Chemical Reuse, Recovery and Recycling in Textile Factories

Promotion of Sustainability in the Textile and Garment Industry in Asia-FABRIC

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

FABRIC Asia

6. Evaluation and Economic Assessment of Chemical Streams (Part 02)

11.15– 12:00

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on behalf of GIZ FABRICS and Espire Consult

Agenda

Case Study on Caustic Recovery Plant
(Part 02 Operational Cost of recovery)

Economics

Investment costs mainly depend on the plant size and purification technique and typically vary from EUR 200 000 to EUR 800 000 euros. The payback time depends on the plant size and operating time per day. Usually, if mercerisation is practised carried out around 400 hours per year full-time, the payback period is less than 1 year. In companies where non-recovered caustic soda lye has to be neutralised with acid, the payback time is less than 6 months. Thus, from the economic point of view, caustic soda recovery may be very attractive [UBA, 2001].

Plant, maintenance costs for curved screens and microfiltration are around EUR 80/week.

Investment costs for recovery of 4 000 kg/h of lye are around EUR 330 000 and for 5 700 kg/h around EUR 350 000.

Economics

Caustic soda recovery level associated with the best available techniques
The environmental performance level related to caustic soda recovery refers to a yearly average calculated using the following equation:

$$\text{caustic soda recovery} = \frac{\text{amount of caustic soda recovered}}{\text{amount of caustic soda before recovery}}$$

where:
amount of caustic soda recovered: the total annual amount of caustic soda recovered from spent mercerisation rinsing water, expressed in kg/year;
amount of caustic soda before recovery: total annual amount of caustic soda in the spent mercerisation rinsing water, expressed in

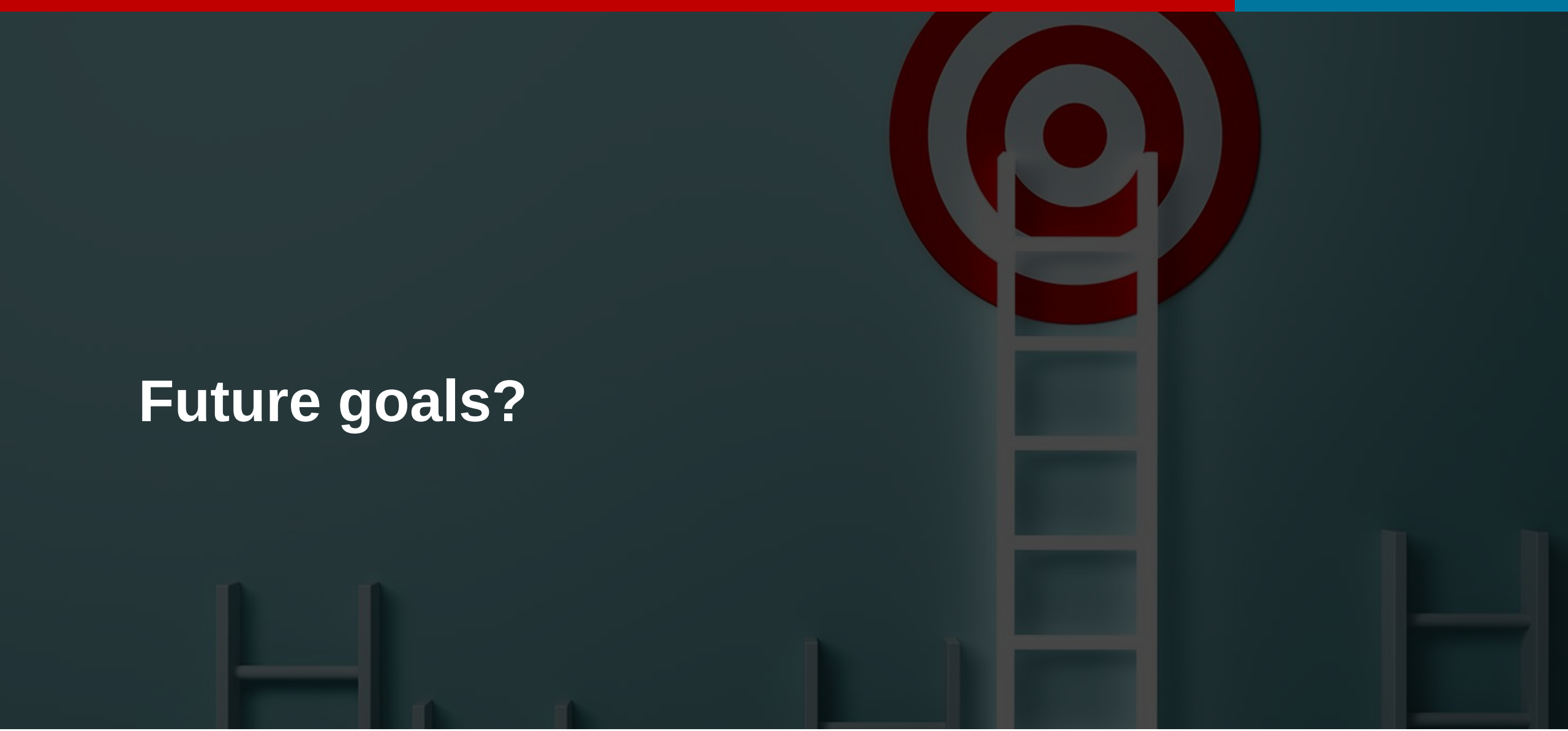
Standard recipes for mercerization and alkali treatment of woven fabric consisting of CO and CO blends

Standard recipe for mercerization of woven fabric consisting of CO and CO blends

Chemicals	(g Telquel/kg textile substrate)	Remarks
NaOH (100 %)	200 - 300	
Wetting agent	0 - 10	A wetting agent is only applied in case of dry-in-wet-mercerisation (raw mercerisation). They consist of short chain anionic compounds such as alkylsulphates
Complexing agent	2	Only for raw mercerisation. The same chemicals are used as for scouring

Standard recipe for alkali treatment of woven fabric consisting of CO and CO blends

Chemicals	(g Telquel/kg textile substrate)	Remarks
KOH (100 %) or NaOH (100%)	200 - 300 60-230	
Wetting agent	5	
Sandoflex A	60 – 80 ml2	The product is a liquid formulation with a concentration of active compounds of 50 %. It consists of sulphuric acid esters, a fatty acid derivate and an alkylsulphonate



Future goals?