

SUSTAINABLE FUTURE

«The European Union (EU) is facing an overwhelming water shortage. One third of EU territory is already experiencing water stress».

Alleviating Water Scarcity Across the EU: The Contribution of the European Union's Proposal for a Regulation on Water Reuse in the Agricultural Sector

Climate change and human health in Europe

Europe's Never Paid So Much for Power as 2022 Breaks Record

The pandemic aggravated labour shortages in some sectors;

the problem is now emerging in others
«The average cost of power for delivery in the short-term soared to record levels this year, rising over 200% in Germany, France, Spain and the U.K. In the Nordic region – where vast supplies of hydro power tend to cap prices – costs surged 470% from a year earlier».



DYCLAR

DYCLAR – Water and Wastewater Clarification Technology is a Response to the challenges of a new reality

- CUSTOMIZED SOLUTIONS
- EFFICIENT TREATMENT THAT MEETS EU STANDARDS
- ENVIRONMENTALLY COMMITTED
- HIGHLY QUALIFIED TEAMS

www.dyclar.com



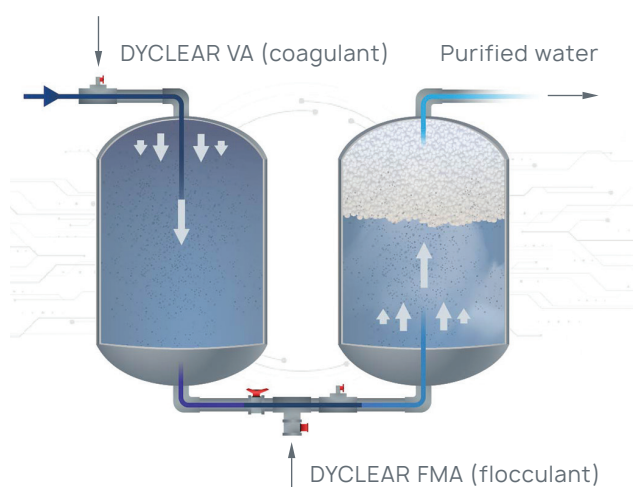
DYCLAR Dynamic
Clarification –
Building a Sustainable Future

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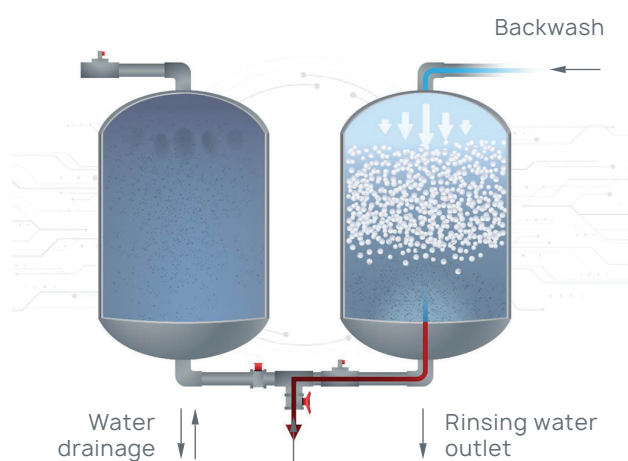
DYCLAR technology was developed
in postindustrial era. Inspired
by natural processes, combined
with human expertise

DYCLAR IS A **CUTTING- EDGE** WATER CLARIFICATION TECHNOLOGY

Filtration mode **20-30 hours**



Regeneration mode **45 minutes**



DYCLAR technology is a physical- chemical
treatment method: water is mixed with
chemicals and filtered through floating
granular media in vessels.

Therefore, DYCLAR works on micro- and
macro- levels: chemical reagents cause
agglomeration of colloids and suspended
solids present in water. Simultaneously
they «activate» surface of filtering media
granules, turning it into «magnet» that
electrostatically captures flocs of
contaminants and effectively traps them in.

«Activated» filtering media acts as a large
yielding molecular membrane with billions
of filtering channels piercing through it.
The Inert® filtering media is a technological
know-how. It is made of recycled plastic
material and is washed with only water
and air: air assisted regeneration
and gravity assisted backwash helps
to improve the over all reliability of the
system and significantly reduce capital
and operational costs. Simplicity makes
the technology durable and reliable.

Watch a movie about DYCLAR →





CHALLENGE:

Growing demand for a highly efficient technologies tailored to a specific customer needs

SOLUTION:

DYCLAR technology offers customized solutions with a 10-year history of successful integration within retrofit-type projects and new installations



APPLICATION SCHEME OF DYCLAR TECHNOLOGY

INLET:

WASTE WATER
(mining, industrial
and other waste
water)

SURFACE WATER
(river & lake water)

PROCESS WATER

- Color
- Turbidity
- Total suspended solids
- COD
- Iron
- Aluminium
- Phosphates
- Oil

OUTLET:

Pre-treatment for membrane
(ULTRAFILTRATION
and REVERSE OSMOSIS)
and ion-exchange processes

Process water (including
reuse and recycling)

Tertiary treatment

Discharge of treated
wastewater to rivers or lakes

REFERENCES

MINING WATER
TREATMENT PLANT /
2021

TSS
IN: 350-400 mg/l
OUT: 0.2 mg/l

WATER TREATMENT
FOR CHEMICAL
INDUSTRY / 2013

Turbidity
IN: 75-105 NTU
OUT: <1 NTU

MANTOVA PAPER
MILL (ITALY, PILOT
TEST) / 2022

Turbidity
IN: 19 NTU
OUT: 0 NTU

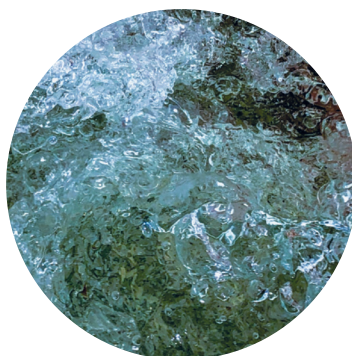
POTABLE WATER
TREATMENT / 2019

Color
IN: 200 TCU
OUT: 14.9 TCU

HEAT SUPPLY SYSTEM
WATER TREATMENT /
2019

Iron
IN: 1.2-7.6 mg/l
OUT: > 0.1 mg/l

You can discuss the details of project with the official representative of DYCLAR GMBH



KEY ADVANTAGES OVER OTHER TECHNOLOGIES

ADVANTAGES OVER CONVENTIONAL FILTERS (E.G. SAND FILTER)

- Filtration rate of DYCLAR normal operation is twice larger than filtration rate of conventional filters
- Higher effluent quality
- Longer service life of the filtering media is not subject to microbial fouling and clogging
- More efficient cleaning of the filter media from mud deposits
- No secondary contamination of filtered water
- Gravity assisted backwash with lower pressure and water consumption
- Compact footprint

ADVANTAGES OVER MEMBRANE TECHNOLOGIES (ULTRAFILTRATION)

- DYCLAR is less sensitive to feed water quality in terms of turbidity, color, suspended solids, oil content and microbiological contamination
- One-stage treatment: no need of additional pretreatment
- Replacement of DYCLAR filtering media is not required during its service life
- No use of dangerous acids and alkaline chemicals for DYCLAR backwashing
- DYCLAR is resistant to water hammers
- Wide range of performance and work loads per filter unit

ADVANTAGES OVER SEDIMENTATION TECHNOLOGIES

OVER lamellar clarifier

- Higher treatment quality (COD reduction: DYCLAR 70-90%; lamellar clarifier ~ 50%; Effluent TSS < 1.5 < ppm; lamellar clarifier > 10 ppm)
- One-stage filtration. No need of post-treatment
- DYCLAR process equipment features no moving parts (e.g. bottom scraper, mixer, etc.), which results in increased reliability and higher resistance to corrosion, decreased risk of unexpected breakdowns and mechanical wear

OVER sand-ballast sedimentation

- Higher effluent quality (COD reduction: DYCLAR 70-90%; ballast sedimentation 50-70%; Effluent TSS: DYCLAR < 1.5 ppm, sand ballast sedimentation > 5 ppm)
- Compact footprint (2-3 times smaller)
- One-stage filtration without need for post-treatment
- DYCLAR is performed without use of ballast (sand), which eliminates abrasive wear in pumps, clarifier, and scrapers
- DYCLAR process equipment features no moving parts (e.g. bottom scraper, mixer, etc.), which results in increased reliability and higher resistance to corrosion, decreased risk of unexpected breakdowns and mechanical wear



CHALLENGE:

Pure water crisis, lack of access to a safe drinking water

SOLUTION:

DYCLAR 2-in-1 technology for effective water filtration and high-turbidity wastewater treatment



DYCLAR
EFFICIENCY

QUALITY INDICATOR	Influent	DYCLAR clarified water (Effluent)
Total suspended solids, mg/l	3-300	0.5-2.0
Turbidity, NTU	3-450	0.1-0.7
Permanganate Index, mg O ₂ /l	3.8-76	1.6-9.4
Color, TCU	30-807	6-15
Iron, mg/l	300-7 600	30-120
Petroleum products (oil), mg/l	0.06-3.4	0.03-0.09
BOD, mg/l	1-12.7	0.5-3.4
COD, mg/l	11.4-140	4-25
Phosphates, mg/l	~ 0.1-1.2	0.01-0.05
Copper, mg/l	~ 0.0053-0.024	0.001
Ammonium, mg/l	0.12-0.6	0.04-0.15
Aluminium, mg/l	50-3700	20-120

TSS
99%
removal

IRON
98%
removal

COD
82%
removal



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CHALLENGE:

Environmental degradation

SOLUTION:

DYCLAR technology reduces environmental burden during its entire operational life



DYCLAR ENVIRONMENTAL ASPECTS

RESOURCES

- Less wash water consumption
- Energy efficient compared to other clarification technologies

RECYCLING

- Filtering media is produced from recycled polymer
- All DYCLAR components are recyclable

ACID AND ALKALI FREE

- DYCLAR doesn't use dangerous reagents and mainly uses air for backwash

GOAL 6:

Ensure access to water and sanitation for all

DYCLAR 2-in-1 technology provides an effective filtration of water with high-turbidity. DYCLAR can be used in drinking water production and for municipal and industrial wastewater treatment.

GOAL 13:

Take urgent actions to combat climate change and its effects

Geographic flexibility due to outsource manufacturing practice (Reduction in Carbon Footprint from elimination of the supply chain).

GOAL 14:

Conserve and sustainably use the oceans, seas and marine resources

First, DYCLAR technology provides the highest quality of wastewater treatment and benefits aquatic life.

Second, DYCLAR technology uses processed plastic (over 100 kg per equipment item). We convert plastic litter into a filtering bed, which means a double effect for maintaining clean oceans, seas, and rivers.

Third, DYCLAR reduces phosphates content in water that cause eutrophication in surface water.

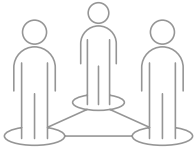


CHALLENGE:

Professional and trained staff shortages within the industry of advanced treatment

SOLUTION:

DYCLAR has a team of water & wastewater experts and technology developers on board



Our team successfully implements water and wastewater treatment projects, while applying a comprehensive approach and **providing warranty service**. Our qualified engineers and project managers coordinate project implementation at all stages.

DYCLAR OPERATIONS

- Engineering
- Procurement
- Installation supervision
- Commissioning
- Chemicals supply

DYCLAR HEADQUARTERS

- R&D
- Laboratories
- Piloting

All necessary resources required to execute our projects are provided from one central location

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DYCLAR GMBH

Headquarters of DYCLAR GmbH
is based in Switzerland.

DYCLAR GmbH is responsible
for implementation of all projects
associated with integration
of the DYCLAR technology.

DYCLAR GmbH invests in development
of technologies that protect aquatic
life and saves resources of our customers.
The company's global mission
is to maintain and improve water
quality and promote environmental
balance.

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