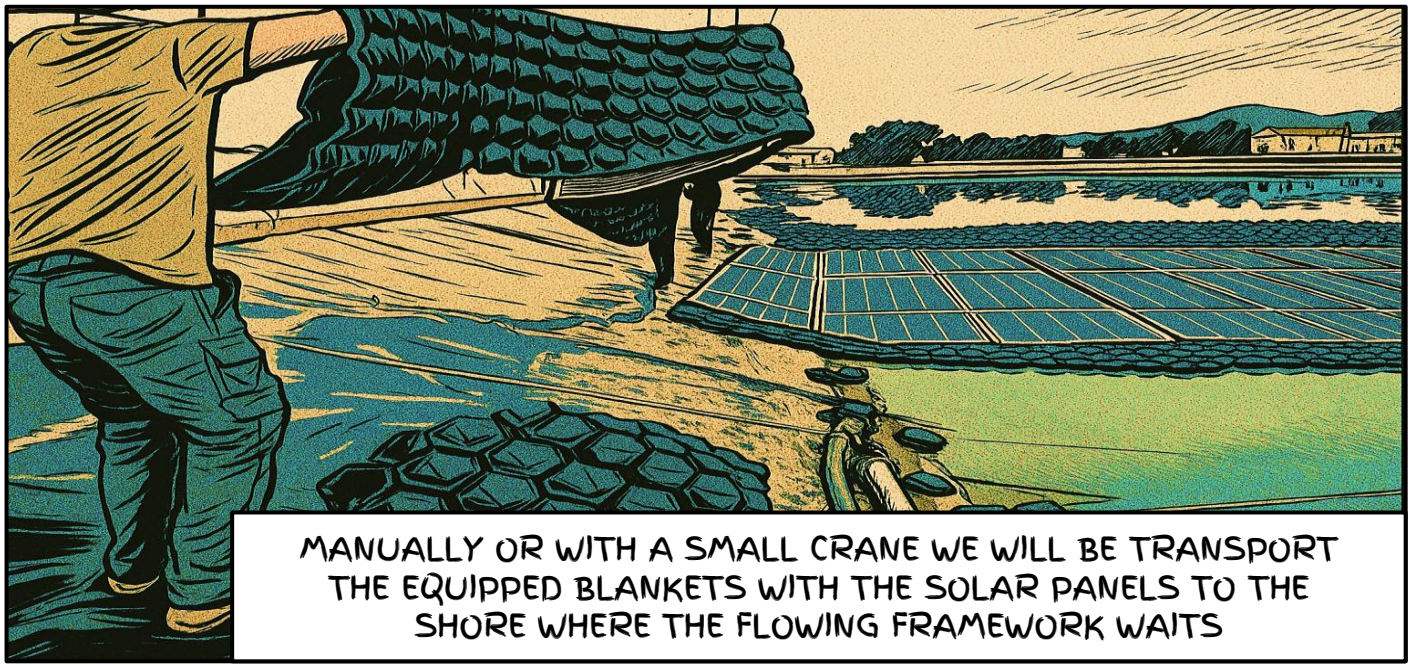
AND WE START FIXING WITH STEEL BRIDGE INOX THE PANELS TO THE BLANKETS



WHILE SO, OTHER WORKER STARTS ASSEMBLYING THE FLOATING TUBE FRAMEWORK

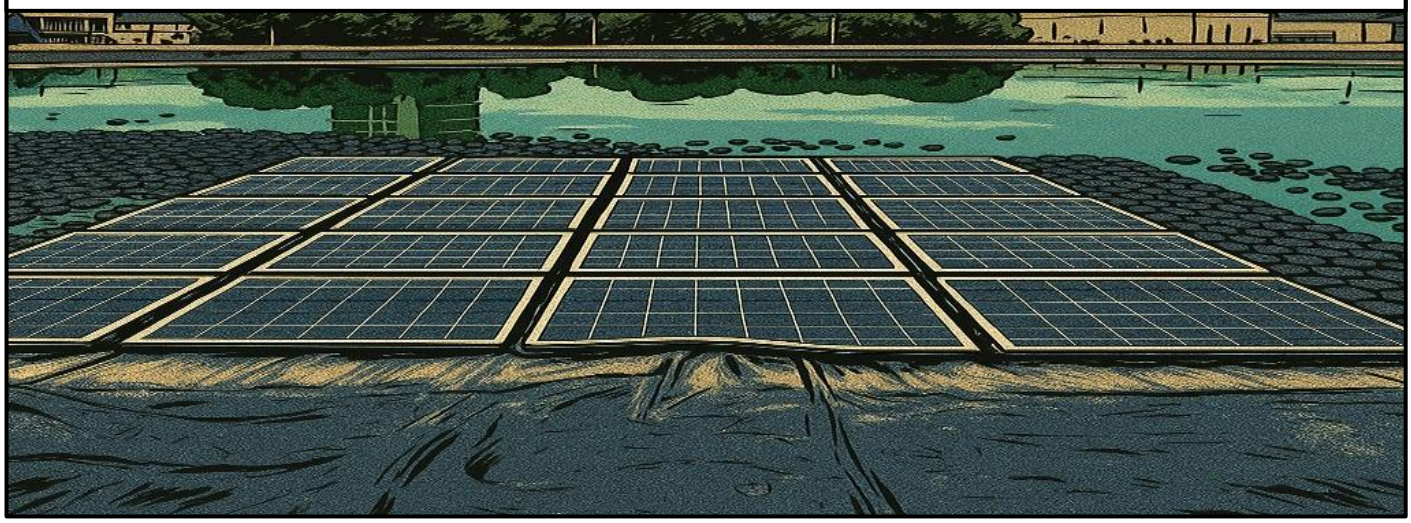


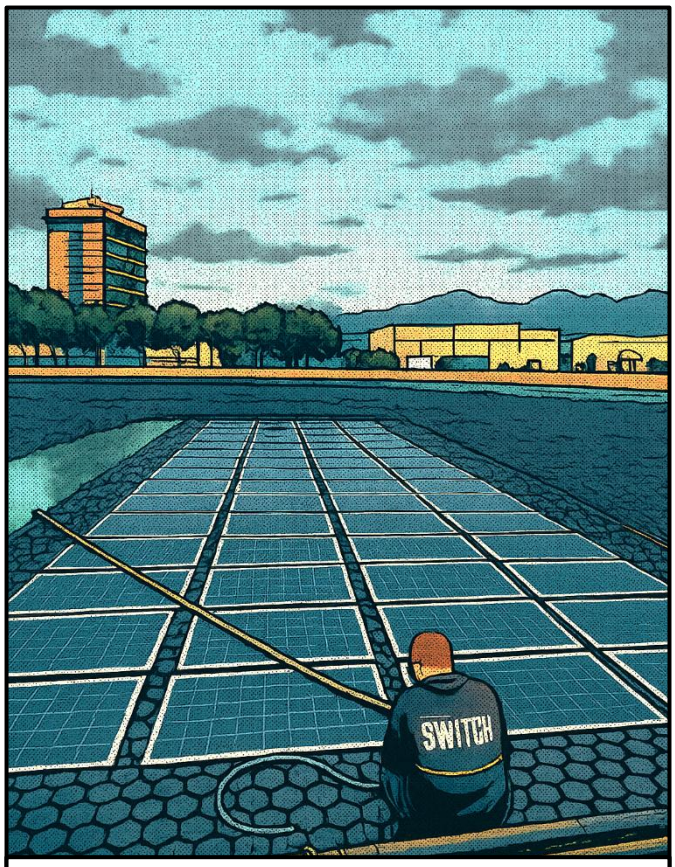
PE TUBES IN 110 MM ARE SOLDING FORMING A DOUBLE PERIMETRAL FRAMEWORK THAT WILL ACCOMPANY THE BLANKETS



MANUALLY OR WITH A SMALL CRANE WE WILL BE TRANSPORT THE EQUIPPED BLANKETS WITH THE SOLAR PANELS TO THE SHORE WHERE THE FLOWING FRAMEWORK WAITS

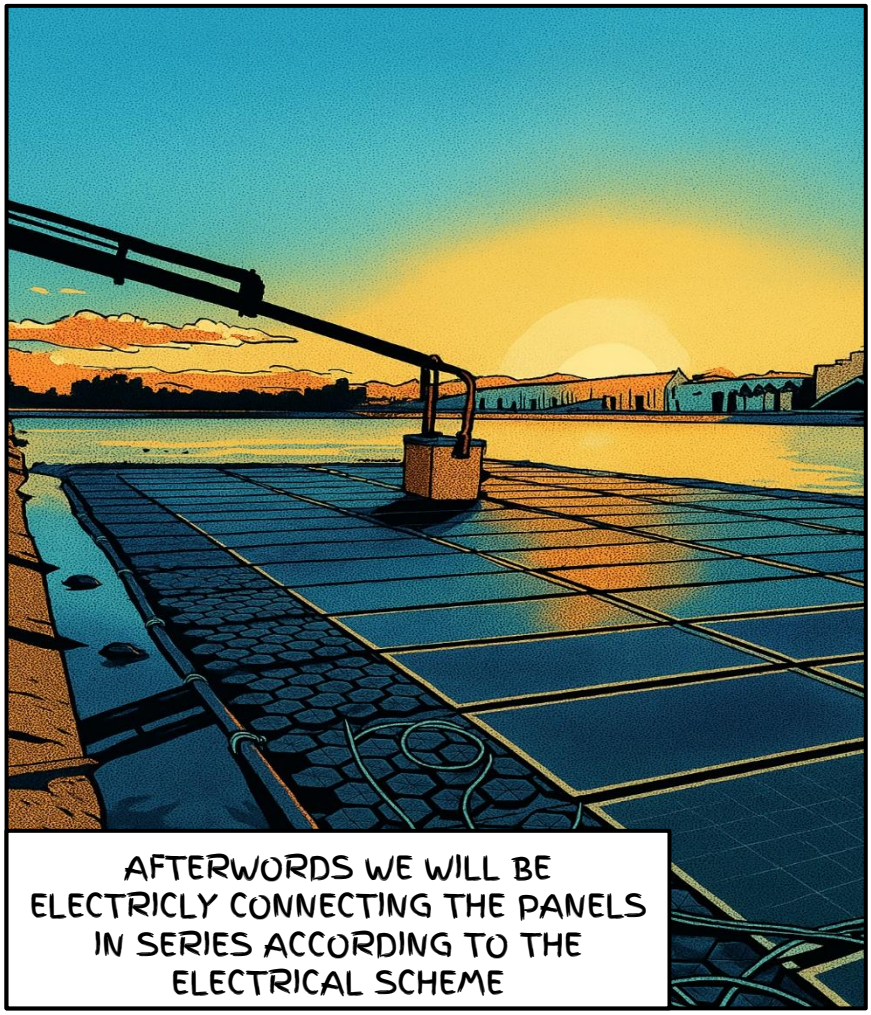
WE WILL CONNECT MECHANICALLY EACH BLANKET WITH THE OPPOSITE THROUGH THE CONNECTORS THAT COME PRE-MOUNTED AND PUSHING THE INSTALLATION TOWARDS THE WATER, SO THAT IT WILL GROW FROM THE SHORE



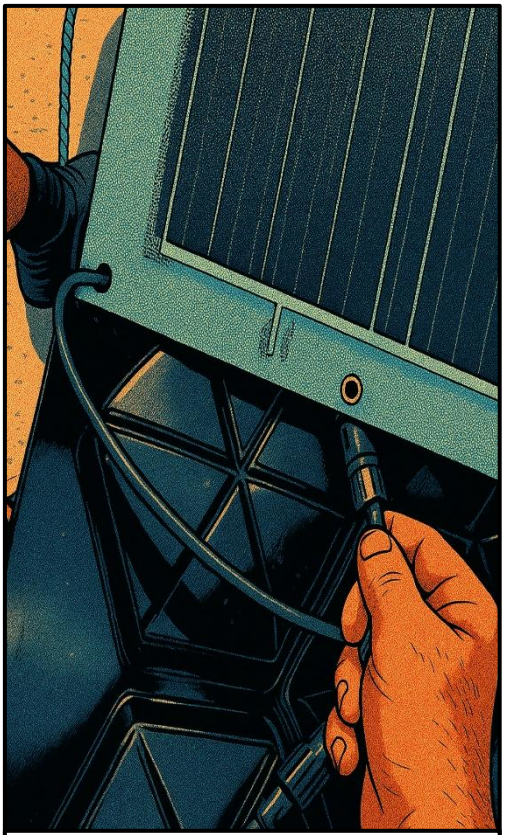


WE WILL INSTALL PERIMETRAL BLANKETS WITHOUT SOLAR PANEL TO AVOID THE POOLING OF BIRDS

ONCE THE PLACEMENT OF THE BLANKETS HAS BEEN COMPLETED, WE WILL TURN THE COVER TO IMPROVE THE REACH OF THE CRAIN TRUCK AND START THE ELECTRICAL CONNECTION.

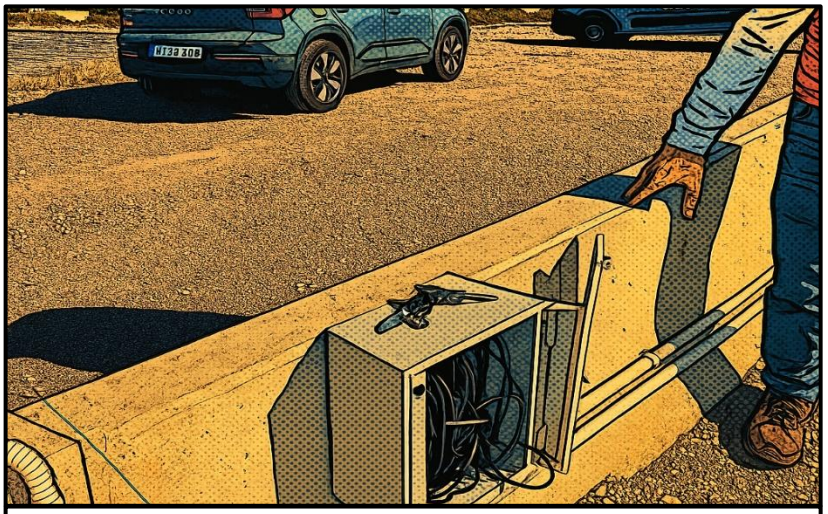


AFTERWORDS WE WILL BE ELECTRICLY CONNECTING THE PANELS IN SERIES ACCORDING TO THE ELECTRICAL SCHEME

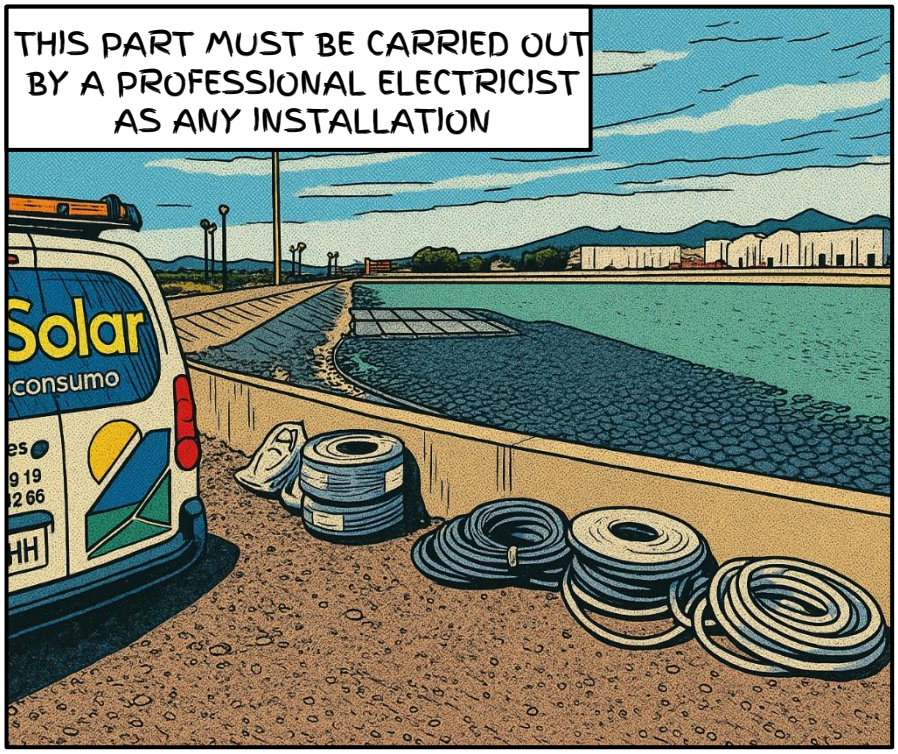


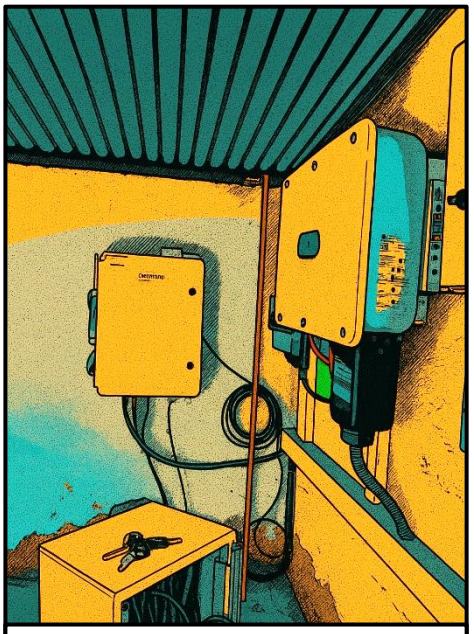
TAKING CARE THAT THE CONNECTION IS PROTECTED FROM THE SUN AND WATER BETWEEN PANEL AND BLANKET

ENSURE THE BLANKETS TO THE PERIMETER AND THATS ALL!

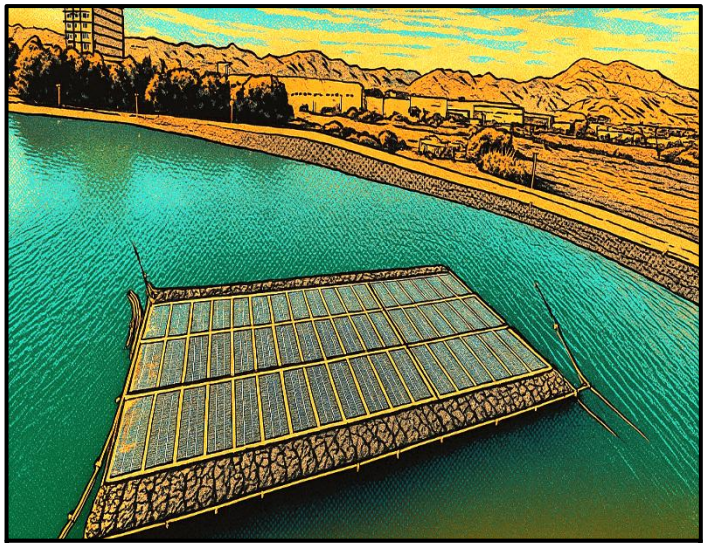


IT'S TIME TO ELECTRIC INSTALLATION

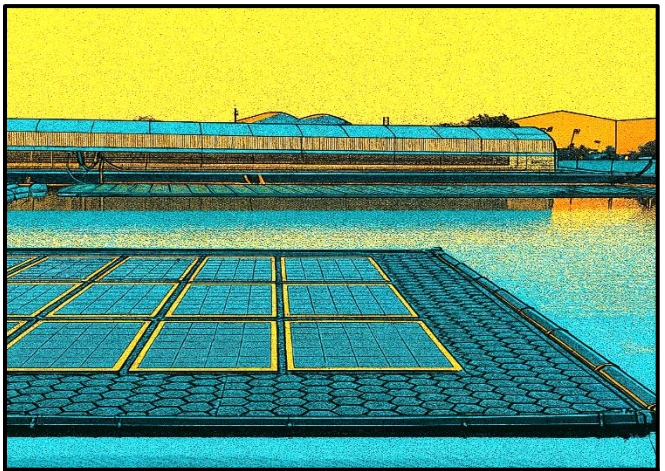




TABLE, INVESTOR, PROTECTIONS...



FINALLY, YOU JUST HAVE TO ARRANGE AND SECURE THE NAUTIC ROPES



AND OUR FLOATING SOLAR PLANT IS FINISHED. SO EASY!

Annex IV: Safety standards

H2OLOCK

PROTOCOLO SEGURIDAD

EVAPOCONTROL OUTSIDE THE PRODUCTIVE CENTER

OBJECTIVE

These standards are intended to serve as recommendations for the safe and proper handling of UTM module transport units (bags, bales, bigbags -BB-, palots, bulk etc.)

YOU KNOW WHAT?

- The different configurations of the UTMs can weigh between 150 and 400kg.
- To operate the UTMs with machinery you must have the corresponding professional licenses (forklift, crane operator, driving, etc.)

IMPORTANT

The pouring operator(s) in EVERY CASE MUST KNOW NADAR correctly and SHALL NEVER ACT ONLY.

IN TRANSPORT AND DOWNLOAD

UTM STACKING STANDARDS

Do not stack at heights more than two sacks/BB (1oH/2oH, 1oV/2oH) or three palots.
Do not suspend pull-outs/BB NEVER of less than two earmuffs.
Do not drag the sacks/BB or isolated modules.
Do not suspend MTUs on operators or machinery.

EPIS AND EQUIPMENT

Wear protective gloves and safety shoes.

IN THE VERTIDO ON THE BALSA/TANQUE

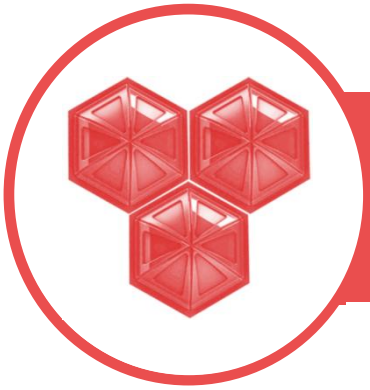
DISCHARGE RULES

Do not carry out the pouring operation with winds greater than 40 km/h or during rain/snow or hail episodes.
The discharge procedure will start with the identification of the operators involved and the reading of the general rules and the discharge protocol. At least two operators.
Cover the discharge area with a geotextile cloth or waterproofing sheet in order to protect against impacts the pouring of bulk modules.
Open the UTMs less than 30 cm from the impact surface to avoid damage to the discharge.
NEVER access the slopes of the glass even if there are modules stranded on them.

EPIS AND EQUIPMENT

EPIS Discharge Operator(s): Wear protective gloves and safety shoes. In case of manoeuvres inside the protective fence with risk of falling to different levels: Safety harness and lifeline.
EPIS Machinery operator(s): Wear protective gloves and safety shoes.

H2OLOCK



PROTOCOLO SEGURIDAD

IN THE OPERATION OF POURING MODULES INTO THE POND

OBJECTIVE

This protocol aims to serve as a general guide for safe handling in the operation of dumping modules to the pond.

IMPORTANT

- The pouring operator in EVERY CASE must KNOW NOW correctly and NEVER ACT ONLY.
- There will ALWAYS be a minimum manoeuvring equipment consisting of life jacket and rescue cape.
- NEVER access the slopes of the glass even if there are modules stranded on them.

EPIS NEEDED

- EPIS Discharge Operator(s): Protective gloves and safety shoes. In case of manoeuvres inside the protective fence with risk of falling to different levels: Safety harness and lifeline.
- EPIS Machinery operator(s): Wear protective gloves and safety shoes.
- Fixed equipment at the manoeuvre: Life jacket and rescue cape.

PLANNING

STUDY OF THE EMPLOYMENT

Checking space for unloading manoeuvres and standby stacking.
Study of access of machinery to coronation or foot of slope.
Positioning d and truck crane for maneuvers.
Choice of transport UTM and discharge system.
Opening of fence or descosido of the same.
Checking pond/tank safety measures: floats, ropes and ladders or ladders.

ENVIRONMENTAL CONDITIONS

Do not schedule the pouring operation with winds greater than 40 km/h or during rain/snow or hail episodes.
Check telephone coverage to provide complementary communications system.

DISCHARGE OPERATION

TASKS PRIOR TO THE START OF WORK

Security meeting: The discharge procedure will start with the identification of the operators (discharge, driver/carrier, driver) involved, the designation of the operation manager and the reading of the general rules and the discharge protocol.
The operation will ALWAYS involve at least two operators.
The Operational Officer (RO) shall ensure that:

- Coordination between the different operators. It will record their names and contact form.
- That operators have the appropriate EPIS.
- The maintenance of the public-free zone.
- Indicate to the pouring operator(s) how to perform the manoeuvre.
- Indicate to the discharge operator(s) the mode and exit point for the rescue operation in the event of an accident.

DURING DISCHARGE

The RO shall ensure that:

- That the OVs work safely in coronation aisle.
- Never put yourself under the loads. If the operator of the machinery is external, pre-arrange the lifting, loosening and lowering signals.
- Check that the OVs use the appropriate EPIS.
- Check that sufficient means of rescue are available.

IMPORTANT

- Stay calm.
- Mechanical means will not be used in the rescue under ANY concept.

IN CASE OF EMERGENCY

Emergencies during UTM loading, transport and unloading operations are common to those of general cargo handling operations, so this protocol focuses exclusively on the particularity of operations on the edge of a pond or tank with a risk of falling inside.

IN CASE OF FALLING INTO THE WATER:

1. An operator must maintain visual contact with the injured person permanently, especially if there are modules floating in the area that could hide it.
2. If he is unable to start the exit manoeuvre at the intended exit point by his own means, the appropriate rescue elements shall be thrown at him.
3. The rescue in water will only be accessed if the loss of consciousness of the OV fallen into the water occurs.
4. If the rescue procedure presents any unforeseen difficulty, Emergencies 112 will be immediately notified indicating position by whatsapp, locative or polygon message and cadastral plot indicated in the contract.
5. Until the emergency services arrive to ensure the buoyancy and state of health of the injured party.

IN THE EVENT OF A FALL INTO THE DRY TANK OR OTHER UNEVENNESS:

1. If he is unable to start the exit manoeuvre at the intended exit point by his own means, the appropriate rescue elements shall be thrown at him.
2. If the rescue procedure presents any unforeseen difficulty, Emergencies 112 will be immediately notified indicating position by wasap, locative or polygon message and cadastral plot indicated in the contract.
3. Until the emergency services arrive to ensure the state of health of the injured party.