



MAELGWYN MINERAL SERVICES

Maelgwyn Mineral Services, 1A Gower Street Cathays Cardiff
CF24 4PA, UK

To: Mr. Özer Özipek

TURSAA MUHENDISLIK
INS.OTMV.MADENCILIK TIC. LTD. STI.

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Quotation

MMS Quote No.	Q3659_MMS_QUOT01.01_ Imhoflot VM-Cells
Date:	21.02.2023
Name:	Felipe Palacio
Tel.:	+33 (0) 7 54 45 41 84
email:	fpalacio@maelgwyn.com
Your Request:	E-mail
Date of Request:	27 Jan 2023



Tursaa Muhendislik Ins.Otmv.Madencilik Tic. Ltd. Sti.
Q3659 – Imhoflot VM12 and VM24

Dear Özer and Farhang,

We are pleased to present you a budgetary offer regarding your request on the proposed Imhoflot Flotation technology.

Maelgwyn would be happy to discuss this proposal further with your team to match the outcomes which you require. Each subject may be addressed to the following personnel:

- Metallurgy: Ekin Güngör egungor@maelgwyn.com
- Engineering: Felipe Palacio fpalacio@maelgwyn.com
- Commercial: Fevzi Durunesil fdurunesil@maelgwyn.com

Yours sincerely,

Felipe Palacio

Engineering Manager



MAELGWYN MINERAL SERVICES

Ty Maelgwyn, 1A Gower Road, Cathays, Cardiff, CF24 4PA, United Kingdom



1. Introduction

In 2022, Mr. Farhang Hedjazi acquired one of Maelgwyn's Imhoflot cells for a Cu flotation pilot testwork.

During the IMPS conference in Turkey, between 15-17th of December 2022, Mr. Farhang approach Fevzi Durunesil and Ekin Güngör for a new project.

2. Project background and motivation

Maelgwyn was informed by Mr. Ekin Güngör via e-mail about the present project, which is located in Iran. No further details have been provided.

The process was described as:

- P₈₀: 75µm
- Feed flowrate: 100m³/h

Due to national regulations, it was requested that the cell bodies shall be produced in country, whilst the remaining parts are manufactured in Germany.

Maelgwyn agreed to proceed by supplying the engineering and drawings of the cells.

The cell sizes were selected by the client. These have not yet been designed by Maelgwyn. Therefore, we will begin generating the drawings for fabrication once the project is approved by the client.

3. Scope of Supply

Following the description above, Maelgwyn will supply:

Imhoflot circuit 1	
Cell Body	
Size	VM24 (ø2.4m)
Quantity	11
Fabrication	Drawings and Engineering – no manufacturing
Aerator and distributor	
Type	SAA350
Fabrication	Germany

Imhoflot circuit 2	
Cell Body	
Size	VM12 (ø1.2m)
Quantity	9
Fabrication	Drawings and Engineering – no manufacturing by Maelgwyn
Aerator and distributor	
Type	SAA280
Fabrication	Germany
Instruments	See Section 5

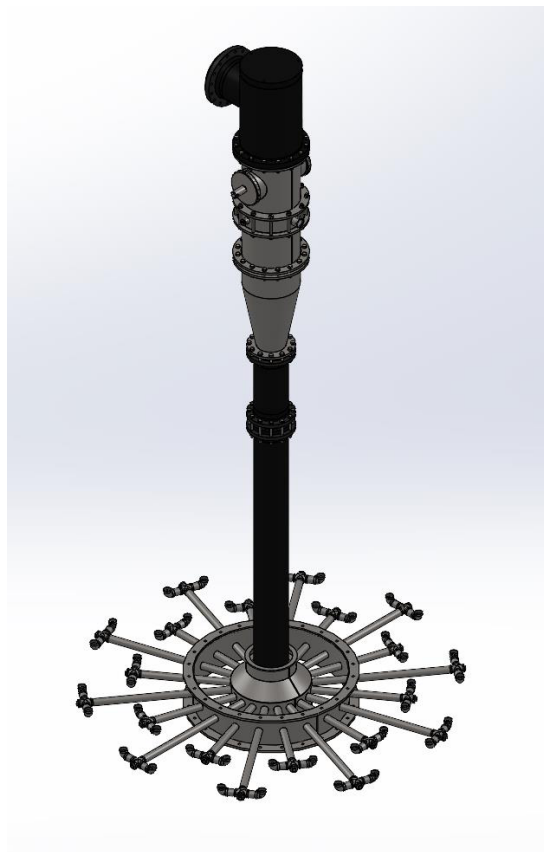
The Imhoflot aerator is Self-Aspirated and does not require forced air intake.

It is estimated that a 3-week commissioning period is suitable for this project:

- 5 Days – Site installation, site integration, Cold Commissioning
- 14 Days – Hot Commissioning, Training and Test work (optional)

3.1 . General Arrangement

Find below an isometric view of the items supplied from Germany.





4. Commercial

4.1. Prices Hardware

Qty	Equipment	Price (€) each	Price (€) total
11	SAA350 and vertical distributor	56 774	624 516
9	SAA280 and vertical distributor	27 139	244 254
	Services		
1	- VM24 cells bespoke design, engineering and drawings. 11 units.	91 170	91 170
	- VM12 cells bespoke design, engineering and drawings. 09 units		
	- Updates as per client's request		
Total			959 940

4.2. Prices instrumentation (See section 5 for details)

Qty	Equipment	Price (€) each	Price (€) total
1	VM24 circuit	115 080	115 080
1	VM12 circuit	80 961	80 961
1	Set of spares	14 375	14 375
Total			210 416

4.3. Prices Spares

Qty	Equipment	Price (€) each	Price (€) total
	VM24 circuit spares		
1	- 2 x SAA350 aerator cartridge	52 270	52 270
	- 2 x T-pieces		
	- 200 vertical nozzles		
	VM12 circuit spares		
1	- 2 x SAA280 aerators	26 135	26 135
	- 160 vertical nozzles		
Total			72 467



4.4. Prices – Commissioning

UOM	Description	Price (€) total
Per Day	Maelgwyn Metallurgist	600
Each	Travel and accommodation	At cost*

** if done by Maelgwyn, upon the presentation of receipts to the client*

4.5. Exclusions

Structural steel
Piping
Installation and assembling
Electrical and wiring
Control and automation

4.6. Conditions

Incoterms: ExWorks Germany

Validity of 30 days from the date of this quote and supersedes previous quotes which may still be valid.

All prices exclude VAT.

4.7. Terms of payment

50% within 15 days from invoices. Remaining amount prior to delivery.

4.8. Lead time

Delivery times:

Drawings: 3-5 working weeks from receipt of 1st payment.
Aerators and distributors: 14-16 weeks

4.9. Other terms and conditions

MMS standard terms and conditions are applicable.



5. Lists

Find within the next page the lists of instruments supplied with the Imhoflot cells, as described and priced on sections 3 and 4.1

PROSES ENG
Project Number Q3659
Instrumentation List for Imhoflot Cells - V.01

TAG	QTY	Designation	Location	Connection	Measurement range	Expected Nominal Value	Unit	Media	Power Supply	Output	Signal use	Model	Remarks	Rev
VM24 CIRCUIT														
	1	Flowmeter Slurry Feed	Pipe Feed Slurry first cell on Circuit	Flange DN250	0 to 420	100	m ³ /h	Slurry	24V DC	4-20 mA	Indication	Krohne Optiflux 4300 C		
	11	Pressure Indicator	Pipe Feed Slurry	G 1½	0 to 10	1.5 - 2.7	bar	Slurry	24V DC	4-20 mA	Indication	Vegabar 82		
	11	Pressure Indicator	Air-Intake Reactor	G ¾	-1 to 1.0	-0.3	bar	Air	24V DC	4-20 mA	Indication and Redundant control	Vegabar 38		
	11	Level Indicator	Submerged to each cell from top	R2" - DIN 2999	0 - 100	200	%	Slurry	24V DC	4-20 mA	Signal to level controller	Vegabar 86		
	11	Flowmeter Air	Air-Pipe Air to Reactor	TBC	1.6 to 478	50	m ³ /h	Air	24V DC	4-20 mA	Signal to level controller	TA DI 53.1 GE 60 m/s /140/p16 ZG1d		
	11	Air flow control	Air-Pipe Air to Reactor	TBC	0 to 100	50	%	Air	24V DC	4-20 mA	Indication	TBC		
VM12 CIRCUIT														
	1	Flowmeter Slurry Feed	Pipe Feed Slurry first cell on Circuit	Flange DN80	0 to 60		m ³ /h	Slurry	24V DC	4-20 mA	Indication	Krohne Optiflux 4300 C		
	9	Pressure Indicator	Pipe Feed Slurry	G 1½	0 to 10	1.5 - 2.7	bar	Slurry	24V DC	4-20 mA	Indication	Vegabar 82		
	9	Pressure Indicator	Air-Intake Reactor	G ¾	-1 to 1.0	-0.3	bar	Air	24V DC	4-20 mA	Indication and Redundant control	Vegabar 38		
	9	Level Indicator	Submerged to each cell from top	R1" - DIN 2999	0 - 100	30	%	Slurry	24V DC	4-20 mA	Signal to level controller	Vegabar 86		
	9	Flowmeter Air	Air-Pipe Air to Reactor	TBC	0.42 to 125	50	m ³ /h	Air	24V DC	4-20 mA	Signal to level controller	TA DI 27.2 GE 60m/s /140/p16 ZG1d		
	9	Air flow control	Air-Pipe Air to Reactor	TBC	0 to 100	50	%	Air	24V DC	4-20 mA	Indication	TBC		
SPARES														
Spare	1	Pressure Indicator	Pipe Feed Slurry	G 1½	0 to 10	1.5 - 2.7	bar	Slurry		4-20 mA		VEGA - Vegabar 82		
Spare	1	Level Indicator	Submerged on VM24		0 to 3760	3500	mm	Slurry		4-20 mA		VEGA - Vegabar 86		
Spare	1	Level Indicator	Submerged on VM12		0 to 2090	1980	mm	Slurry		4-20 mA		VEGA - Vegabar 86		
Spare	1	Pressure Indicator	Air-pipe Air to Reactor (VM12 or VM24)	G ¾	-1 to 1.0 bar	10	bar	Air		4-20 mA		VEGA - Vegabar 38		
Spare	1	Air flow control	Air-pipe Air to Reactor VM36	G 1½	0 to 100	50	%	%		4-20 mA		TA DI 53.1 GE 60 m/s /140/p16 ZG1d		