

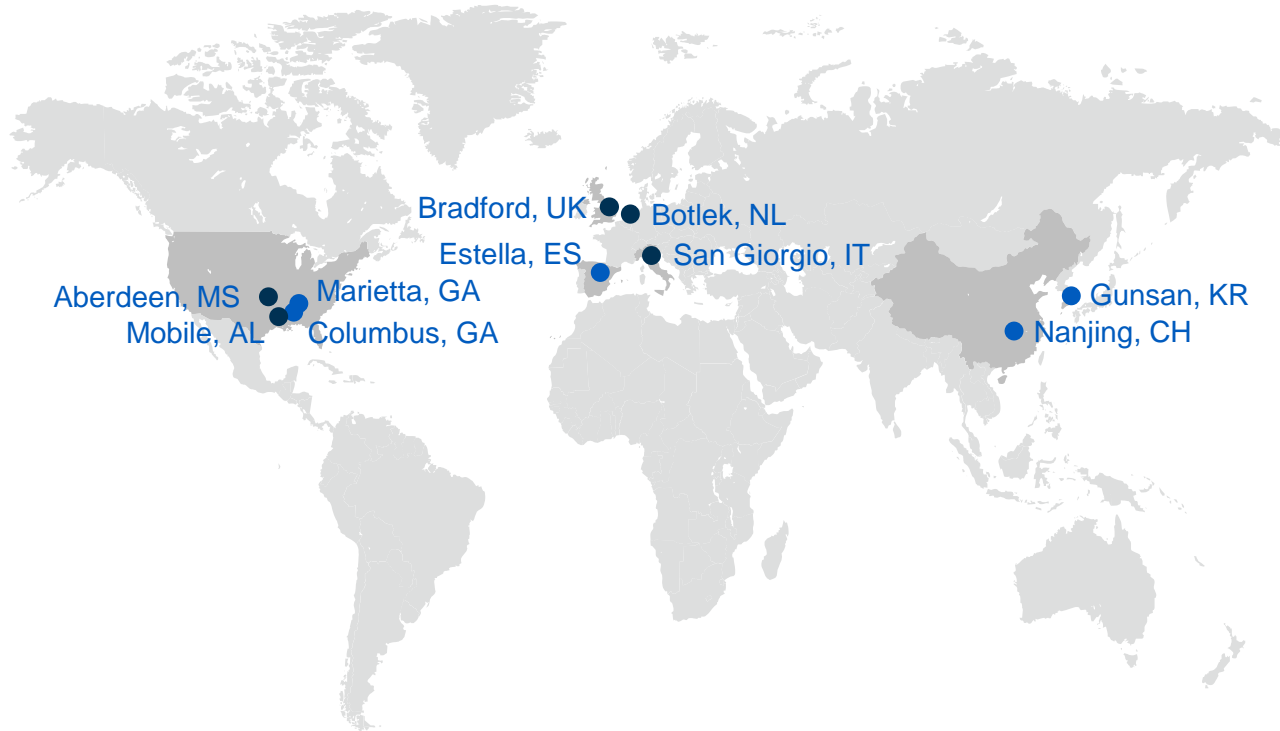


**Next generation
high-performance cationic
dewatering flocculants**

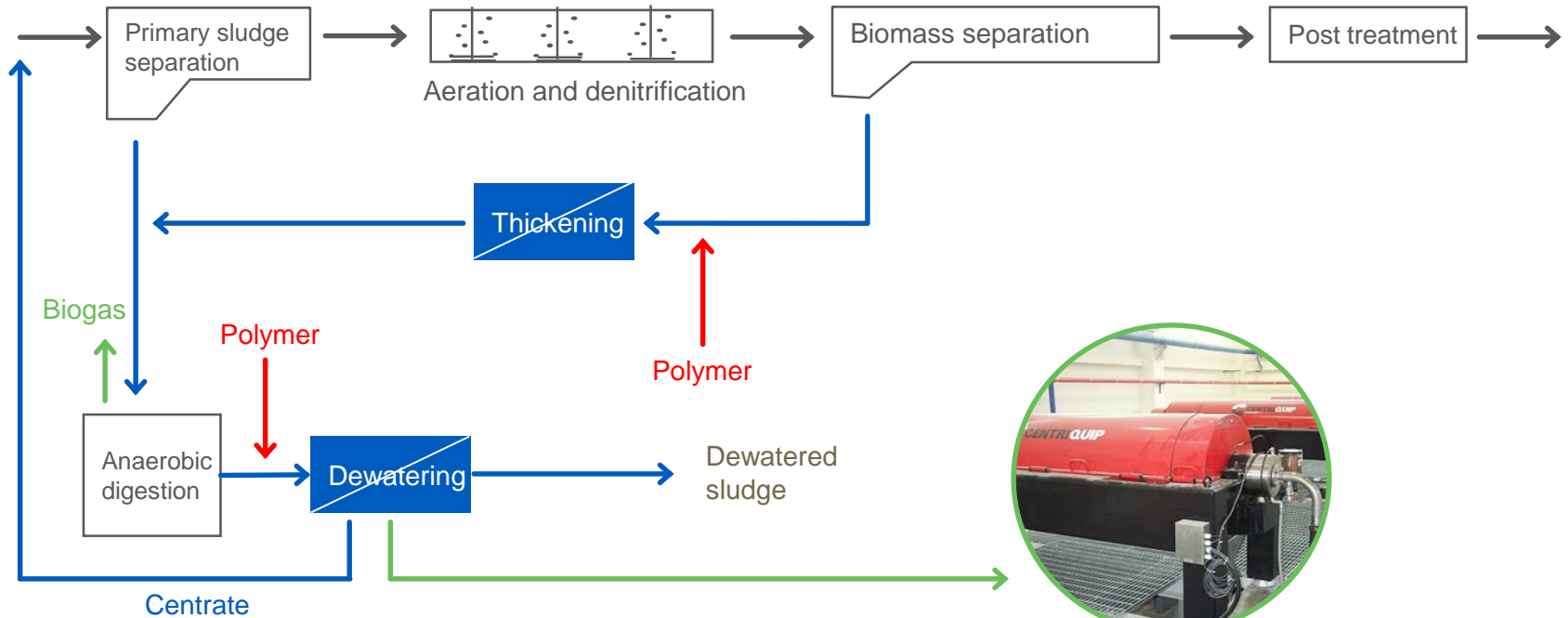
Kemira Superfloc® XD series

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Kemira flocculant global manufacturing footprint



Sludge thickening / dewatering at WWTPs



Sludge dewatering needs

Optimized OPEX for the sludge dewatering process

- Achieved through polymer / other reactive dosage reduction in kg/Ton Dry Solids
- Achieved through unit cost reduction in €/kg product
- Achieved through a combination of above criteria

Lower cost for transportation and sludge disposal

- Higher dry solids % in dewatered sludge
- Cost efficient sludge disposal route (landfill is cheaper than incineration, if legally authorized)

Better centrate quality

- Less suspended solids and COD going back to the process
- Overall improved process stability



New Superfloc XD series product line



Product	MW	Cationic Charge	Target Sludge Dewatering Application
Superfloc XD-5200	Very High	Medium - High	Centrifuge
Superfloc XD-5300	Very High	Medium - High	Centrifuge
Superfloc XD-5400	Very High	High	Centrifuge
Superfloc XD-5500	Very High	High	Centrifuge
Superfloc XD-7400	High	High	Centrifuge, Belt Press, Filter Press
Superfloc XD-7600	High	Very High	Centrifuge, Belt Press, Filter Press

Full scale industrial trials with Superfloc XD series

Case study 1

Superfloc XD-7600

Plant data:

- 410 000 Population Equivalent
- 109 000 m³/day
- 10 000 ton sludge dry matter
- Digested sludge
- 2 Guinard D7LL centrifuges
- Flowrate \approx 30 to 35 m³/hr
- DS feed \approx 4 to 4,5 %
- Polymer make-up unit: Batch system
- Date of testing: August, 2016



Municipal waste water treatment plant in UK

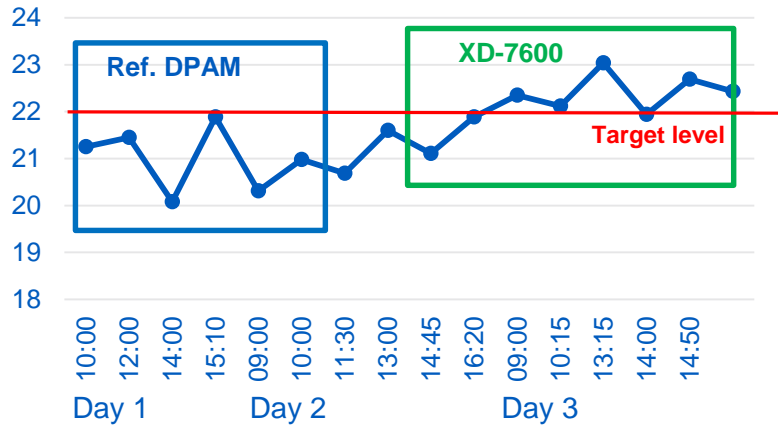


Case Study 1 / Superfloc XD-7600

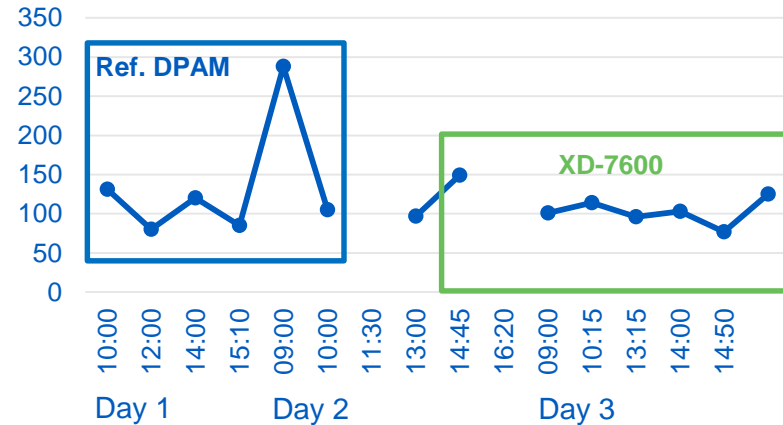
Plant targets:

- Dry Solids: > 22,0%
- Suspended solids in centrate: < 1000 mg/l

Cake dry solids (%)



Suspended solids centrate (mg/l)



Polymer consumption with both polymers: 7-8 kg / tds

Results

Case 1

- Dry solids with reference polymer below target of 22%
- Dry solids with Superfloc XD-7600 above target of 22%
- Polymer consumption of both polymers 7-8 kg / tds
- Improved centrate quality with Superfloc XD-7600 versus reference polymer

Case study 2

Superfloc XD-7600

Plant data:

- 100 000 Population Equivalent
- 45 000 m³/day
- 1 300 ton sludge dry matter
- Digested sludge
- Alfa Laval centrifuge
- Flowrate \approx 10 m³/hr
- DS feed \approx 2 %
- Polymer make-up unit: Batch system
- Date of testing: week 1-21, 2017

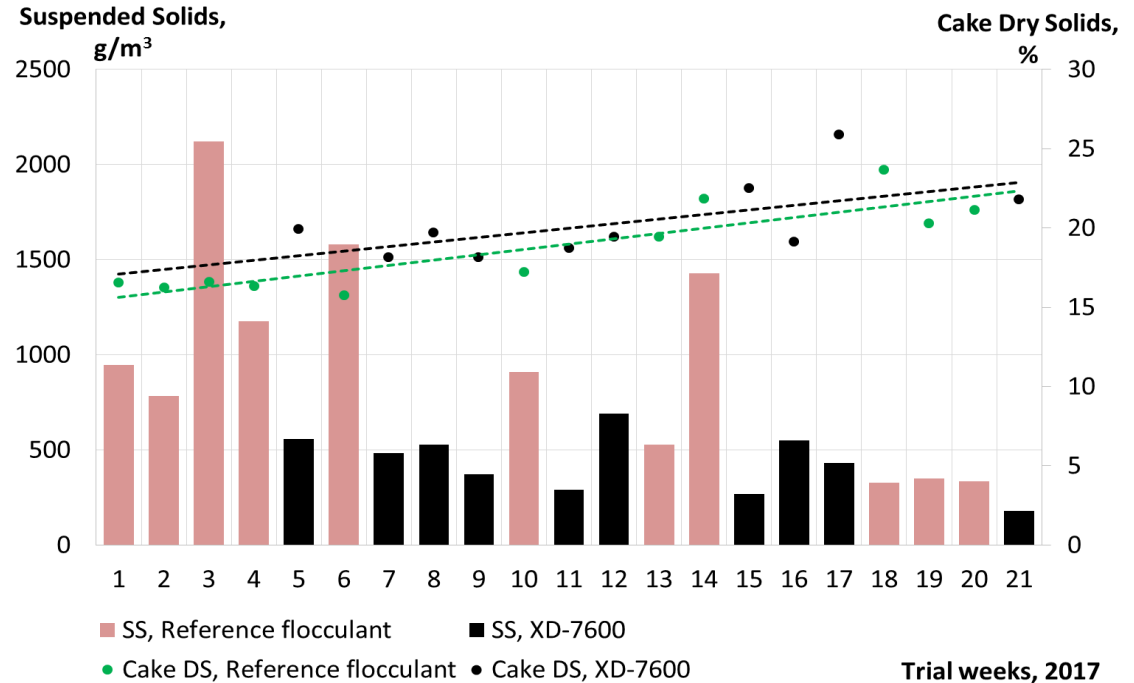


Municipal Waste Water Treatment plant
in Sweden

Case study 2 / Superfloc XD-7600

Plant targets:

- Improve dry solids from 22-23% to 23-25%
- Improve centrate quality to below 300 mg/l



Results

Case 2

- Dry solids with Superfloc XD-7600 is slightly higher than dry solids with reference polymer
- Better centrate quality with Superfloc XD-7600 versus reference polymer
- Both targets on improved centrate quality and higher dry solids are achieved

Case study 3

Superfloc XD-5300

Plant data:

- 1 000 000 Population Equivalent
- 360 000 m³/day
- > 10 000 ton sludge dry matter
- Digested sludge mixed with primary sludge ratio 1:1
- Flowrate \approx 55 m³/hr
- DS feed \approx 1,2 to 2,5 %
- Polymer make-up unit: Batch system
- Date of testing: September, 2017

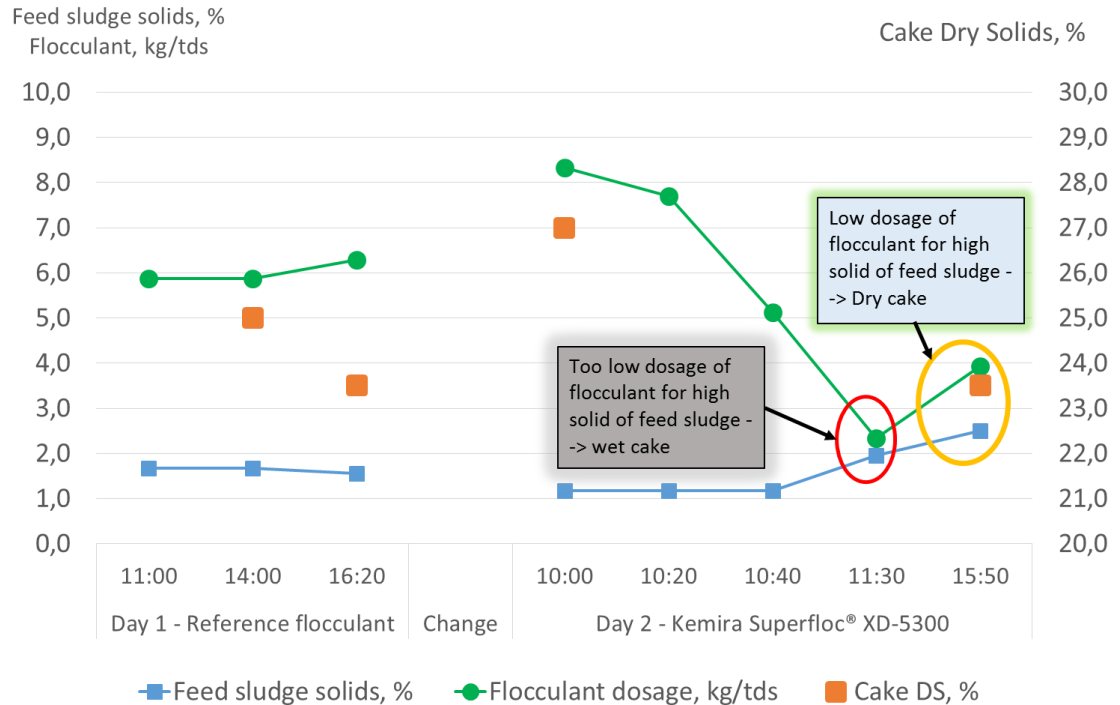


Municipal Waste Water Treatment plant in
South East Asia

Case Study 3 / Superfloc XD-5300

Plant targets:

- Dry Solids as high as possible with high variations in feed sludge concentration
- Lower dosage of flocculant by at least 10% without compromising sludge dry solids and centrate quality



Results

Case 3

- Same cake dry solids 23.5% was achieved with Superfloc XD-5300 versus reference polymer with 20% less consumption (5-6 kg/tds)
- Cake dry solids of 27% was achieved with Superfloc XD-5300 versus reference polymer with similar consumption (7-8 kg/tds)

Conclusion

- 1 Kemira Superfloc® XD-7600 significantly improves cake solids and filtrate quality compared to conventional cationic flocculants and at similar dosage levels.
- 2 In full-scale trials XD-series flocculants have improved the filtrate quality and the cake dry solids 2-3% compared to conventional cationic polymers
- 3 In full-scale trials XD-series flocculants can give similar cake solids than with reference product by using even 20% lower dosage levels

Where water
meets chemistry™

kemira

