

Pulp and Paper

Dedicated water, wastewater and sludge treatment expertise for the Pulp and Paper industry



Concrete answers to your needs

As preferred partner for the Pulp and Paper Industry, Veolia Water draws on its experience as designer, supplier, installer, builder and operator, to respond to your industrial water needs. Our comprehensive range of technologies and services enables fulfilment of the most demanding reliability and quality requirements. We offer Best Available Techniques (BAT) at best price.

More than
1,000
Pulp and Paper
Industry clients
have
entrusted in
Veolia Water
for the
treatment of
their water and
wastewater.



> YOUR EXPECTATIONS

1. Reliability of production

Water is a key component of your business activity and you require the most reliable supply and a quality adapted specifically to your needs.

2. Reduced water management costs

With markets driving competitiveness, you need increasing savings on the cost of water.

3. Protection of the environment

Preserving natural resources and limiting environmental impacts are essential for the pulp and paper industry. Consequently you seek the best solutions to achieve sustainable development.

> OUR SOLUTIONS

1. Expertise and experience permitting the identification of optimal solutions and the realisation of economies of scale:

- . Reduction in water cycle costs
- . Optimisation of ratio of water consumption (m³) to production of pulp and paper (tonnes)
- . Recycling of water and fibres according to a technical and economic optimum

2. Implementation of innovative, reliable and proven solutions

- . Use of the FMECA (Failure Mode, Effects and Critical Analysis) and HAZOP (Hazard and Operability) analysis methods
- . Management through key performance indicators
- . Reliability of the pre-treatment water supply
- . Guarantee of effluent quality
- . Provision of a proactive technology survey through a dedicated R&D organisation

3. Quality control to exceptional standards

- . Guarantee of continuous improvement in environmental management and compliance with regulations
- . Compliance to ISO 9000, ISO 14000, ISO 18000, EMAS and EC directive 96/61.



Industrial water, wastewater, sludge water, sour

Design and Construction

- . Water engineering (boreholes, networks, equipment)
- . Upgrade of facilities
- . Design and construction of treatment facilities

Equipment

- . Demineralisation
- . Reverse osmosis
- . Black liquor concentration by evaporation
- . Activated sludge treatment
- . Anaerobic digestion
- . Dissolved Air Flotation (DAF)
- . Screw press
- . Belt press
- . Gravity tables

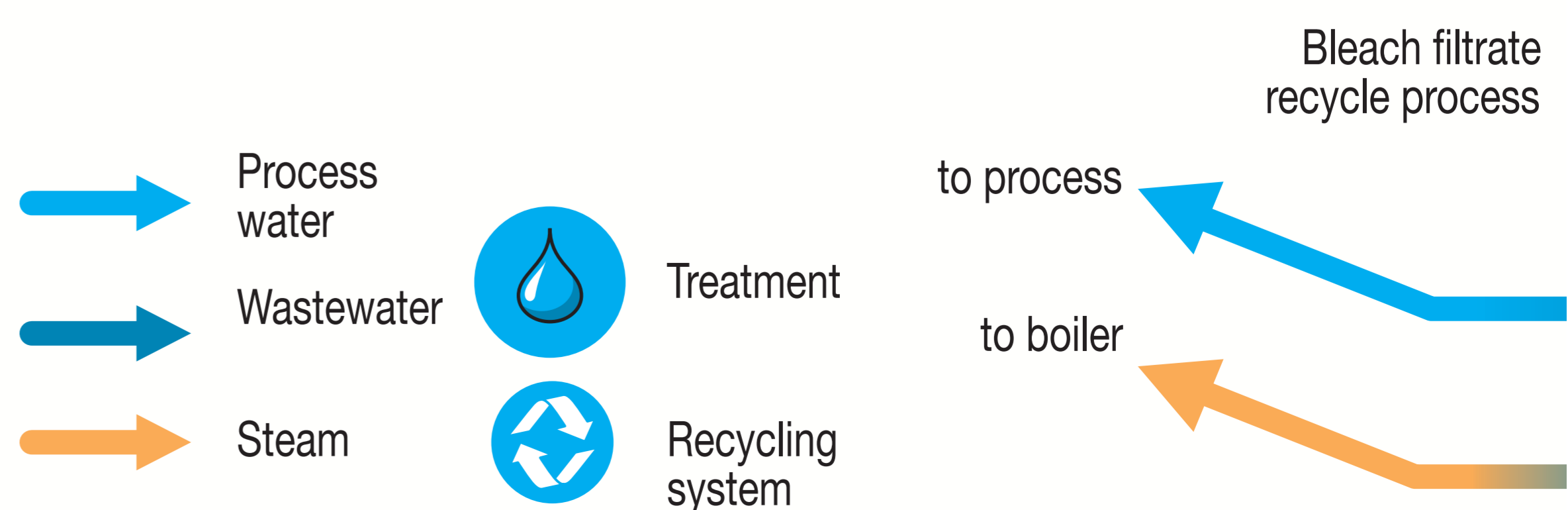
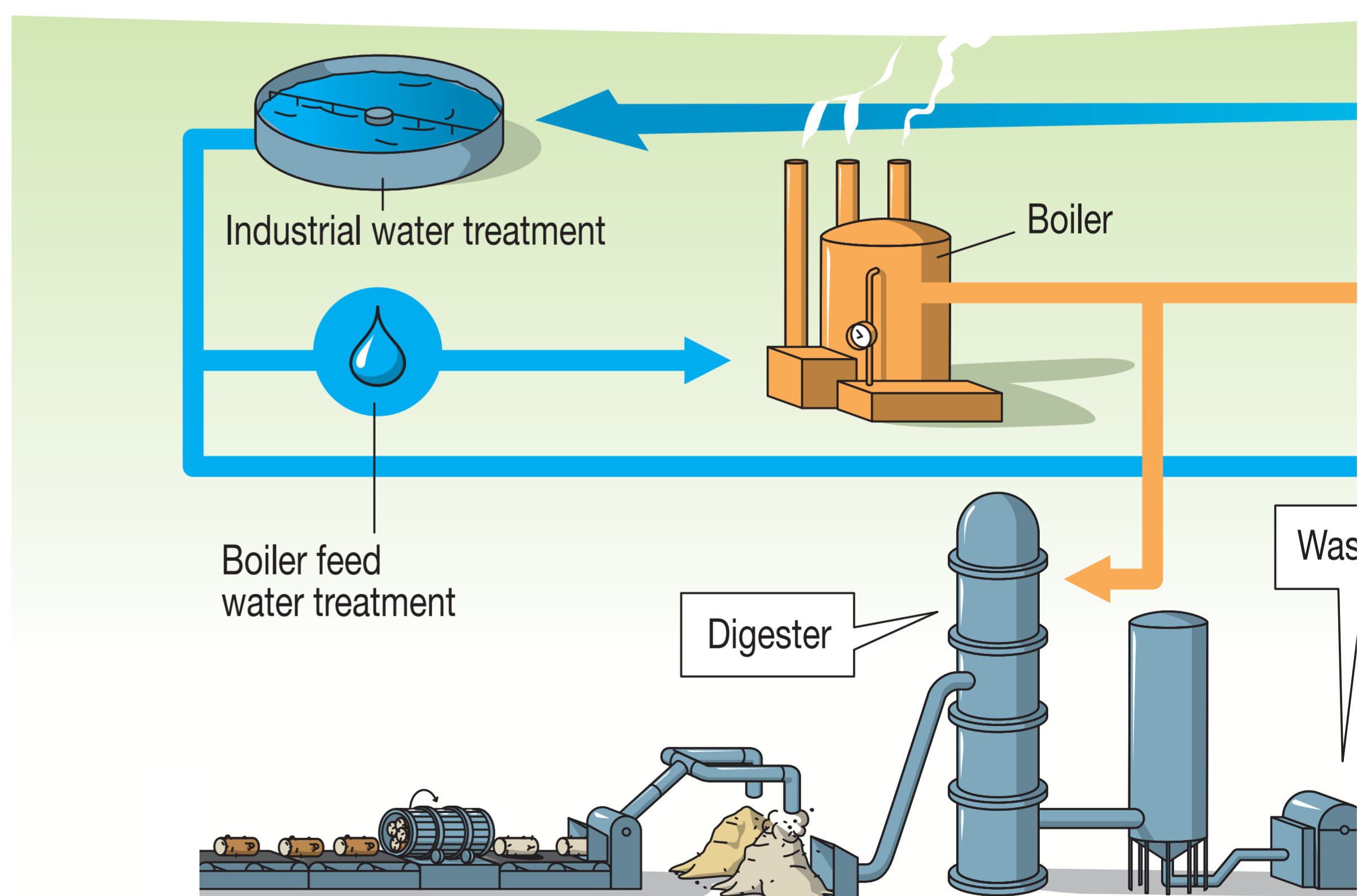
Outsourcing services

- . Performance guarantees
- . Reduction in water cycle costs
- . Commitment to quality of service
- . Continuous improvement through long-term partnership



> Water pre-treatment: innovate and simplify

- . Industrial water: boreholes, filtration, decantation, settling, flocculation (Actiflo®, a ballasted flocculation process followed by lamellar settling, particularly efficient for high volumes), activated carbon, chlorination, potabilisation
- . Boiler feed water: carbonate removal, softening, reverse osmosis, demineralisation, mobile installations



and recycling:

Value of added value



> Wastewater treatment: optimise and secure

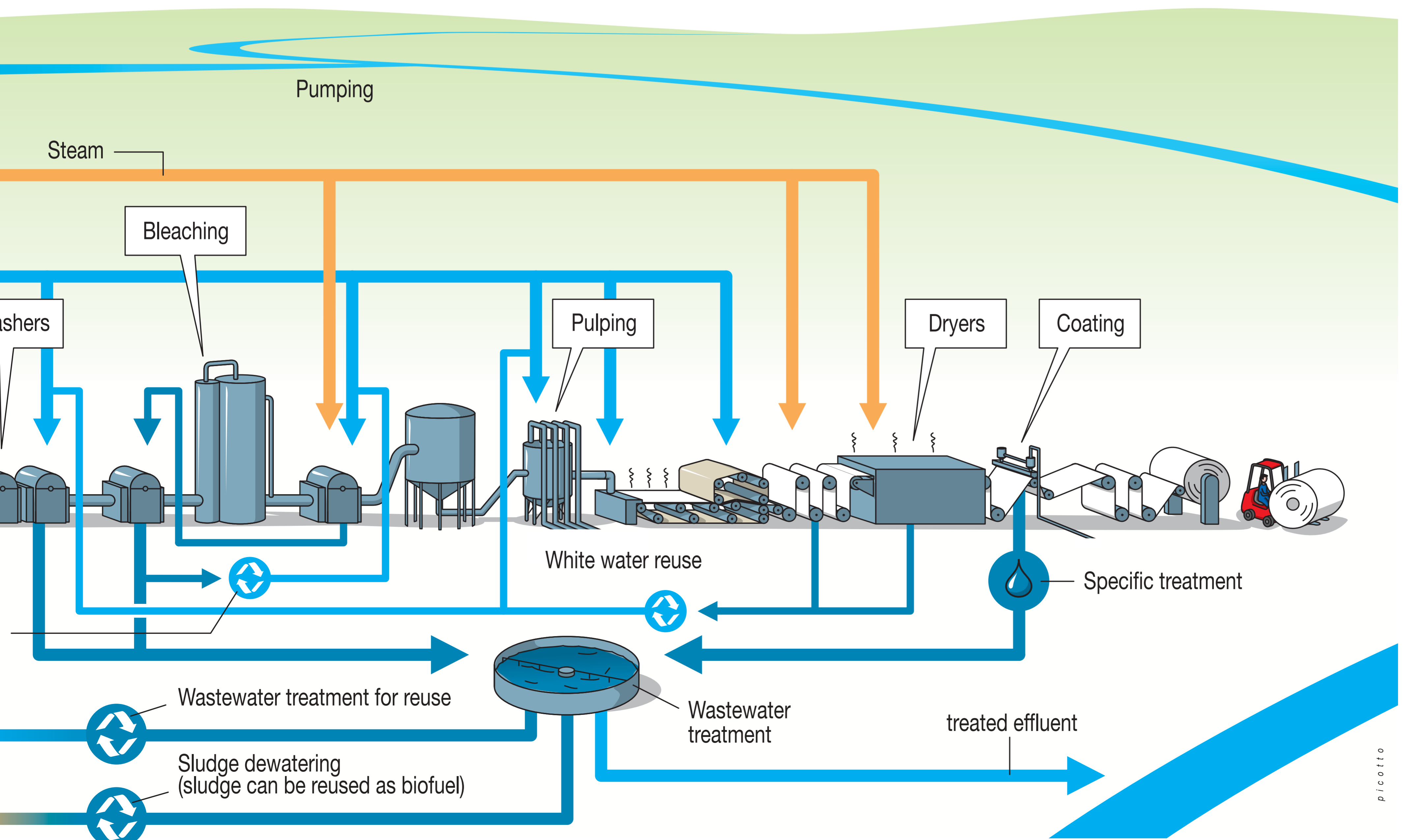
- . Primary treatment
- . Anaerobic biological treatment
- . Aerobic biological treatment (MBP: Minimum Biosludge Production)
- . Membrane processes
- . Tertiary treatment

> Sludge treatment: Reduce, recover and recycle

- . Thickening
- . Digestion
- . Dewatering
- . Incineration
- . Land application

> Recycling: protect the environment and reduce costs

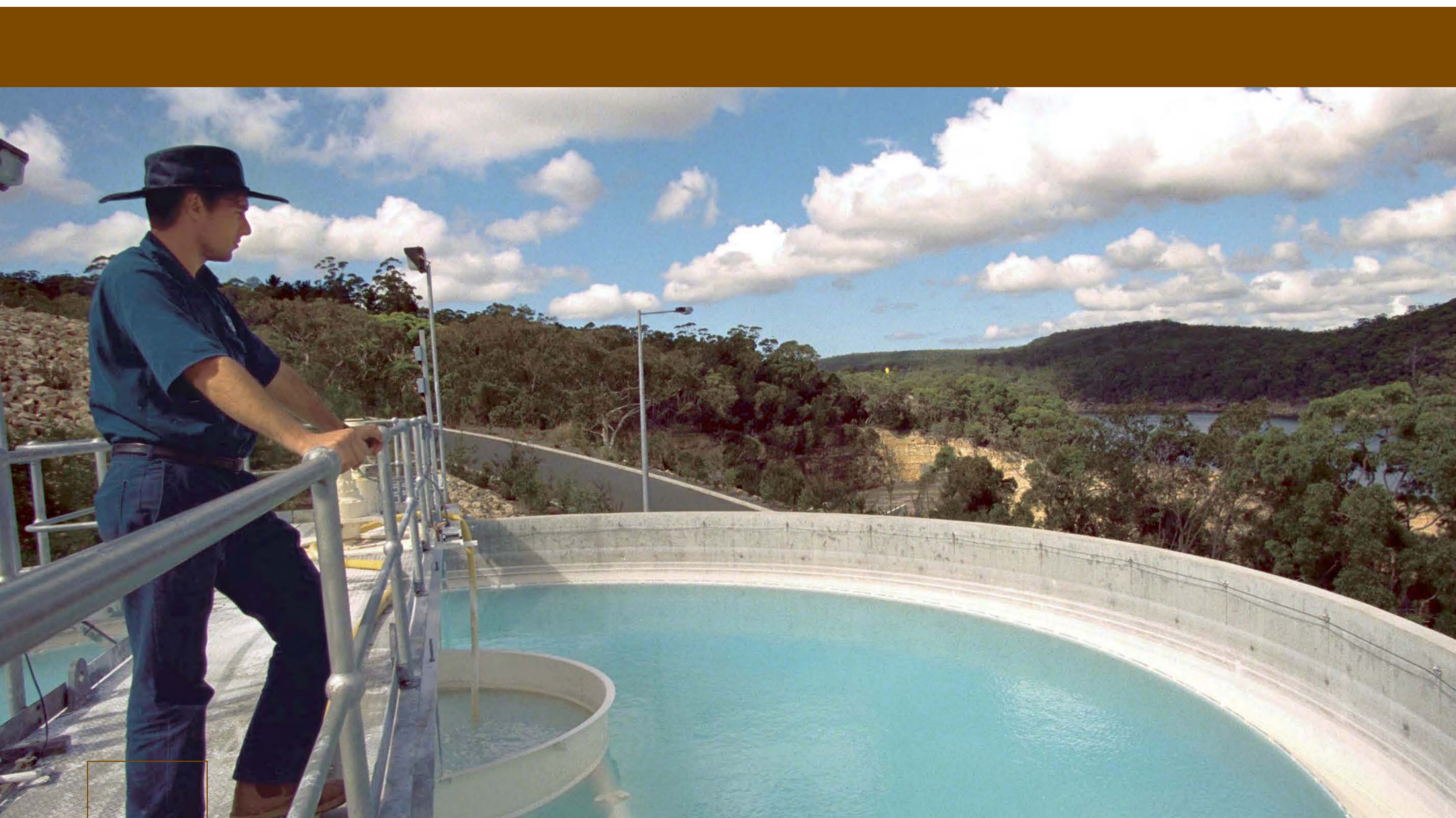
- . White water recycling
- . Fibre recycling
- . Bleaching wastewater recycling
- . Sludge recycling. The submerged membrane process Biosep® permits recycling of both sludge and wastewater
- . Wastewater recycling
- . Condensate recovery
- . Treatment of black liquors



Outsourcing,

a competitive advantage and continuous improvement

Many Pulp and Paper Industry clients have already entrusted in Veolia Water for the management of part or all of their water and wastewater facilities.



Release of resources enabling a company to concentrate on its paper making processes.

Outsourcing allows you to: procure efficient water treatment facilities that meet all specifications and environmental standards, reduce and control operating costs and transfer the management of these facilities to release resources. It reinforces your core-business focus.

The choice of which services to outsource corresponds to requirements which vary according to a company's strategy.

Whatever the choice, Veolia Water implements its competencies in design, construction, operation and maintenance and commits daily to each Pulp and Paper Industry client.



► BRINGS FLEXIBILITY TO YOUR INDUSTRIAL WATER

Genesys is an innovative approach to industrial water supply that guarantees optimal quality and quantity:

- . Rapid provision of a modular industrial water production unit
- . Supply of water by the cubic metre, at a guaranteed quality and quantity according to your needs
- . 24-hour service via remote monitoring and on-call staff
- . No capital investment

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