

# Automatic Multiple Flocculation AMF

Demand-oriented addition of flocculants with automatically optimized dewatering and thickening via an intelligent algorithm at varying sludge properties.

**The Automated Multiple Flocculation (AMF) is the catalyst of sludge conditioning:**

*Lower emissions, operating resources and costs with higher performance through intelligent algorithms.*

## What is it about?

Nowadays Flocculants (polymers) are largely added statically to sewage sludge today. Adjustments of the quantities are rather based on routines and not on the basis of real-time data. The Automatic Multiple Flocculation (AMF) of awama changes that. The AMF uses physical principles and scientifically proven effects of sludge conditioning to respond to changes of the sludge properties and the wastewater - with automated dosing and flocculation processes in real-time.

## How does the AMF work exactly?

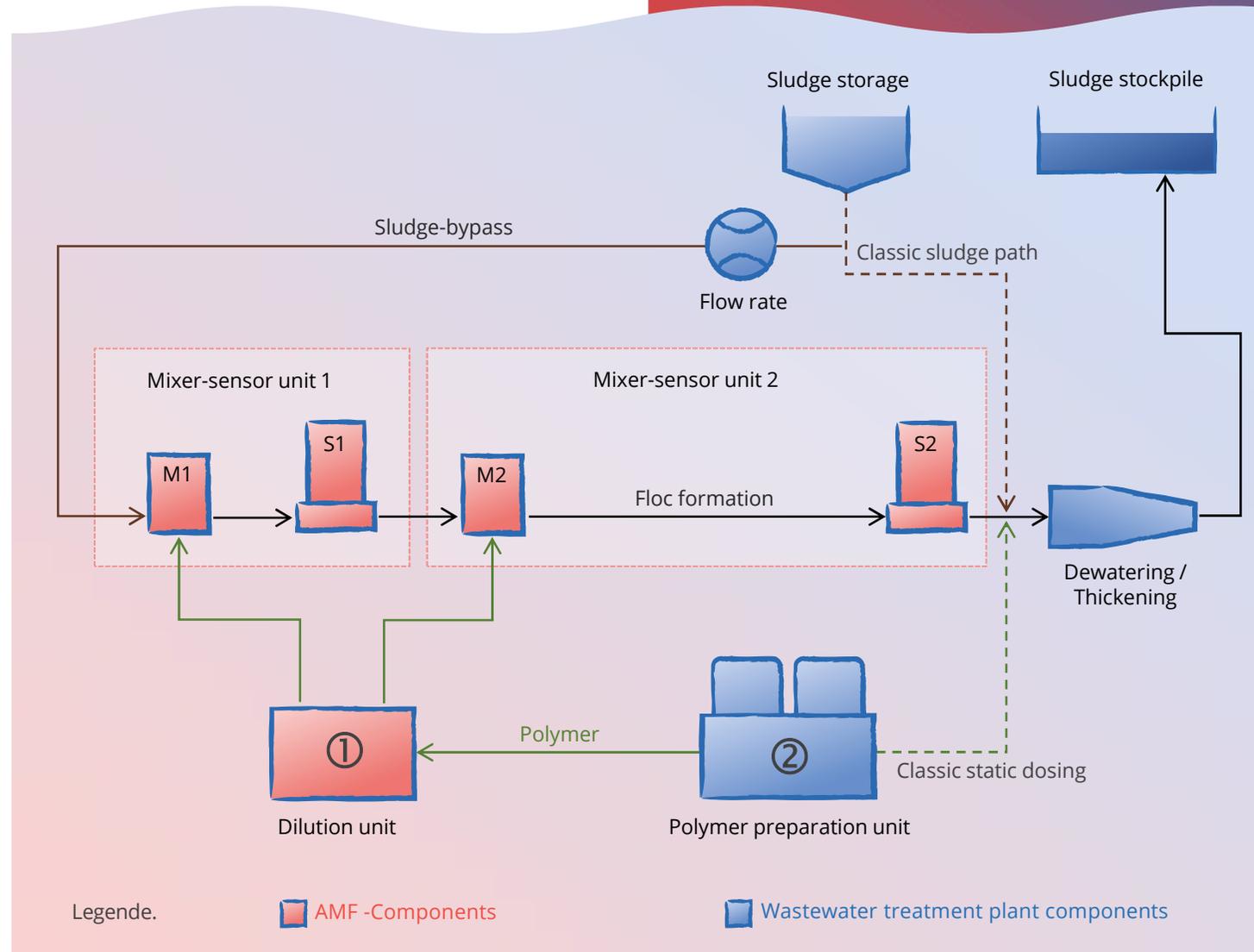
The modularly constructed technology consists of two dynamic mixer-sensor units, a dilution unit ① and an evaluation unit, which is connected to the process control system of the wastewater treatment plant if required. The conditioning system usually includes the two-time addition of the same polymer with dynamic mixers (M1 and M2) from the existing polymer preparation unit ②. Each of the two dosing points is followed by a corresponding sensor (S1 and S2). These sensors control the addition of polymer and process water in the dilution module as well as the speed of both mixers. The system components can be integrated in the sludge path in full flow or as a bypass, parallel to the classic sludge path.



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## Key facts

- Automatic flocculation on demand
- Multiple flocculant (polymer) dosing
- flocculant savings
- higher dry residue
- Avoidance of incidents
- Improvement of the operational safety
- Dewatering - Sedimentation - Flotation



The AMF is a measurement and control technology for sludge treatment. The core of the AMF is an intelligent algorithm - developed based on many years of experience of our engineers and new scientific findings from research at Clausthal University of Technology. The task of this algorithm is to control the optimal dosage of flocculants, considering important parameters:

- Sludge properties
- Flocculant
- Mixing method (conditioning)
- Dewatering technology
- Process engineering for sludge and wastewater treatment

### How and where does the control take place?

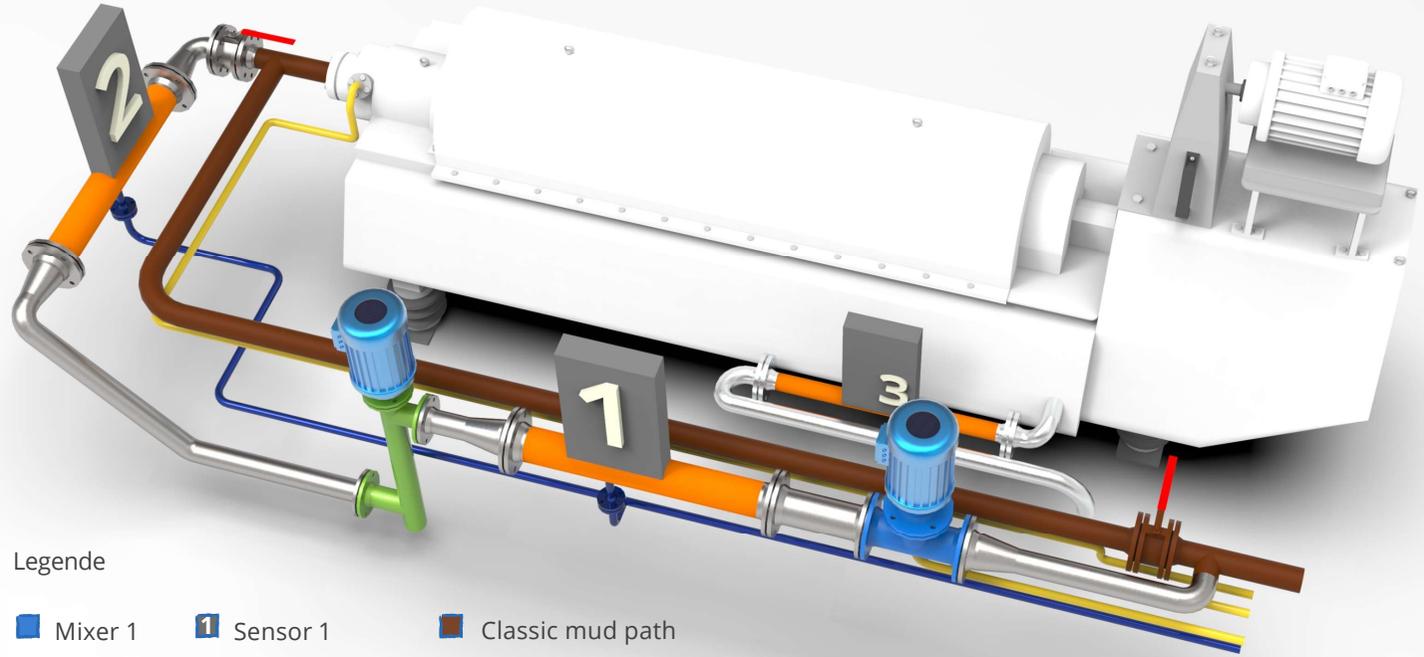
The evaluations by the algorithm take place in real time so that the plant can react to changes in sludge properties during the dewatering process. And it does so automatically. If the intelligent algorithm detects changes in flake properties via the sensors, the modules of the system adjust the dosing of the flocculant and the speed of the mixers. With the mixer-sensor unit from awama is different: To efficiently control the use of the polymers, the system is added **before** the dewatering unit.

Depending on requirements, AMF technology can be integrated on one or more dewatering units. Various points in the dewatering or thickening processes can be considered. The system is also flexible in terms of automation: we can automate your processes partially or completely. The location and number of dosing points as well as the degree of integration into the existing plant technology can vary depending on the constellation and degree of automation.

### When can the technology be used?

What is the minimum size for AMF? How large must the processing capacity be? Can the system be simplified?

Please contact us to answer your questions!  
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Legende

- |          |                  |                      |
|----------|------------------|----------------------|
| Mixer 1  | Sensor 1         | Classic mud path     |
| Mixer 2  | Sensor 2         | Flocculant (polymer) |
| Cuvettes | centrate sensor* | Operating water      |

AMF scheme awama.flocculation

## Advantages AMF

- Regardless of the application: Complete automation of thickening or dewatering
- Regardless of the wastewater composition or sludge properties: Optimal or constant flocculation properties for dewatering, flotation or sedimentation
- Regardless of the operating condition: Reduction of variations, avoid incorrect or overdosing and lowering operating costs
- Regardless of the flocculant: Saving of operating resources (polymers and water), increase of the dry residue in the sludge dewatering
- Independent of the dewatering unit: Cost- or demand-orientated use of flocculants (polymers)



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 \* in development (schematic)