#1

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Wednesday, July 05, 2023 12:35:54 PM
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Time Spent:	00:07:43
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Page 1

Q1

Company Details

Company Name	**barc**
Country	**india**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Supply of Drinking Water

Q3

What is your plant capacity (Hydraulic capacity, population served)?

100 KLD

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

1-5 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**permioics**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**HF**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Both CAPEX & OPEX (total cost of ownership)

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Not important**
Waste Management	**Somewhat important**
Micropollutants	**Somewhat important**
PFAS	**Somewhat important**
Bacteria and/or viruses	**Somewhat important**
Deterioration of feed water	**Somewhat important**
More stringent discharge requirements to the environment	**Somewhat important**
Energy Costs	**Somewhat important**
Chemical cost	**Somewhat important**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Somewhat important**
Limited space for extension capacity	**Somewhat important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Somewhat important**
Regulatory approval for the membrane modules	**Somewhat important**
Successful application at nearby plants	**Somewhat important**
Supplier’s track record with PVDF at other plants	**Somewhat important**
Membrane recycling vs disposal	**Somewhat important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Hazardous waste incineration,

Other (please specify):

AOP

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Ultrafiltration Membrane – Hollow-Fiber

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

arriving at feasibility further

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

relatively low TDS

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quantity

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Disruption in delivery of water/wastewater

Q15

Please describe any possible consequences for your end consumers

we are planning to reschedule

#2

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, July 05, 2023 1:11:28 PM
Last Modified: Wednesday, July 05, 2023 1:29:16 PM
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Q1

Company Details

Company Name	**Crossflow Solutions**
Country	**India**
Contact Name (Optional)	**Ashutosh Gopal**
Email address (Optional)	[redacted]**@crossflowsolution.com**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Supply of Drinking Water,

Supply of Industrial Process Water,

Treatment of Municipal Sewage Water for discharge to the environment

,

Treatment of Municipal Sewage Water for Reuse,

Supply of Water for Industrial Applications

Q3

What is your plant capacity (Hydraulic capacity, population served)?

60KLD to 70 MLD

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

Less than One Year,

1-5 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Asahi Kasei Corporation**
Optional: Membrane Model	**UNA620A**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**Hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Pilot Test/Field Test comparing PVDF and ceramic/PES/PS/Other Membranes

,

Higher fluxes,

Operation Cost (OPEX),

Service Life,

Fouling Resistant,

Ease of Maintenance

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Somewhat important**
Waste Management	**Critical**
Micropollutants	**Critical**
PFAS	**Important**
Bacteria and/or viruses	**Critical**
Deterioration of feed water	**Critical**
More stringent discharge requirements to the environment	**Critical**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Important**
Increasing Demand	**Important**
Ability to perform an integrity test	**Important**
Regulatory approval for the membrane modules	**Important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Critical**
Membrane recycling vs disposal	**Important**

Q8

Please list any other challenges that are missing above (Question 7)

Sludge generation & disposal due to chemical pretreatment for drinking water treatment plant.
Very less awareness about PFAS in developing countries & its impact on health of human & as well as irrigation.

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Municipal incineration

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Microfiltration Membrane – Hollow-Fiber,

Ceramic Membranes

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

PVDF- MF is a better option due to its higher flux and membrane resistivity towards aggressive chemicals for cleaning. Their life cycle cost is very low. Cermaic membranes are also excellent performer but have major issue of logistics & handling.

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Lower Life cycle cost with consistent performance with reliability in output quality & quantity.

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies with major losses in treated water quality

,

Working with alternative membranes/technologies with major losses in treated water quantity

---

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Additional costs for your supply chain,

Additional costs for procurement of new machinery & equipment

,

Disruption in delivery of water/wastewater

Q15

Please describe any possible consequences for your end consumers

They may shift to conventional water treatment technologies, which are simpler and cost effective with quality issue.

#3

COMPLETE

Collector: Web Link 1 (Web Link)
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Last Modified: Wednesday, July 05, 2023 2:44:54 PM
Time Spent: 00:05:03
IP Address: 5.224.209.101

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Q1

Company Details

Company Name	**Alejandro Sturniolo Ferrer**
Country	**Spain**
Contact Name (Optional)	**Alejandro Sturniolo**
Email address (Optional)	**[redacted]@gmail.com**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Municipal Sewage Water for Reuse

Q3

What is your plant capacity (Hydraulic capacity, population served)?

Alicante (Alacant)

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

More than 20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Dupont, Toray, LG**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Capital Cost (CAPEX),

Operation Cost (OPEX),

Recommended by system supplier/consulting company/membrane manufacturer.

,

Footprint Constraints,

Service Life,

Both CAPEX & OPEX (total cost of ownership),

Fouling Resistant,

Cleaning Frequency,

Ease of Maintenance

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Critical**
Waste Management	**Critical**
Micropollutants	**Critical**
PFAS	**Critical**
Bacteria and/or viruses	**Critical**
Deterioration of feed water	**Critical**
More stringent discharge requirements to the environment	**Critical**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Not important**
Availability of qualified resources (people)	**Somewhat important**
Limited space for extension capacity	**Important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Somewhat important**
Regulatory approval for the membrane modules	**Critical**
Successful application at nearby plants	**Critical**
Supplier’s track record with PVDF at other plants	**Critical**
Membrane recycling vs disposal	**Critical**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Hazardous landfill

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Microfiltration Membrane – Hollow-Fiber,

Microfiltration Membrane – Dlat Sheet,

Ultrafiltration Membrane – Hollow-Fiber,

Ultrafiltration Membrane – Flat Sheet,

Ceramic Membranes,

Another Alternative Membrane,

Another Alternative Technology

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

there is no replacement

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

yes

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies resulting in substantial increases in costs

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for your supply chain,

Costs of planning,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Additional transport costs,

Loss in water/wastewater quality,

Disruption in delivery of water/wastewater,

Disruption in downstream supply chain (profit loss)

Q15

Please describe any possible consequences for your end consumers

We will not reach the SDG´s GOALS

#4

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Wednesday, July 05, 2023 3:42:31 PM
Last Modified:	Wednesday, July 05, 2023 4:11:04 PM
Time Spent:	00:28:33
IP Address:	206.172.239.163

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Q1

Company Details

Company Name	**H2O Innovation**
Country	**CANADA, USA, SPAIN, FRANCE, UK, CHILE**
Contact Name (Optional)	**Guillaume**
Email address (Optional)	[redacted]**@h2oinnovation.com**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Supply of Drinking Water,

Supply of Industrial Process Water,

Supply of Water for Food and Beverages,

Supply of Water for Agricultural Applications (Crops),

Treatment of Municipal Sewage Water for discharge to the environment

,

Treatment of Municipal Sewage Water for Potable Water – Direct Use

,

Treatment of Municipal Sewage Water for Potable Water – Indirect Use

,

Treatment of Municipal Sewage Water for Reuse,

Treatment of Industrial Sewage Water discharge to the environment

,

Treatment of Industrial Sewage Water for Reuse,

Supply of Water for Industrial Applications,

Treatment of Sewage by Membrane Bioreactor (MBR) for discharge to the environment

,

Treatment of Sewage by Membrane Bioreactor (MBR) for indirect use

,

Treatment of Sewage by Membrane Bioreactor (MBR) for direct use

Q3

What is your plant capacity (Hydraulic capacity, population served)?

Many plants totalling over 300,000m3/day.

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

10-20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**All of them (Dupont, Toray, Suez, Memstar, Hydranautics, etc)**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**Hollow fiber and flat sheet**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Pilot Test/Field Test comparing PVDF and ceramic/PES/PS/Other Membranes

,

Higher fluxes,

Footprint Constraints,

Both CAPEX & OPEX (total cost of ownership)

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Important**
Micropollutants	**Not important**
PFAS	**Critical**
Bacteria and/or viruses	**Critical**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Critical**
Chemical cost	**Somewhat important**
Cost of raw water	**Not important**
Availability of qualified resources (people)	**Critical**
Limited space for extension capacity	**Important**
Increasing Demand	**Important**
Ability to perform an integrity test	**Important**
Regulatory approval for the membrane modules	**Important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Not important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Municipal incineration

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Microfiltration Membrane – Hollow-Fiber,

Microfiltration Membrane – Dlat Sheet,

Ceramic Membranes

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

Possible

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Better effluent quality. Small footprint. Phydical barrier. Reuse potentisl.

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quality

,

Working with alternative membranes/technologies without major losses in treated water quantity

,

Working with alternative membranes/technologies resulting in substantial increases in costs

,

Explanation of your selection(s) (optional)Others, please define:

Ceramics work. We have them in operations. But it is much more expansive that is for sure.

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for your supply chain,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

Q15

Please describe any possible consequences for your end consumers

I dont think they would notice other than the price of Water would have to go up and they would be impacted that way.

#5

COMPLETE

Collector: Web Link 1 (Web Link)
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Last Modified: Wednesday, July 05, 2023 6:33:58 PM
Time Spent: 00:18:29
IP Address: 67.52.122.245

Page 1

Q1

Company Details

Company Name	**Orange County Water District**
Country	**United States**
Contact Name (Optional)	**Mehul Patel**
Email address (Optional)	**[redacted]@ocwd.com**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Municipal Sewage Water for Potable Water – Indirect Use

Q3

What is your plant capacity (Hydraulic capacity, population served)?

130 mgd capacity and 2.5 million people served

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

10-20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Memcor/Dupont Water Solutions**
Optional: Membrane Model	**S10**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**hollow fiber, submersible**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Pilot Test/Field Test comparing PVDF and ceramic/PES/PS/Other Membranes

,

Higher fluxes,

Footprint Constraints

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Not important**
Waste Management	**Somewhat important**
Micropollutants	**Somewhat important**
PFAS	**Important**
Bacteria and/or viruses	**Critical**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Somewhat important**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Not important**
Availability of qualified resources (people)	**Not important**
Limited space for extension capacity	**Important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Important**
Regulatory approval for the membrane modules	**Somewhat important**
Successful application at nearby plants	**Somewhat important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Somewhat important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Non-hazardous landfill

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Microfiltration Membrane – Hollow-Fiber,

Ultrafiltration Membrane – Hollow-Fiber

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

Polypropylene is also used at our facility and can be used in place of PVDF, but cost and availability are issues.

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Pilot testing showed proper pre-treatment to RO in a small footprint.

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quantity

,

Working with alternative membranes/technologies resulting in substantial increases in costs

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for your supply chain

Q15

Please describe any possible consequences for your end consumers

Possible increase in rates we charge customers for groundwater if no PVDF product available and only polypropylene can be used.

#6

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, July 06, 2023 5:00:44 AM
Last Modified: Thursday, July 06, 2023 5:17:32 AM
Time Spent: 00:16:48
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Page 1

Q1

Company Details

Company Name	**ACCIONA Agua**
Country	**Australia**
Contact Name (Optional)	**Javier Artal**
Email address (Optional)	[redacted]**@acciona.com**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Supply of Drinking Water

Q3

What is your plant capacity (Hydraulic capacity, population served)?

300.000 m3/d

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

10-20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**DuPont (formerly Evoqua)**
Optional: Membrane Model	**S10V and S10N**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**Hollow tubes**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Both CAPEX & OPEX (total cost of ownership)

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Not important**
Waste Management	**Somewhat important**
Micropollutants	**Somewhat important**
PFAS	**Important**
Bacteria and/or viruses	**Not important**
Deterioration of feed water	**Not important**
More stringent discharge requirements to the environment	**Not important**
Energy Costs	**Critical**
Chemical cost	**Critical**
Cost of raw water	**Not important**
Availability of qualified resources (people)	**Somewhat important**
Limited space for extension capacity	**Not important**
Increasing Demand	**Not important**
Ability to perform an integrity test	**Not important**
Regulatory approval for the membrane modules	**Not important**
Successful application at nearby plants	**Not important**
Supplier’s track record with PVDF at other plants	**Not important**
Membrane recycling vs disposal	**Somewhat important**

Q8

Please list any other challenges that are missing above (Question 7)

Cybersecurity

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Non-hazardous landfill

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Other (please specify):

Media filtration

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

Media filtration is the good old way of doing. It works, only clients sometimes prefer more modern technology -despite minor advantages if any-

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Commercial strategy

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies resulting in substantial increases in costs

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Costs of planning,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

Q15

Please describe any possible consequences for your end consumers

None, PVDF may be convenient as water treatment but certainly there are viable alternatives

#7

COMPLETE

Collector: Web Link 1 (Web Link)
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Last Modified: Monday, July 10, 2023 8:01:14 PM
Time Spent: 00:36:57
IP Address: 89.27.232.141

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Q1

Company Details

Company Name	**Passavant-Geiger GmbH**
Country	**Germany**
Contact Name (Optional)	**Lars Späth**
Email address (Optional)	**[redacted]@passavant-geiger.com**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Municipal Sewage Water for discharge to the environment

,

Treatment of Municipal Sewage Water for Reuse

Q3

What is your plant capacity (Hydraulic capacity, population served)?

Zero. We provide technology, not operation

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

More than 20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Not membrane technology**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Other (please specify):

None yet

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Somewhat important**
Micropollutants	**Critical**
PFAS	**Important**
Bacteria and/or viruses	**Critical**
Deterioration of feed water	**Critical**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Important**
Chemical cost	**Somewhat important**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Important**
Increasing Demand	**Important**
Ability to perform an integrity test	**Somewhat important**
Regulatory approval for the membrane modules	**Not important**
Successful application at nearby plants	**Not important**
Supplier’s track record with PVDF at other plants	**Not important**
Membrane recycling vs disposal	**Somewhat important**

Q8

Please list any other challenges that are missing above (Question 7)

Other technologies to treat micropollutants (pesticides, pharmaceuticals), such as activated carbon etc

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Municipal incineration ,

Hazardous waste incineration

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Ceramic Membranes

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

h

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Design specs

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quality

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Additional costs for re-construction of your plant

Q15

Please describe any possible consequences for your end consumers

Lack of supply possible

#8

COMPLETE

Collector:	Web Link 1 (Web Link)
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Last Modified:	Thursday, July 13, 2023 12:58:31 PM
Time Spent:	00:17:34
IP Address:	194.78.157.65

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Q1

Company Details

Company Name	**FARYS**
Country	**Belgium**
Contact Name (Optional)	**Bart De Gusseme**
Email address (Optional)	**[redacted]@farys.be**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Supply of Drinking Water,

Supply of Industrial Process Water,

Supply of Water for Food and Beverages

Q3

What is your plant capacity (Hydraulic capacity, population served)?

The Ostende drinking water plant has a capacity of max. 1200 m³/h, serving drinking water to >300.000 customers (av. 70 m³/yr for a 2,3 pe family)

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

1-5 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**PALL**
Optional: Membrane Model	**Microza UNA620A**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**hollow fibers**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Pilot Test/Field Test comparing PVDF and ceramic/PES/PS/Other Membranes

,

Higher fluxes,

Recommended by system supplier/consulting company/membrane manufacturer.

,

Footprint Constraints,

Both CAPEX & OPEX (total cost of ownership),

Fouling Resistant,

Ease of Maintenance

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Critical**
Waste Management	**Somewhat important**
Micropollutants	**Important**
PFAS	**Somewhat important**
Bacteria and/or viruses	**Critical**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Critical**
Chemical cost	**Critical**
Cost of raw water	**Important**
Availability of qualified resources (people)	**Somewhat important**
Limited space for extension capacity	**Important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Critical**
Regulatory approval for the membrane modules	**Important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Somewhat important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Hazardous landfill ,

Other (please specify):

Specialized waste collection

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Ultrafiltration Membrane – Hollow-Fiber

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

We are testing cross-flow NF membranes at pilot-scale. Yet, this system runs at higher energy and lower water recovery.

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

The MF treatment is the first pre-treatment step in our membrane filtration plant, next steps are RO, activated carbon, limestone remineralisation, UV disinfection. The choice for pressure-driven MF was made based on previous experience in another plant using brackish surface water as well. The membranes proved to be robust to fouling, exhibit good SS removal prior to RO and showed long lifetimes of >8yr. In addition, water recovery of +/- 90% can be achieved, which is important to safe on raw water intake in a water scarce region such as Flanders.

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies with major losses in treated water quality

,

Working with alternative membranes/technologies with major losses in treated water quantity

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Other costs/profit loss impacts, please define:

Water recovery might be lower

Q15

Please describe any possible consequences for your end consumers

The system is now built in 9 parallel treatment lines, with 8+1 redundancy. It means that membrane replacement can be done quite easily and fast on each redundant MF line. If another membrane type would be needed, longer shutdown will be required to adapt piping, connections, (potentially) pumps, etc. This might severely impact the drinking water supply by the plant and to the end consumers in the neighbourhood.

#9

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Thursday, July 13, 2023 9:31:10 PM
Last Modified:	Thursday, July 13, 2023 10:22:47 PM
Time Spent:	00:51:37
IP Address:	109.132.5.54

Page 1

Q1

Company Details

Company Name	**Water-link**
Country	**Belgium**
Contact Name (Optional)	**Sam Van Nevel**
Email address (Optional)	[redacted]**@water-link.be**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Supply of Industrial Process Water

Q3

What is your plant capacity (Hydraulic capacity, population served)?

500 + 200 + 150 m³/h

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

1-5 Years,

10-20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Pall + Dupont**
Optional: Membrane Model	**Microza Una + Integrapac**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**outside in hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Pilot Test/Field Test comparing PVDF and ceramic/PES/PS/Other Membranes

,

Service Life,

Both CAPEX & OPEX (total cost of ownership),

Fouling Resistant,

Ease of Maintenance,

Other (please specify):

In one system, we are replacing PES with PVDF since they perform better on this water, in another plant next door.

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Somewhat important**
Waste Management	**Important**
Micropollutants	**Not important**
PFAS	**Critical**
Bacteria and/or viruses	**Somewhat important**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Critical**
Energy Costs	**Important**
Chemical cost	**Somewhat important**
Cost of raw water	**Not important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Important**
Increasing Demand	**Important**
Ability to perform an integrity test	**Somewhat important**
Regulatory approval for the membrane modules	**Not important**
Successful application at nearby plants	**Somewhat important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Not important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Municipal incineration

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Other (please specify):

No technology seems technically AND economically equivalent, although we do not have a lot of experience with tests.

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

See remark above.

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Robust enough and good end quality. More certainity about end quality compered to sand or AFM filtration.

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies with major losses in treated water quality

,

Working with alternative membranes/technologies resulting in substantial increases in costs

,

Explanation of your selection(s) (optional)Others, please define:

Either you increase cost, or you decrease the end quality. Options which are as good are more expensive.

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for your supply chain,

Costs of planning,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Disruption in delivery of water/wastewater,

Disruption in downstream supply chain (profit loss)

Q15

Please describe any possible consequences for your end consumers

Since we don't have spare space at our plants, we cannot guarantee the continuity of supply while replacing the technology. This is a major problem for large industry.

#10

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, July 18, 2023 4:51:39 PM
Last Modified: Tuesday, July 18, 2023 5:24:51 PM
Time Spent: 00:33:11
IP Address: 163.116.184.104

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Q1

Company Details

Company Name	**AGBAR-Veolia España**
Country	**SPAIN**
Contact Name (Optional)	**JOSE GARCIA TEJERO**
Email address (Optional)	**[redacted]@veolia.com**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Municipal Sewage Water for Reuse

Q3

What is your plant capacity (Hydraulic capacity, population served)?

40.000 m3/day

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

1-5 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**ZENON**
Optional: Membrane Model	**ZWD500**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**HOLLOW**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Recommended by system supplier/consulting company/membrane manufacturer.

,

Cleaning Frequency,

Ease of Maintenance

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Critical**
Micropollutants	**Somewhat important**
PFAS	**Somewhat important**
Bacteria and/or viruses	**Important**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Critical**
Increasing Demand	**Critical**
Ability to perform an integrity test	**Important**
Regulatory approval for the membrane modules	**Important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Somewhat important**
Other (please specify) MAINTENANCE COSTS	

Q8

Please list any other challenges that are missing above (Question 7)

MAINTENANCE COSTS

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Non-hazardous landfill

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

No Alternative

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

NO ALTERNATIVE

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

QUALITY OF TREATED WATER, REDUCTION OF SPACE

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies resulting in substantial increases in costs

,

Explanation of your selection(s) (optional)Others, please define:

IT'S NOT POSSIBLE

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for your supply chain,

Costs of planning,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Loss in water/wastewater quality,

Disruption in delivery of water/wastewater

Q15

Please describe any possible consequences for your end consumers

THE CHANGE OF TECHNOLOGY IS NOT POSSIBLE WITHOUT PROJECTING ANOTHER TREATMENT STATION

#11

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, July 18, 2023 5:15:18 PM
Last Modified: Tuesday, July 18, 2023 6:19:58 PM
Time Spent: 01:04:40
IP Address: 163.116.184.105

Page 1

Q1

Company Details

Company Name	**AGBAR-Veolia España**
Country	**España**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Sewage by Membrane Bioreactor (MBR) for discharge to the environment

,

Treatment of Sewage by Membrane Bioreactor (MBR) for indirect use

,

Treatment of Sewage by Membrane Bioreactor (MBR) for direct use

Q3

What is your plant capacity (Hydraulic capacity, population served)?

Sabadell

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

1-5 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Kubota Membrane cartdrige H7-510**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**flat sheet**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Recommended by system supplier/consulting company/membrane manufacturer.

,

Both CAPEX & OPEX (total cost of ownership)

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Critical**
Micropollutants	**Important**
PFAS	**Somewhat important**
Bacteria and/or viruses	**Important**
Deterioration of feed water	**Critical**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Critical**
Chemical cost	**Critical**
Cost of raw water	**Important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Important**
Increasing Demand	**Important**
Ability to perform an integrity test	**Important**
Regulatory approval for the membrane modules	**Somewhat important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Critical**
Membrane recycling vs disposal	**Critical**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Non-hazardous landfill ,

Other (please specify):

Reuse + Recycling

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

No Alternative

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

a

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Reclaimed water is used for different uses.

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies with major losses in treated water quality

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for re-construction of your plant ,

Loss in water/wastewater quality,

Disruption in delivery of water/wastewater

Q15

Please describe any possible consequences for your end consumers

Negative impact for us and our customers with cost increases and loss of water quality

#12

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, July 19, 2023 10:36:26 AM
Last Modified: Wednesday, July 19, 2023 11:01:07 AM
Time Spent: 00:24:41
IP Address: 163.116.184.107

Page 1

Q1

Company Details

Company Name	**AGBAR-Veolia España**
Country	**España**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Municipal Sewage Water for discharge to the environment

,

Treatment of Municipal Sewage Water for Reuse

Q3

What is your plant capacity (Hydraulic capacity, population served)?

64.000 m3/d, 375.000 habitantes equivalentes

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

10-20 Years,

More than 20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**GE WATER & PROCESS TECHNOLOGIES**
Optional: Membrane Model	**ZW500D**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Both CAPEX & OPEX (total cost of ownership)

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Important**
Micropollutants	**Important**
PFAS	**Important**
Bacteria and/or viruses	**Critical**
Deterioration of feed water	**Somewhat important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Somewhat important**
Regulatory approval for the membrane modules	**Somewhat important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Somewhat important**
Membrane recycling vs disposal	**Important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Non-hazardous landfill ,

Other (please specify):

WE DON'T HAVE A PLAN YET

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

No Alternative

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

To implement other technologies, civil works should be modified

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

TO BUY RECLAIMED WATER

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quantity

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Loss in water/wastewater quality

Q15

Please describe any possible consequences for your end consumers

The measure would have a negative impact for us and our customers.

#13

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Wednesday, July 19, 2023 11:10:39 AM
Last Modified:	Wednesday, July 19, 2023 11:26:39 AM
Time Spent:	00:15:59
IP Address:	163.116.184.107

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Q1

Company Details

Company Name	**AGBAR-Veolia España**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Municipal Sewage Water for Reuse

Q3

What is your plant capacity (Hydraulic capacity, population served)?

12000m3/día

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

5-10 Years,

More than 20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**kubota**
Optional: Membrane Model	**ek400**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Higher fluxes

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Not important**
Waste Management	**Important**
Micropollutants	**Important**
PFAS	**Important**
Bacteria and/or viruses	**Important**
Deterioration of feed water	**Somewhat important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Somewhat important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Important**
Regulatory approval for the membrane modules	**Important**
Successful application at nearby plants	**Somewhat important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Non-hazardous landfill

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Microfiltration Membrane – Hollow-Fiber,

Microfiltration Membrane – Dlat Sheet

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

Not

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Because less space is needed

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quality

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for your supply chain,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Loss in water/wastewater quality

Q15

Please describe any possible consequences for your end consumers

they would have to make a large investment to remodel the plant so that it could continue to maintain the quality of the water

#14

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Friday, July 21, 2023 9:20:10 AM
Last Modified: Friday, July 21, 2023 10:15:16 AM
Time Spent: 00:55:06
IP Address: 208.127.111.255

Page 1

Q1

Company Details

Company Name	**Asahi Kasei Corp.**
Country	**JAPAN**
Contact Name (Optional)	**Tomoyoshi Segawa**
Email address (Optional)	**[redacted]@om.asahi-kasei.co.jp**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Supply of Drinking Water,

Supply of Industrial Process Water,

Supply of Water for Food and Beverages,

Supply of Water for Industrial Applications

Q3

What is your plant capacity (Hydraulic capacity, population served)?

2m3/Hour/Module

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

10-20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**ASAHI KASEI Corp**
Optional: Membrane Model	**UNA-620A, UNA-620C, WTR-620E**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**hollow fiber membrane**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Higher fluxes,

Capital Cost (CAPEX),

Operation Cost (OPEX),

Recommended by system supplier/consulting company/membrane manufacturer.

,

Footprint Constraints,

Service Life,

Both CAPEX & OPEX (total cost of ownership),

Fouling Resistant,

Cleaning Frequency,

Ease of Maintenance

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Somewhat important**
Micropollutants	**Critical**
PFAS	**Critical**
Bacteria and/or viruses	**Not important**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Somewhat important**
Chemical cost	**Somewhat important**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Not important**
Increasing Demand	**Not important**
Ability to perform an integrity test	**Somewhat important**
Regulatory approval for the membrane modules	**Important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Not important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Non-hazardous landfill

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

No Alternative

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

non available altenatives

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

long life,

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies with major losses in treated water quality

,

Working with alternative membranes/technologies with major losses in treated water quantity

,

Working with alternative membranes/technologies resulting in substantial increases in costs

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for your supply chain,

Costs of planning,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Additional transport costs,

Loss in water/wastewater quality,

Disruption in delivery of water/wastewater,

Disruption in downstream supply chain (profit loss)

Q15

Please describe any possible consequences for your end consumers

this PFAS restriction is never suited with real using situation. All PFAS polmers and rubbers shall be exemption.

#15

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Monday, July 24, 2023 3:03:14 PM
Last Modified: Monday, July 24, 2023 4:04:20 PM
Time Spent: 01:01:06
IP Address: 163.116.184.51

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Q1

Company Details

Company Name	**AGBAR-Veolia España**
Country	**Spain**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Industrial Sewage Water for Reuse

Q3

What is your plant capacity (Hydraulic capacity, population served)?

12.500m3/d

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

5-10 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**PENTAIR**
Optional: Membrane Model	**8” Aquaflex-64 membrane module**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**Hydrophilic membrane composed of a blend of polyvinylpyrrolidone and polyethersulfone**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Recommended by system supplier/consulting company/membrane manufacturer.

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Important**
Micropollutants	**Important**
PFAS	**Important**
Bacteria and/or viruses	**Important**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Somewhat important**
Limited space for extension capacity	**Important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Somewhat important**
Regulatory approval for the membrane modules	**Somewhat important**
Successful application at nearby plants	**Somewhat important**
Supplier’s track record with PVDF at other plants	**Somewhat important**
Membrane recycling vs disposal	**Somewhat important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Non-hazardous landfill

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

No Alternative

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

No Alternative

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Recommended by system supplier/consulting company/membrane manufacturer.

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quality

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

Q15

Please describe any possible consequences for your end consumers

Increase costs

#16

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, July 25, 2023 3:24:40 PM
Last Modified: Tuesday, July 25, 2023 3:39:17 PM
Time Spent: 00:14:36
IP Address: 20.67.84.37

Page 1

Q1

Company Details

Company Name	**AQUADUIN**
Country	**BELGIUM**
Contact Name (Optional)	**Emmanuel Van Houtte**
Email address (Optional)	[redacted]**@aquaduin.be**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Municipal Sewage Water for Potable Water – Indirect Use

Q3

What is your plant capacity (Hydraulic capacity, population served)?

2,500,000 m³/year

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

More than 20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**ZENON, now SUEZ**
Optional: Membrane Model	**ZW500c**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**submerged, hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Pilot Test/Field Test comparing PVDF and ceramic/PES/PS/Other Membranes

,

Footprint Constraints,

Cleaning Frequency,

Ease of Maintenance

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Somewhat important**
Micropollutants	**Important**
PFAS	**Important**
Bacteria and/or viruses	**Somewhat important**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Somewhat important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Somewhat important**
Regulatory approval for the membrane modules	**Somewhat important**
Successful application at nearby plants	**Somewhat important**
Supplier’s track record with PVDF at other plants	**Somewhat important**
Membrane recycling vs disposal	**Somewhat important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Municipal incineration

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

No Alternative

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

as we have good experiences with the PVDF submerged membranes we do not intend to change to any other alternative

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

It proved to be a good treatment prior to reverse osmosis (RO); RO being the most important treatment when water reuse is performed to produce drinking-water, either in a direct or indirect way

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quality

,

Working with alternative membranes/technologies without major losses in treated water quantity

,

Explanation of your selection(s) (optional)Others, please define:

Quality remains the most important aspect in drinking-water business but we also need a good recovery

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Costs of planning,

Additional costs for re-construction of your plant ,

Loss in water/wastewater quality

Q15

Please describe any possible consequences for your end consumers

water shortage and probably lower quality

#17

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, August 02, 2023 1:12:19 PM
Last Modified: Wednesday, August 02, 2023 1:31:12 PM
Time Spent: 00:18:52
IP Address: 151.96.255.242

Page 1

Q1

Company Details

Company Name	**Eni**
Country	**Italy**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Industrial Sewage Water for Reuse

Q3

What is your plant capacity (Hydraulic capacity, population served)?

Produced flow of 500 m3/h

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

5-10 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Veolia**
Optional: Membrane Model	**ZeeWeed 500**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Footprint Constraints,

Both CAPEX & OPEX (total cost of ownership),

Cleaning Frequency,

Ease of Maintenance

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Critical**
Waste Management	**Important**
Micropollutants	**Somewhat important**
PFAS	**Important**
Bacteria and/or viruses	**Somewhat important**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Critical**
Chemical cost	**Important**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Somewhat important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Important**
Regulatory approval for the membrane modules	**Somewhat important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Somewhat important**
Membrane recycling vs disposal	**Important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Hazardous landfill

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Ultrafiltration Membrane – Hollow-Fiber,

Ultrafiltration Membrane – Flat Sheet,

Other (please specify):

The same plant produces final high-quality effluent also for a neibour industrial site in order to reduce the water footprint and avoid exploitation of natural water resources. The unaivailability of UF membrane would negatively impact also this other user.

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

-

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Three main reasons:

- ZW500 has been deemed suitable for treating the water leaving the secondary clarifier
- The high quality required to reuse the wastewater in the main industrial process required a UF technology thanks to the small pores of the membranes and its stability over the long run
- UF was also identified as the best available technlogy from capex+opex evaluation

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies with major losses in treated water quality

,

Working with alternative membranes/technologies with major losses in treated water quantity

,

Explanation of your selection(s) (optional)Others, please define:

The above selection needs further investigation based on the real alternatives out there that can solve our current challanges

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for your supply chain,

Additional costs for procurement of new machinery & equipment

,

Loss in water/wastewater quality,

Disruption in downstream supply chain (profit loss)

Q15

Please describe any possible consequences for your end consumers

The unaivailability of UF membrane would negatively impact the water reuse in industrial sites

#18

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, August 02, 2023 1:48:53 PM
Last Modified: Wednesday, August 02, 2023 2:18:06 PM
Time Spent: 00:29:12
IP Address: 163.116.172.116

Page 1

Q1

Company Details

Company Name	**ASVT SpA**
Country	**Italy**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Supply of Drinking Water,

Treatment of Sewage by Membrane Bioreactor (MBR) for discharge to the environment

Q3

What is your plant capacity (Hydraulic capacity, population served)?

85.000 a.e.

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

Less than One Year,

1-5 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Suez**
Optional: Membrane Model	**EV**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Footprint Constraints,

Other (please specify):

high purifying quality

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Critical**
Micropollutants	**Important**
PFAS	**Important**
Bacteria and/or viruses	**Important**
Deterioration of feed water	**Somewhat important**
More stringent discharge requirements to the environment	**Somewhat important**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Critical**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Not important**
Regulatory approval for the membrane modules	**Not important**
Successful application at nearby plants	**Critical**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Not important**

Q8

Please list any other challenges that are missing above (Question 7)

no other reason

Q9

Non-hazardous landfill

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Q10

No Alternative

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

no alternative

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

I chose membranes UF for reduction footprint plant, high performance on purifying and for the good past managment experince

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quality

,

Working with alternative membranes/technologies without major losses in treated water quantity

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Costs of planning,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Disruption in delivery of water/wastewater

Q15

Please describe any possible consequences for your end consumers

no other reason

#19

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, August 02, 2023 5:40:21 PM
Last Modified: Wednesday, August 02, 2023 6:44:51 PM
Time Spent: 01:04:29
IP Address: 213.215.254.6

Page 1

Q1

Company Details

Company Name	**CAP Holding**
Country	**Italy**
Contact Name (Optional)	**Saino**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Municipal Sewage Water for discharge to the environment

,

Treatment of Municipal Sewage Water for Reuse

Q3

What is your plant capacity (Hydraulic capacity, population served)?

300.000 people served

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

1-5 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Veolia WTS**
Optional: Membrane Model	**ZeeWeed**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Higher fluxes,

Capital Cost (CAPEX),

Footprint Constraints,

Fouling Resistant,

Cleaning Frequency

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Important**
Micropollutants	**Important**
PFAS	**Not important**
Bacteria and/or viruses	**Somewhat important**
Deterioration of feed water	**Not important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Critical**
Chemical cost	**Critical**
Cost of raw water	**Not important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Critical**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Not important**
Regulatory approval for the membrane modules	**Somewhat important**
Successful application at nearby plants	**Somewhat important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Not important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Hazardous waste incineration

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Another Alternative Technology,

Other (please specify):

MBBR + Tertiary Application for WWTP. Conventional Filtration for DW

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

Not evaluated yet

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Small footprint
Good quality of the treated water

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies with major losses in treated water quality

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Loss in water/wastewater quality

Q15

Please describe any possible consequences for your end consumers

The real consequence is the lack of adequate drinking water quality for the consumer. On the wastewater side, the issue would be to receive fines from local authorities

#20

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Thursday, August 03, 2023 12:13:13 PM
Last Modified: Thursday, August 03, 2023 3:57:59 PM
Time Spent: 03:44:46
IP Address: 163.116.184.49

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Q1

Company Details

Company Name	**Aigües de Barcelona EMGCIA**
Country	**Spain**
Contact Name (Optional)	**Josep Oriol Canals Fontes**
Email address (Optional)	[redacted]**@aiguesdebarcelona.cat**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Supply of Drinking Water

Q3

What is your plant capacity (Hydraulic capacity, population served)?

Our UF line capacity is up to 240.000m3/day. The plant is up to 432.000m3/day

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

10-20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**ZeeWeed**
Optional: Membrane Model	**ZeeWeed 1000**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**Hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Pilot Test/Field Test comparing PVDF and ceramic/PES/PS/Other Membranes

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Important**
Micropollutants	**Important**
PFAS	**Important**
Bacteria and/or viruses	**Somewhat important**
Deterioration of feed water	**Critical**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Critical**
Chemical cost	**Critical**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Important**
Increasing Demand	**Not important**
Ability to perform an integrity test	**Important**
Regulatory approval for the membrane modules	**Important**
Successful application at nearby plants	**Not important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Important**

Q8

Please list any other challenges that are missing above (Question 7)

Climate change. In our region, we are experiencing imbalances in the rainfall patterns which translates into periods of drought.

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Non-hazardous landfill

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

No Alternative

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

For now, we do not have an alternative. First, we should theoretically evaluate which technologies are available and which one best suits our process. Once selected, a long and costing piloting period is required due to the complexities of our collection water. Implementing an alternative would require a significant financial investment for technology validation and modifying the installation for it.

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

It was the best available technology in our process as pretreatment for an RO. Providing water of optimal quality for proper and robust operation of the RO.

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quality

,

Explanation of your selection(s) (optional)Others, please define:

The RO installation can request up to 2650l/s. We cannot install a technology that provides us with less flow or quality.

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Disruption in delivery of water/wastewater

Q15

Please describe any possible consequences for your end consumers

In the context of the current drought, with the worsening of water quality, a situation where it is necessary to change part of the process or coexist with two technologies can lead to a partial reduction of the total treatable flow.

#21

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Monday, August 14, 2023 6:48:50 PM
Last Modified: Monday, August 14, 2023 7:00:21 PM
Time Spent: 00:11:31
IP Address: 163.116.172.113

Page 1

Q1

Company Details

Company Name	**A2A ciclo Idrico spa**
Country	**Italy**
Contact Name (Optional)	**Bolpagni Daniele**
Email address (Optional)	[redacted]**@a2a.it**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Municipal Sewage Water for discharge to the environment

,

Treatment of Sewage by Membrane Bioreactor (MBR) for discharge to the environment

Q3

What is your plant capacity (Hydraulic capacity, population served)?

4400 mc/h, 296000PE

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

5-10 Years,

More than 20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**General Electric**
Optional: Membrane Model	**500C**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Footprint Constraints,

Other (please specify):

treated water quality

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Important**
Waste Management	**Important**
Micropollutants	**Somewhat important**
PFAS	**Somewhat important**
Bacteria and/or viruses	**Important**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Critical**
Chemical cost	**Important**
Cost of raw water	**Somewhat important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Somewhat important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Somewhat important**
Regulatory approval for the membrane modules	**Somewhat important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Somewhat important**
Membrane recycling vs disposal	**Important**

Q8

Please list any other challenges that are missing above (Question 7)

no more

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Municipal incineration

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Ultrafiltration Membrane – Hollow-Fiber,

Other (please specify):

Microfiltration

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

L'ultrafiltrazione impiegata eccede in qualità le performance imposte dai limiti allo scarico imposti per legge ad eccezione della disinfezione. In questo senso le evoluzioni tecniche a cui la Microfiltrazione sta andando incontro possono portare questa tecnologia ad essere una valida alternativa.

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Limited space for extension capacity

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies resulting in substantial increases in costs

,

Explanation of your selection(s) (optional)Others, please define:

La tecnologia MBR assicura un refluo disinfettato. Abbandonare tale tecnologia verso la sediemntazione convenzionale comporta la mancanza di questo step di trattamento. Sostituire tale tecnologia per assicurare la disinfezione comporta implementazione di opere con impatti OPEX e CAPEX anche su impianti di recente costruzione.

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Costs of planning,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Other costs/profit loss impacts, please define:

L'impossibilità di sostituire le membrane impone la sostituzione della tecnologia con la sedimentazione convenzionale, addizionata di microfiltrazione e disinfezione UV. I costi derivanti da questa situazione critica sono molto elevati e addirittura potrebbero incidere su impianti anche di recente costruzione.

Q15

Please describe any possible consequences for your end consumers

difficoltà nel raggiungimento dei nuovi limiti imposti allo scarico in caso di riutilizzo irriguo ai sensi della nuova normativa europea/regionale. quindi minor disponibilità per il riutilizzo in agricoltura.

#22

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Tuesday, August 15, 2023 6:12:33 AM
Last Modified:	Tuesday, August 15, 2023 6:32:38 AM
Time Spent:	00:20:05
IP Address:	205.220.129.228

Page 1

Q1

Company Details

Company Name	**Drinking Water Plant**
Country	**Italy**

Q2

Supply of Drinking Water

Please select the type of plant you operate (multiple selections can be selected):

Q3

What is your plant capacity (Hydraulic capacity, population served)?

100 MLD

Q4

5-10 Years

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**ZeeWeed**
Optional: Membrane Model	**500d**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**Reinforced Hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Higher fluxes,

Service Life,

Both CAPEX & OPEX (total cost of ownership),

Fouling Resistant,

Cleaning Frequency,

Ease of Maintenance

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Somewhat important**
Waste Management	**Somewhat important**
Micropollutants	**Important**
PFAS	**Important**
Bacteria and/or viruses	**Critical**
Deterioration of feed water	**Somewhat important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Important**
Availability of qualified resources (people)	**Somewhat important**
Limited space for extension capacity	**Somewhat important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Somewhat important**
Regulatory approval for the membrane modules	**Important**
Successful application at nearby plants	**Somewhat important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Important**

Q8

Please list any other challenges that are missing above (Question 7)

No other

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Municipal incineration ,

Other (please specify):

we will define the disposal mode at the end of membrane life

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Ultrafiltration Membrane – Hollow-Fiber

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

No evaluation yet

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Quality of the final product, flexibility of production capacity, less operation labor required

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies without major losses in treated water quality

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Costs of planning,

Additional costs for re-construction of your plant ,

Disruption in delivery of water/wastewater

Q15

Please describe any possible consequences for your end consumers

Possible increase in water tariff for end consumers

#23

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, August 15, 2023 7:29:03 PM
Last Modified: Tuesday, August 15, 2023 7:37:41 PM
Time Spent: 00:08:37
IP Address: 168.149.179.76

Page 1

Q1

Company Details

Company Name	**MBR Industrial**
Country	**Germany**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Industrial Sewage Water discharge to the environment

Q3

What is your plant capacity (Hydraulic capacity, population served)?

2000 m3/h

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

5-10 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**ZeeWeed**
Optional: Membrane Model	**500d**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Both CAPEX & OPEX (total cost of ownership),

Fouling Resistant,

Ease of Maintenance

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Somewhat important**
Waste Management	**Somewhat important**
Micropollutants	**Somewhat important**
PFAS	**Not important**
Bacteria and/or viruses	**Important**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Not important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Not important**
Regulatory approval for the membrane modules	**Not important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Somewhat important**

Q8

Please list any other challenges that are missing above (Question 7)

nothing else

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Hazardous waste incineration

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Microfiltration Membrane – Hollow-Fiber,

Microfiltration Membrane – Dlat Sheet

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

Unknown performance factors / operating results.

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

100% rejection, superb permeate quality, footprint that is/was available in our plant.

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies with major losses in treated water quality

,

Working with alternative membranes/technologies with major losses in treated water quantity

,

Working with alternative membranes/technologies resulting in substantial increases in costs

,

Explanation of your selection(s) (optional)Others, please define:

Alternatives (alternative membrane products) would have to be tested (-> Piloting!). Test/pilots conducted in the past have demonstrated that ZeeWeed membranes performed the best.

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for your supply chain,

Costs of planning,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Loss in water/wastewater quality,

Disruption in delivery of water/wastewater,

Disruption in downstream supply chain (profit loss)

Q15

Please describe any possible consequences for your end consumers

we are the end user of the MBR plant. Therefore, see above answers

#24

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Tuesday, August 15, 2023 8:00:31 PM
Last Modified: Tuesday, August 15, 2023 8:17:20 PM
Time Spent: 00:16:49
IP Address: 148.64.10.12

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Q1

Company Details

Company Name	**Industrial MBR**
Country	**Italy**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Industrial Sewage Water discharge to the environment

,

Treatment of Industrial Sewage Water for Reuse

Q3

What is your plant capacity (Hydraulic capacity, population served)?

250 m3/h currently under expansion up to 300 m3/h

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

1-5 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Veolia Water Technologies**
Optional: Membrane Model	**ZW500D**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**Hollow fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Footprint Constraints,

Service Life,

Other (please specify):

Stable and reliable effluent quality. Potential for reuse of product

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Not important**
Waste Management	**Important**
Micropollutants	**Critical**
PFAS	**Somewhat important**
Bacteria and/or viruses	**Important**
Deterioration of feed water	**Important**
More stringent discharge requirements to the environment	**Critical**
Energy Costs	**Important**
Chemical cost	**Somewhat important**
Cost of raw water	**Important**
Availability of qualified resources (people)	**Critical**
Limited space for extension capacity	**Somewhat important**
Increasing Demand	**Important**
Ability to perform an integrity test	**Not important**
Regulatory approval for the membrane modules	**Not important**
Successful application at nearby plants	**Important**
Supplier’s track record with PVDF at other plants	**Important**
Membrane recycling vs disposal	**Important**

Q8

Please list any other challenges that are missing above (Question 7)

Respondent skipped this question

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Non-hazardous landfill

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Ultrafiltration Membrane – Hollow-Fiber,

Another Alternative Membrane

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

equivalent installed base
high packing density-low footprint

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

To ensure stable and reliable TSS-free effluent quality, and explore potential reuse after furher polishing steps (AOPs).

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies with major losses in treated water quality

,

Working with alternative membranes/technologies resulting in substantial increases in costs

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Loss in water/wastewater quality,

Disruption in delivery of water/wastewater

Q15

Please describe any possible consequences for your end consumers

Business continuity would be affected.
Also, the lack of a high quality WW treatment would cause reputational damages in front of the community.
Need for additional investments and potential impact on costs and price to the end user.

#25

COMPLETE

Collector:	Web Link 1 (Web Link)
Started:	Tuesday, August 15, 2023 8:13:09 PM
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IP Address:	199.247.40.94

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Q1

Company Details

Company Name	**MBR Municipal**
Country	**Germany**

Q2

Please select the type of plant you operate (multiple selections can be selected):

Treatment of Sewage by Membrane Bioreactor (MBR) for discharge to the environment

Q3

What is your plant capacity (Hydraulic capacity, population served)?

7000 m^3/d; 10,000 P.E.

Q4

What is the age of your Water Treatment System (multiple options can be selected if you have systems of different ages).

10-20 Years

Q5

Please specify what type of PVDF Membranes you are currently using:

Membrane Manufacturer	**Veolia**
Optional: Membrane Model	**ZeeWeed 500**
Membrane Type (hollow fiber, flat sheet, bore type, ….):	**Hollow Fiber**

Q6

What were your reasons for selecting the PVDF Membranes? Multiple options can be selected.

Higher fluxes,

Operation Cost (OPEX),

Service Life,

Cleaning Frequency,

Ease of Maintenance

Q7

What challenges are you facing in Water/Wastewater Treatment today, and what impact do they have?

Carbon Footprint	**Not important**
Waste Management	**Somewhat important**
Micropollutants	**Not important**
PFAS	**Not important**
Bacteria and/or viruses	**Somewhat important**
Deterioration of feed water	**Somewhat important**
More stringent discharge requirements to the environment	**Important**
Energy Costs	**Important**
Chemical cost	**Important**
Cost of raw water	**Not important**
Availability of qualified resources (people)	**Important**
Limited space for extension capacity	**Somewhat important**
Increasing Demand	**Somewhat important**
Ability to perform an integrity test	**Not important**
Regulatory approval for the membrane modules	**Not important**
Successful application at nearby plants	**Not important**
Supplier’s track record with PVDF at other plants	**Not important**
Membrane recycling vs disposal	**Somewhat important**

Other (please specify)
none

Q8

Please list any other challenges that are missing above (Question 7)

none

Q9

How do you currently dispose of or plan to dispose of your membranes when reaching the end of life? If applicable, you can select multiple options.

Municipal incineration

Q10

Do any Technically/Economically equivalent replacement alternative technologies/materials exist for your application? If applicable, you can select multiple options

Ultrafiltration Membrane – Hollow-Fiber,

No Alternative

Q11

If you evaluated any alternatives listed in Question 10, please discuss their technical/economic feasibility

We tested alternative PES Hollow Fiber membranes and experienced worse performance

Q12

Why did you choose MF/UF membranes to treat your water/wastewater?

Carstic area with increased requirements on effluent quality

Q13

In the event that you were to replace your MF/UF Membrane Technology, how would you anticipate it impacting your plants' performance? Please select any of the below that apply.

Working with alternative membranes/technologies with major losses in treated water quality

,

Working with alternative membranes/technologies with major losses in treated water quantity

,

Working with alternative membranes/technologies resulting in substantial increases in costs

,

Explanation of your selection(s) (optional)Others, please define:

worse performance = increased membrane surface area ==> higher OPEX reduced lifetime = higher re-investment cost

Q14

What would be the direct and indirect consequences for your operation and surroundings if your PVDF Membranes could not be delivered to you anymore? (selection of multiple options is possible). Please answer this question based on your answer to Question 13.

Increase of operational costs,

Additional costs for your supply chain,

Costs of planning,

Additional costs for re-construction of your plant ,

Additional costs for procurement of new machinery & equipment

,

Loss in water/wastewater quality,

Disruption in delivery of water/wastewater,

Disruption in downstream supply chain (profit loss)

Q15

Please describe any possible consequences for your end consumers

higher wastewater discharge cost for population