ALBINIEnergia

PER UN FUTURO SOSTENIBILE

ENERGY SAVING COMPANY

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PER UN FUTURO SOSTENIBILE

WHO WE ARE

Albini Energia was established in **2011**, from the experience of Albini GROUP (textile industry since 1876).

WHAT WE DO

- Energy Audit that also includes an investment payback analysis
- Consulting services in order to propose (and install) energy saving plants
- Recovery systems design and supply
- Engineering activities (New plants design / turnkey textiles plants; Industrial systems design)

WET PROCESSES IN TEXTILE

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Textile wet processing (of fabric or cones) normally includes:

- pretreatment (or preparation)
- coloration (dyeing or printing)
- finishing.

Textile wet processing is carried out:

- a continuous process
- in batches
- a combination of the two.

WET PROCESSES IN TEXTILE

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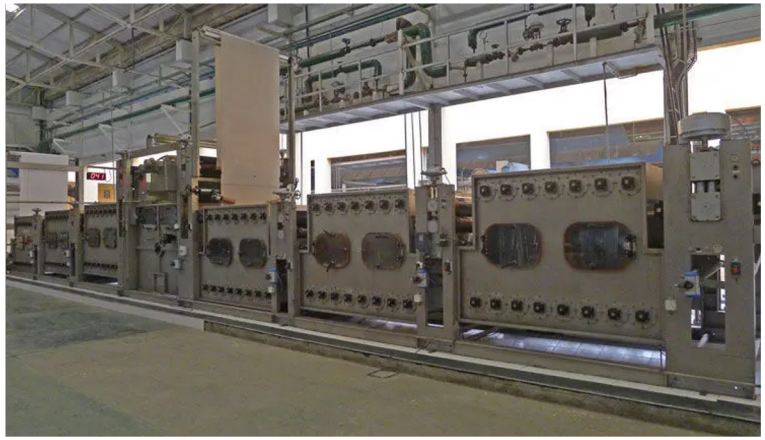

Continuous processing uses a series of vessels, each of which represents one processing step. Fabric is passed from one vessel to the next in the correct sequence for the processes being carried out.

Batch processing

Fabric, chemicals and water are put into a single vessel and heated as necessary. If there are several processes to be carried out on the same batch of fabric, the vessel may have to be emptied and cleaned between processes.

WET PROCESSES IN TEXTILE

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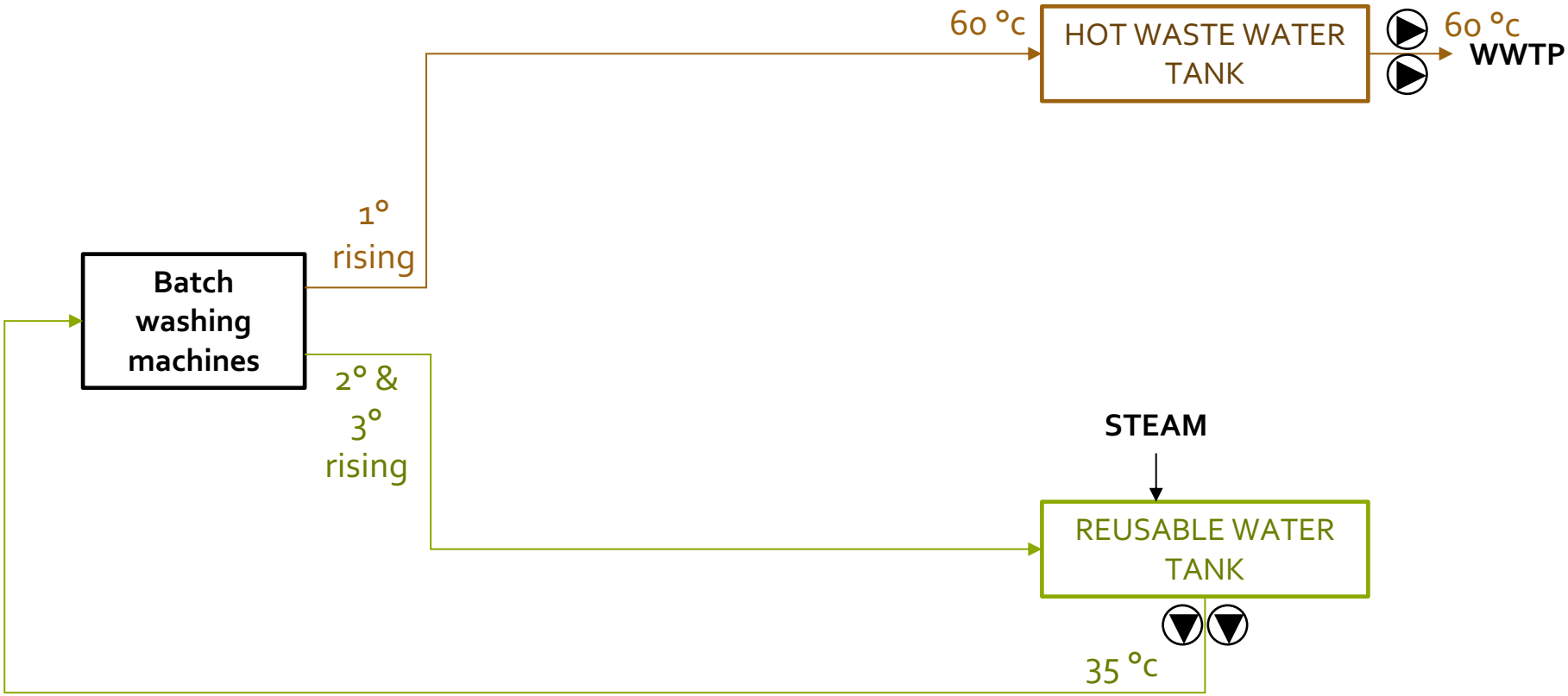
SOME EXAMPLES TO SAVE ENERGY

- HEAT EXCHANGER ON BATCH MACHINES
- HEAT EXCHANGER ON CONTINOUS PROCESS
- CHOOSE THE RIGHT MACHINES (washing and dyeing machines)
- SIZE CORRECTLY THE PIPES OF THE MACHINES

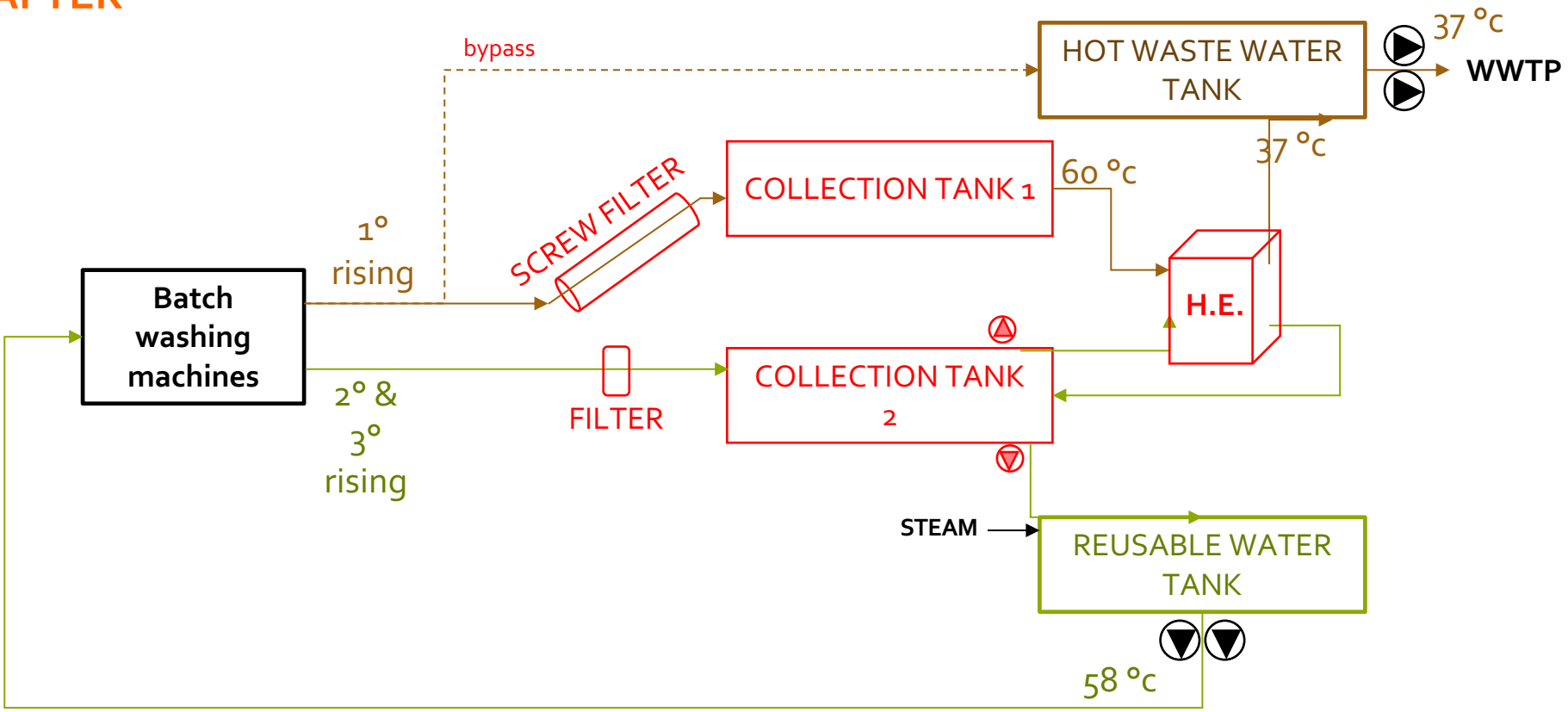
EXAMPLE H.E. ON BATCH MACHINES

BEFORE



EXAMPLE H.E. ON BATCH MACHINES

AFTER



EXAMPLE H.E. ON BATCH MACHINES

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AFTER

SCREW FILTER

ALBINI ENERGIA
HEAT EXCHANGER
ON SKID

SELF-CLEANING HEAT EXCHANGER OUR PATENTS

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- More than 85% heat exchange efficiency
- Removal of any chemical residue from internal pipes
- Automatic self-cleaning system
- Tailor made Client solutions
- For **continuous line machine**s and for **multi-line and batch machines**
- Made of tubes or made of plates

Two video:
Heat Exchanger (H.E.) operation on continuous line
Heat Exchanger (H.E.) patents in the world

EXAMPLE H.E. ON BATCH MACHINES

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ROI CALCULATION

Base of calculation

- Steam cost: 24,87 USD/Mkcal + 3,9 USD/Mkcal boiler electrical consumption = 28,77 USD/MkcaL
- Electrical cost: 0,07 USD per kWh
- Hot waste water temperature: 60°C
- Reusable water average temperature: 35°C
- Hot waste water average flow: 6 cubic meters per hour
- Working hours per year: 4.940 h/year

EXAMPLE H.E. ON BATCH MACHINES

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ROI CALCULATION

Annual thermical saving

(58°C – 35 °C) * 6.000 liters/hour * 4.940 Hours/year = 681,720 Mkcal/year
681,720 Mkcal/year * 28,77 USD/Mkcal = 19.613,00 USD/year

Real saving

Considering the acid costs and the electrical costs related to the extra pumps:
18.500,00 USD

Investment costs: 115.000,00 USD

Pay-back time = 6,2 years

EXAMPLE H.E. ON CONTINUOUS PROCESS

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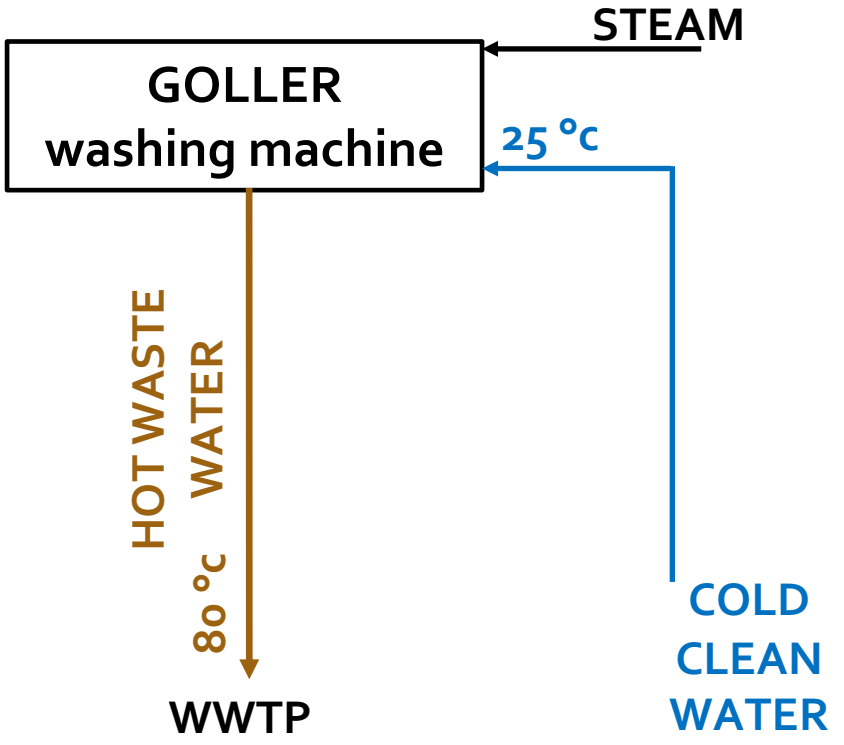
BEFORE



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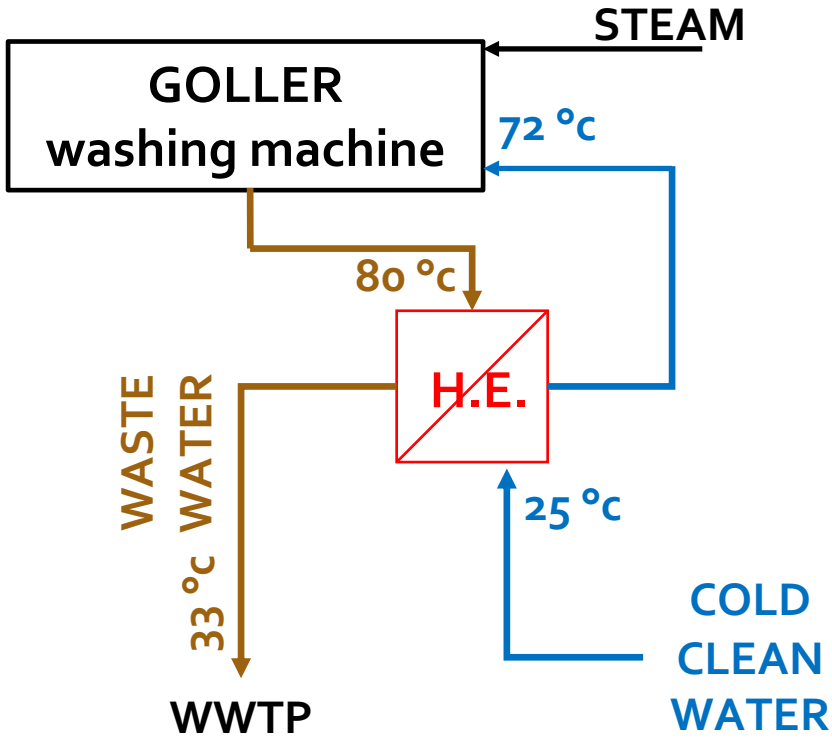

EXAMPLE H.E. ON CONTINUOUS PROCESS

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ROI CALCULATION

Base of calculation

- Steam consumption: 1,2 ton/hour
- Steam cost: 23,76 USD/ton
- Hot waste water temperature: 80°C
- Cold water average temperature: 25°C
- Water average flow: 11 cubic meters per hour
- Working hours per year: 3.160 h/year

EXAMPLE H.E. ON CONTINUOUS PROCESS

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ROI CALCULATION

Annual thermical saving

[(80 – 25) °C x 11.000 liters/hour x 0,86 HE efficiency] / 600 kcal/kg steam =
= 520.300 kcal/hour / 600 kcal/kg steam = 867 kg steam/hour

[(867 kg steam/hour x 3.160 hours/year) / 1.000 kg/ton] x 23,76 USD/ton =
65.000,00 USD/year

Investment costs: 78.500,00 USD

Pay-back time = 1,2 years

CHOOSE THE RIGHT MACHINE

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SOMETIMES CHANGE THE MACHINE IS THE BEST SOLUTION

EXAMPLE – WASHING MACHINES

Actual washing machine (very old)
Brand: BENE'
Water consumption**: 931** liters/kg fabric

New washing machines
Water consumption: **less than 35** liters/kg fabric

Can you imagine the saving in water, steam, WWT?

CHOOSE THE RIGHT MACHINE

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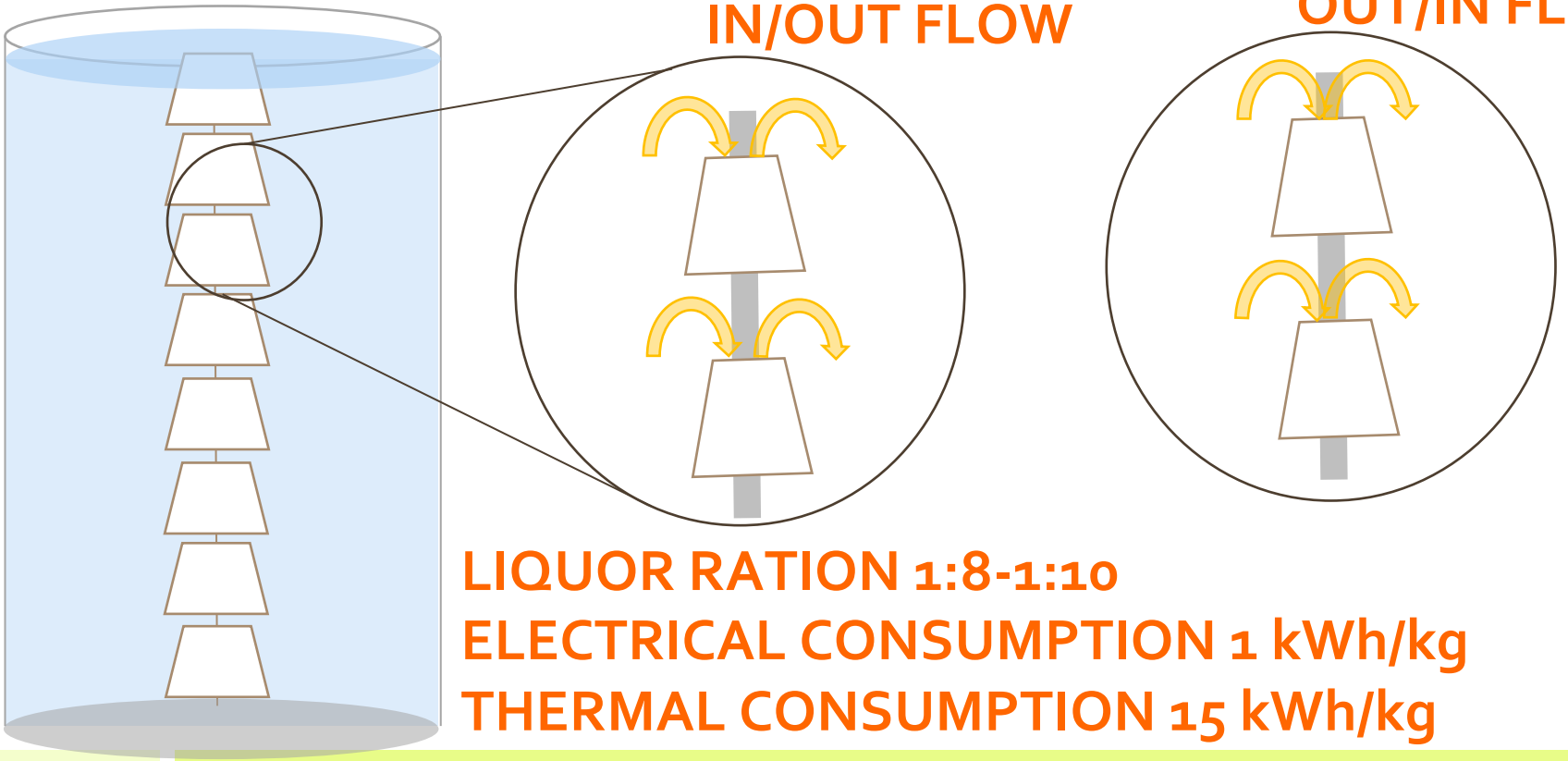
DYEING MACHINES COMMON TECHNOLOGY



LIQUOR RATION 1:8-1:10
ELECTRICAL CONSUMPTION 1 kWh/kg
THERMAL CONSUMPTION 15 kWh/kg

CHOOSE THE RIGHT MACHINE

DYEING MACHINES PULSE WAVE

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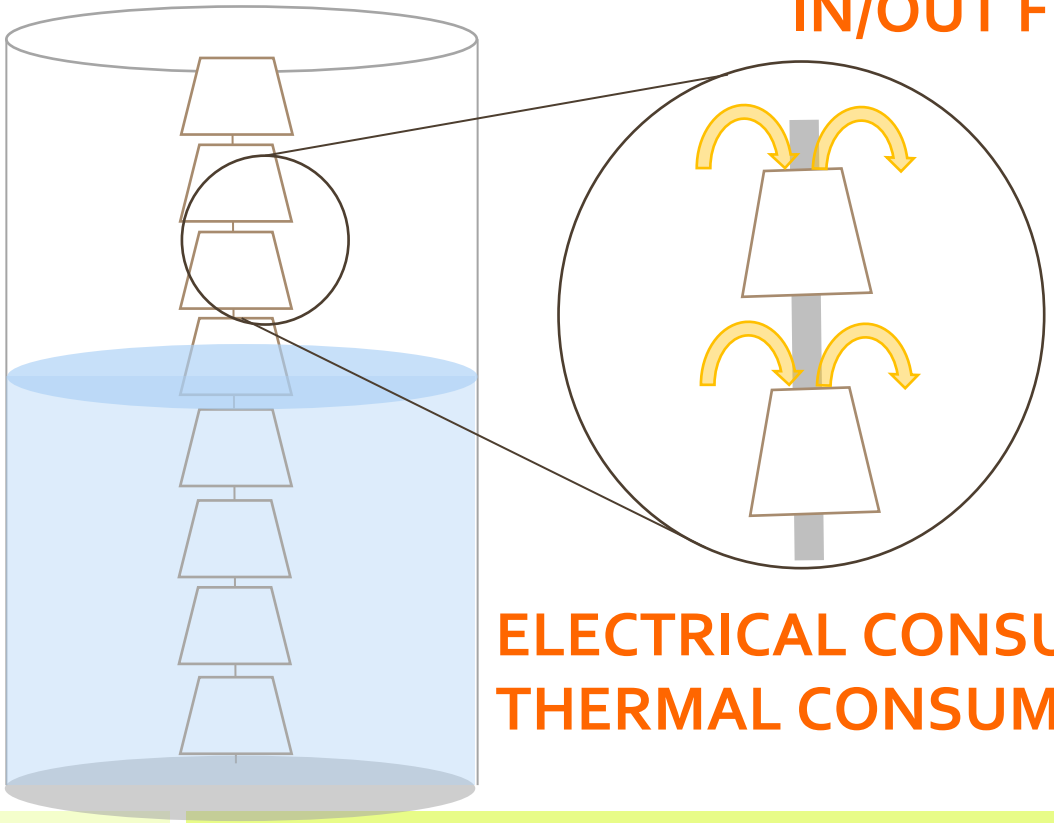

IN/OUT FLOW

LIQUOR RATION 1:5

ELECTRICAL CONSUMPTION 0,7 kWh/kg
THERMAL CONSUMPTION 8-10 kWh/kg

SIZE CORRECTLY THE PIPES

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DYEING HOUSE

If the pipes are too small :

1. *You need more time to fill the machines (more electrical energy consumption)*
2. *You can do less operations*

In a Vietnamese factory we could prove that the wrong pipes cause an increase in costs equal to 29.000,00 USD/year.

The investment to change the pipes is 120.500,00 USD.

Pay-back time = 4,2 years