BIG RIVER STEEL

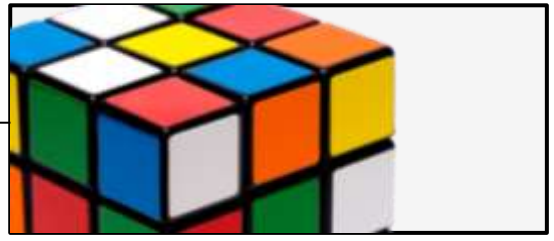
ECO-FRIENDLY WATER TREATMENT PLANT

RUSSULA

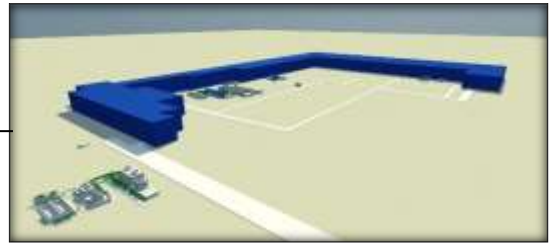
RUSSULA

INTRODUCTION

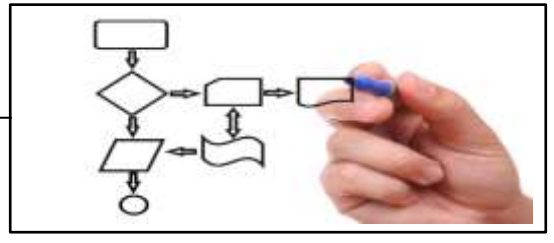
CHALLENGES



LAYOUT



PROCESS TECHNOLOGY

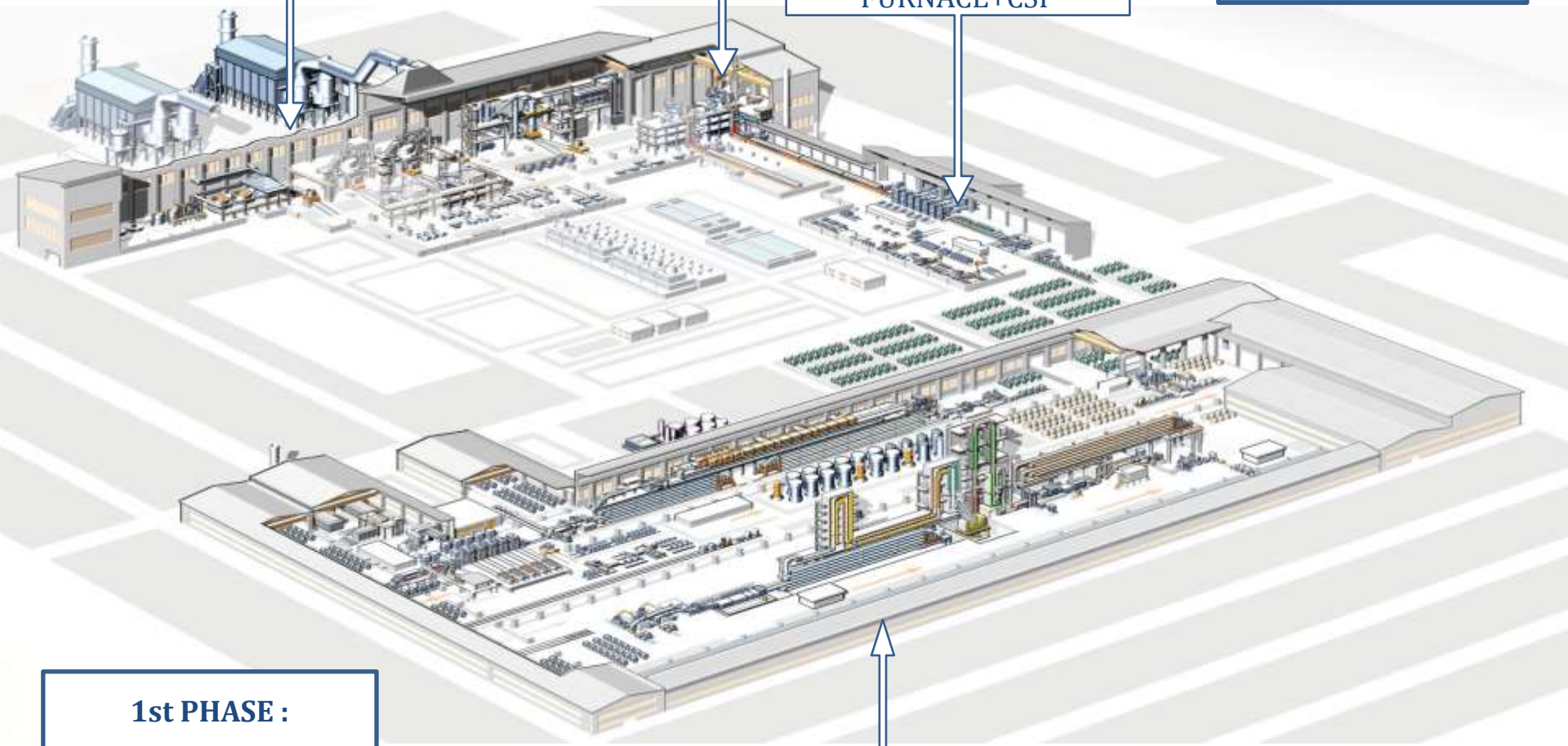


EFFICIENCY

RUSSULA

INTRODUCTION


OSCEOLA
ARKANSAS



1st PHASE :

- 150 Tn EAF
- 150 Tn LF
- 150 Tn RH
- CSP (6 Stands)
- PLS/SPM/CGL/BAF

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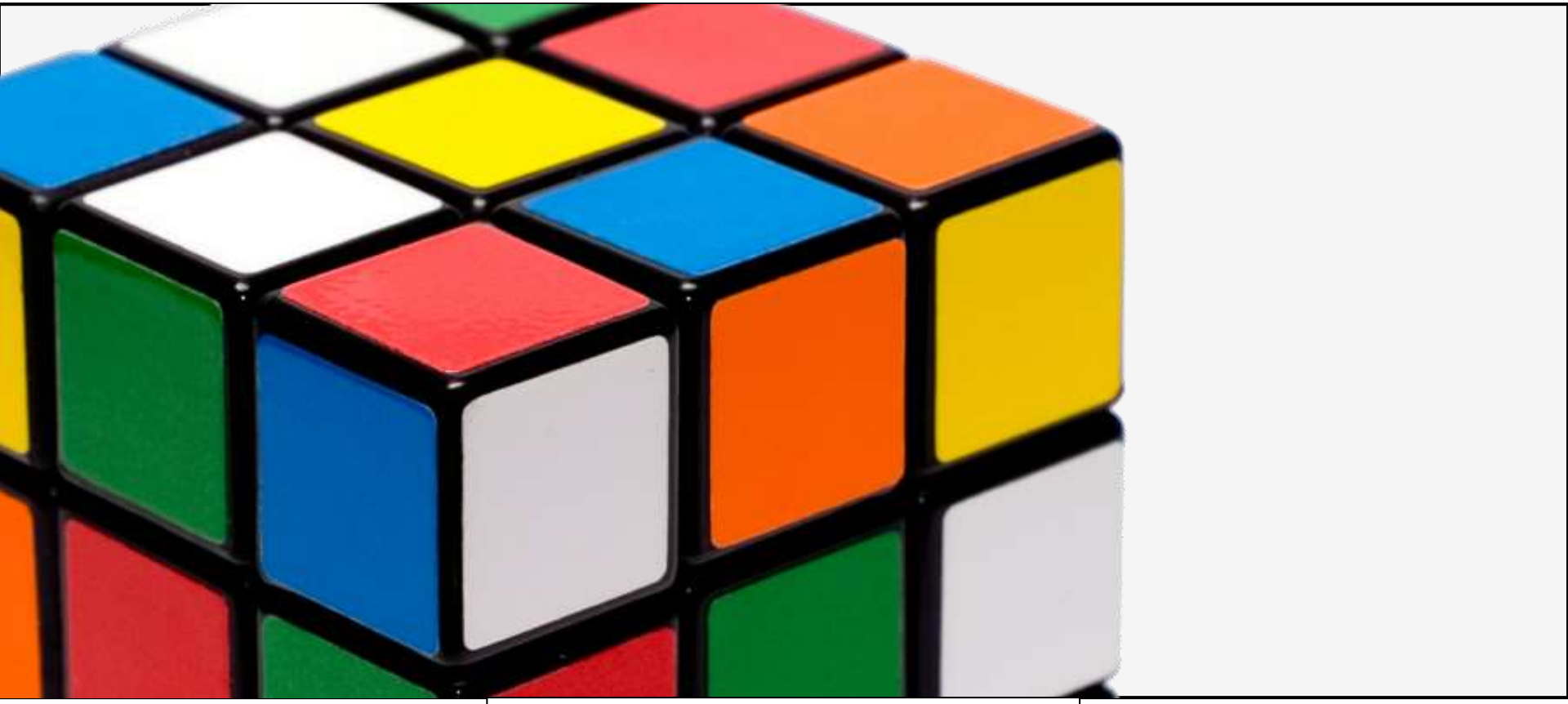


CHALLENGES

DESIGN PREMISES

DO NOT MIX CIRCUITS

COMPLETE IN 14 MONTHS

REDUCE INVESTMENT & OPERATION COST

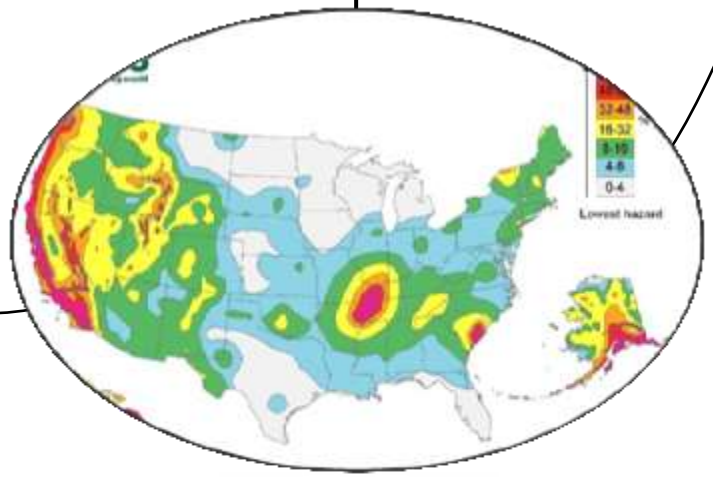
EASY OPERATION AND MAINTENANCE

REDUCE WORKS ONSITE

INDEPENDENT AND EFFICIENT OPERATION

CIVIL DESIGN & EXECUTION

- Proximity of New Madrid, Missouri.
- New Madrid area contains the highest level of seismicity in the central and eastern parts of the United States.

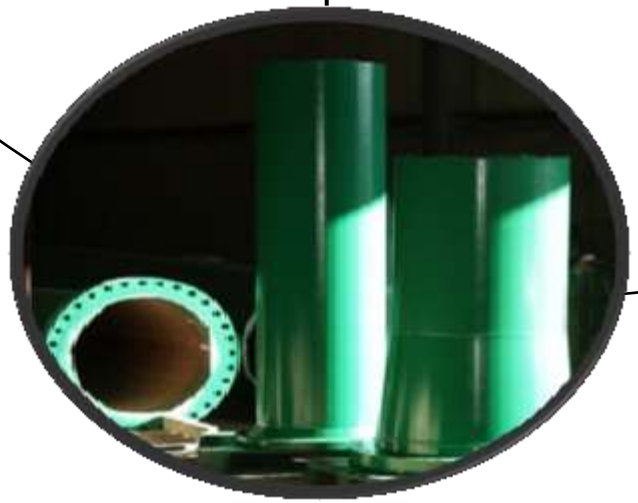


- Very high water level.
- Drain pumps needed and sheet piling must be used.
- Reduce excavations as much as possible.

PIPING DESIGN

- Avoid Corrosion
- Pipes towards buildings ALL buried.
- HDPE pipes

- Tight Project schedule.
- Reduce erection time, waste material and cost.
- PREFABRICATED pipe.

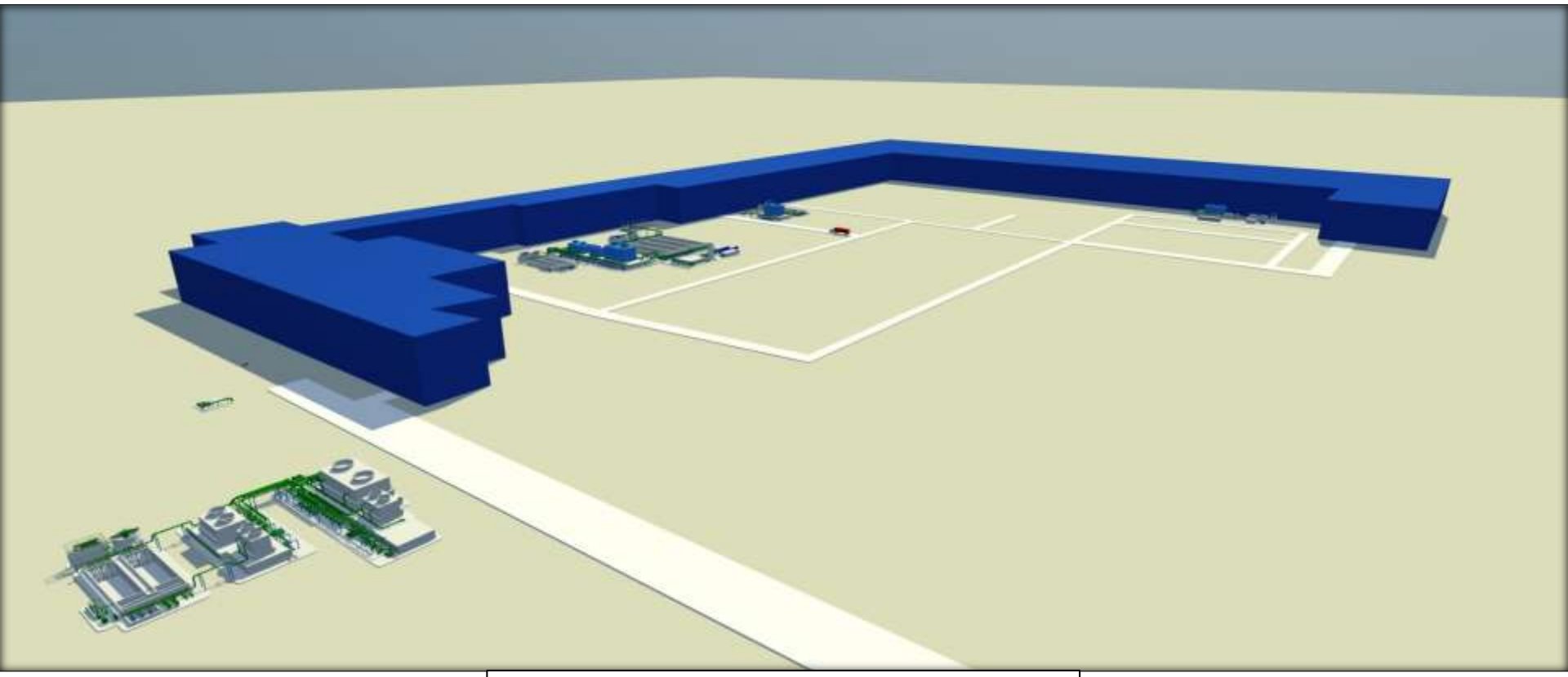


OPERATION & SOFTWARE

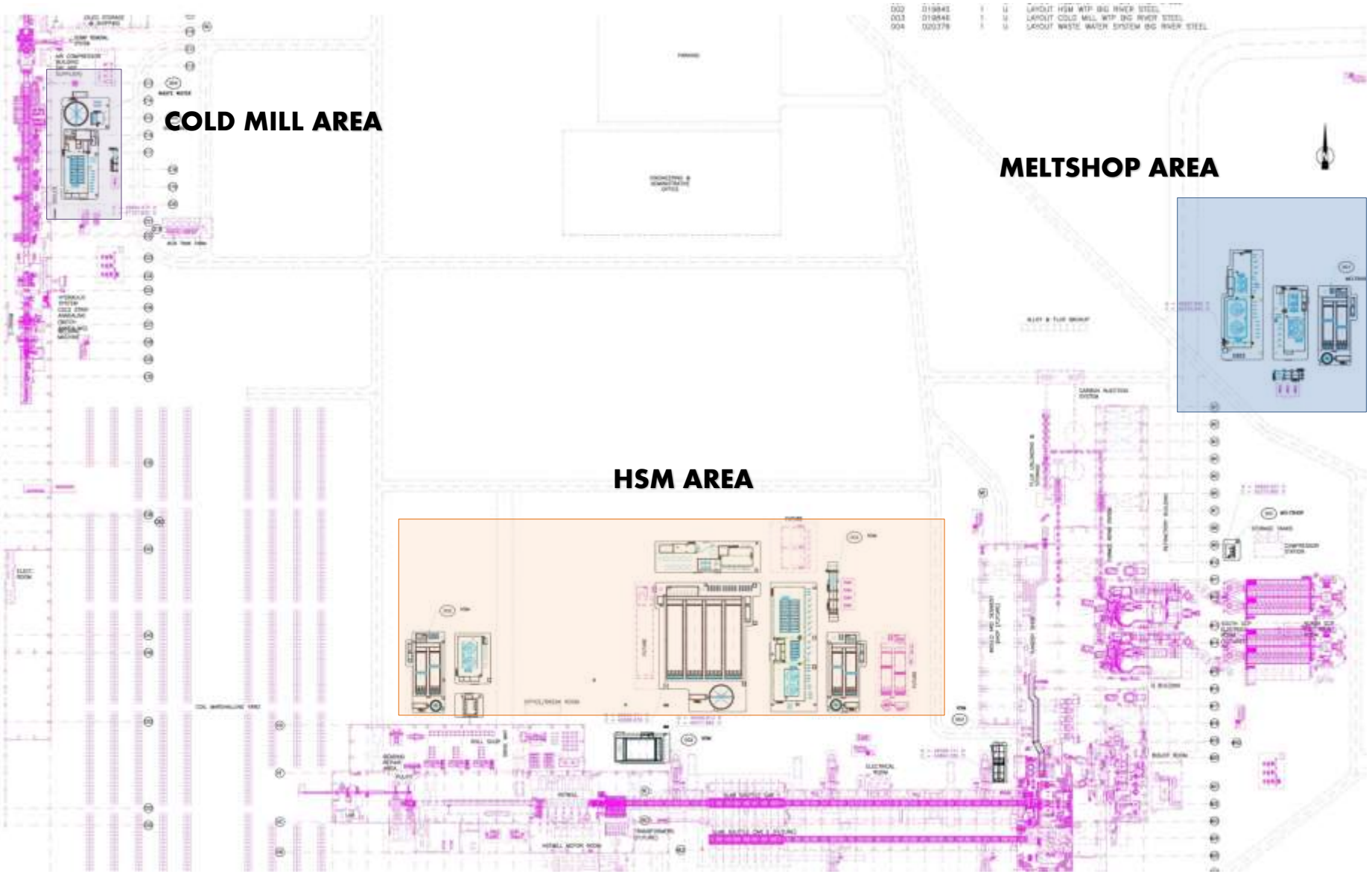
- Fully Automated system
- Easy operation and maintenance.

- Efficiency
- Reduce Operational Cost
- Automation and signals gathering improve operation.

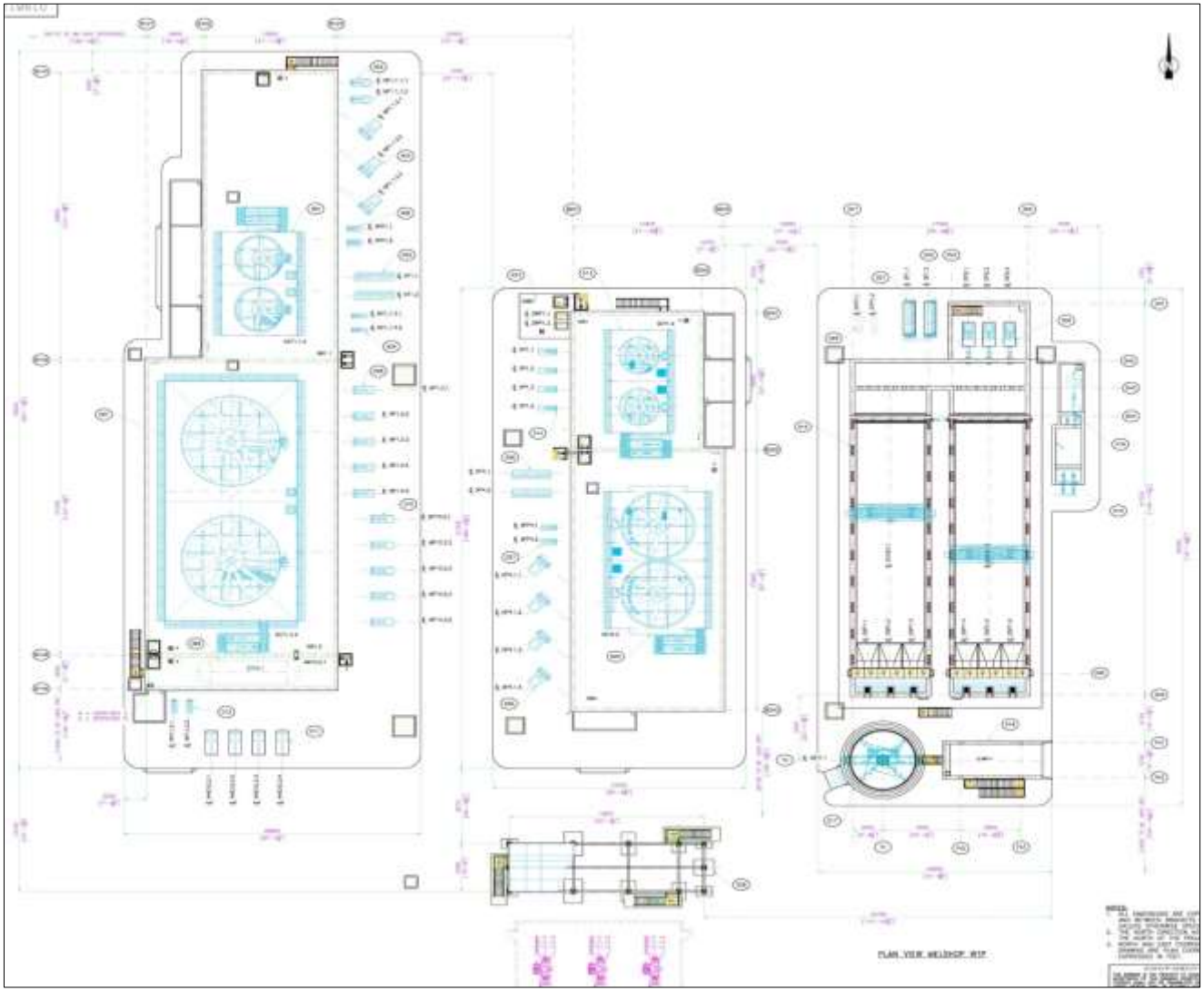
RUSSULA



LAYOUT

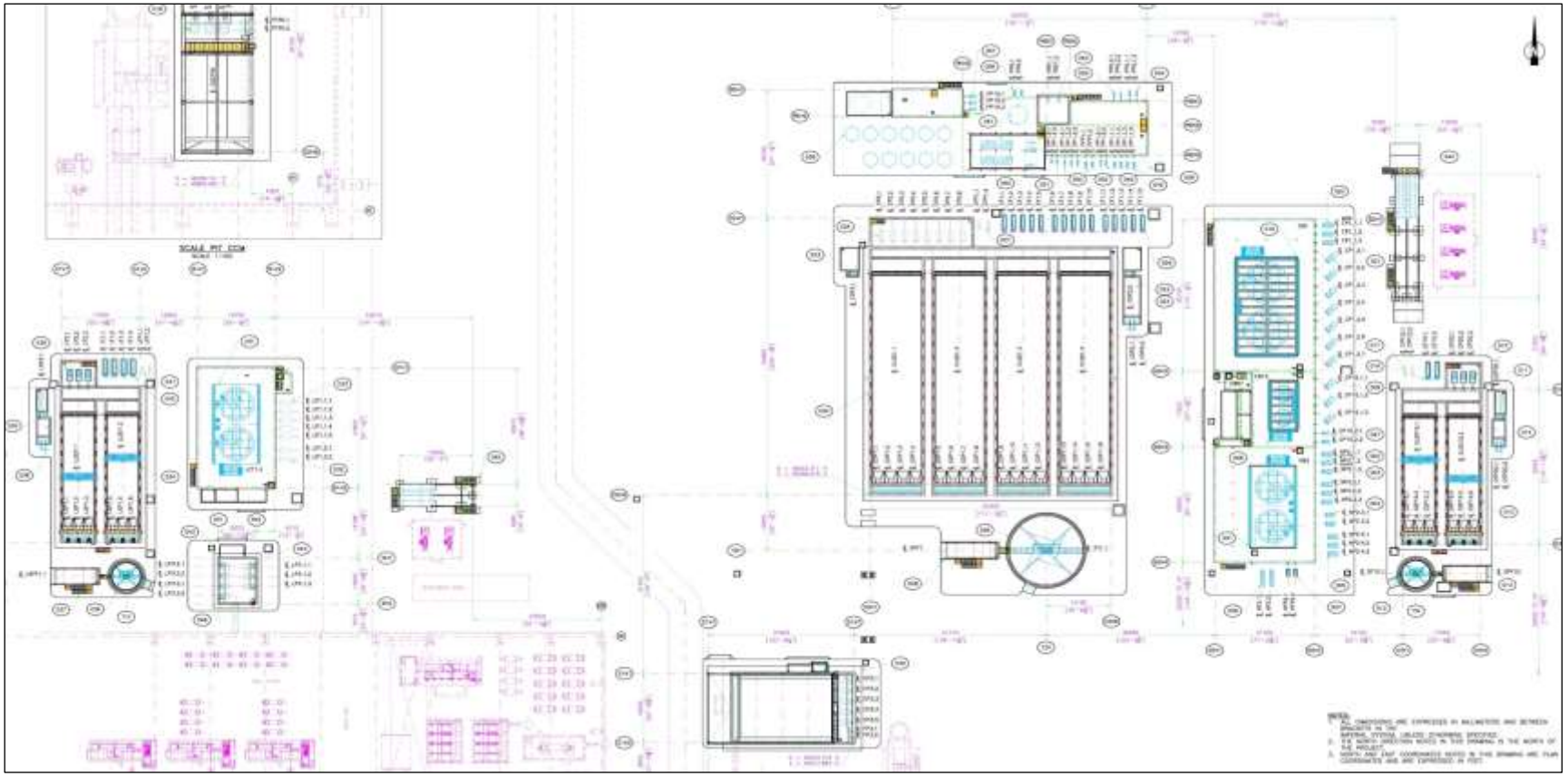

COLD MILL AREA
MELTSHOP AREA
HSM AREA

MELTSHOP AREA



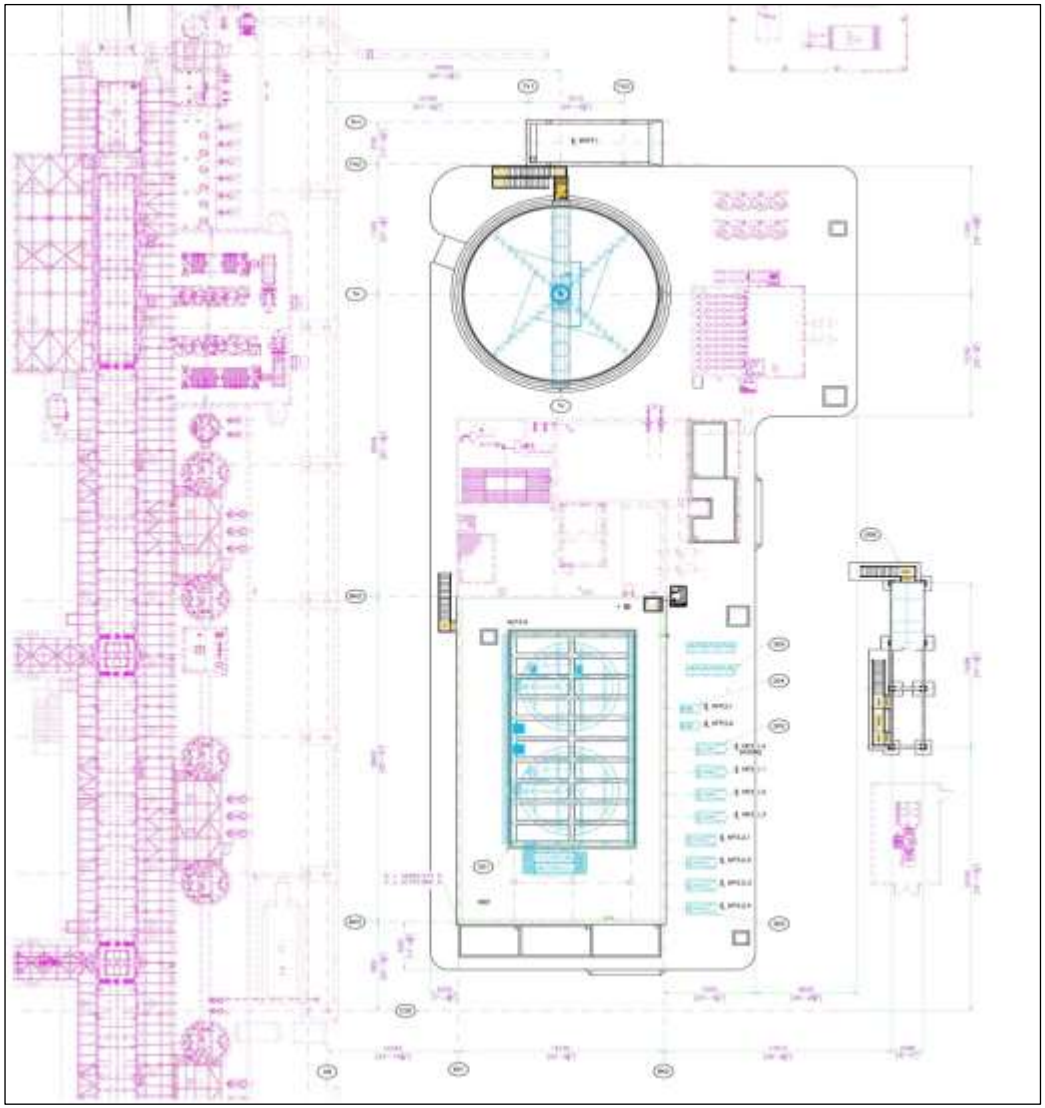
- NCW EAF+LF+RH
- NCW EAF SPRAYS
- NCW GAS DUCT
- CW DEGASSER
- ELECTRICAL ROOM

HSM (CSP) AREA



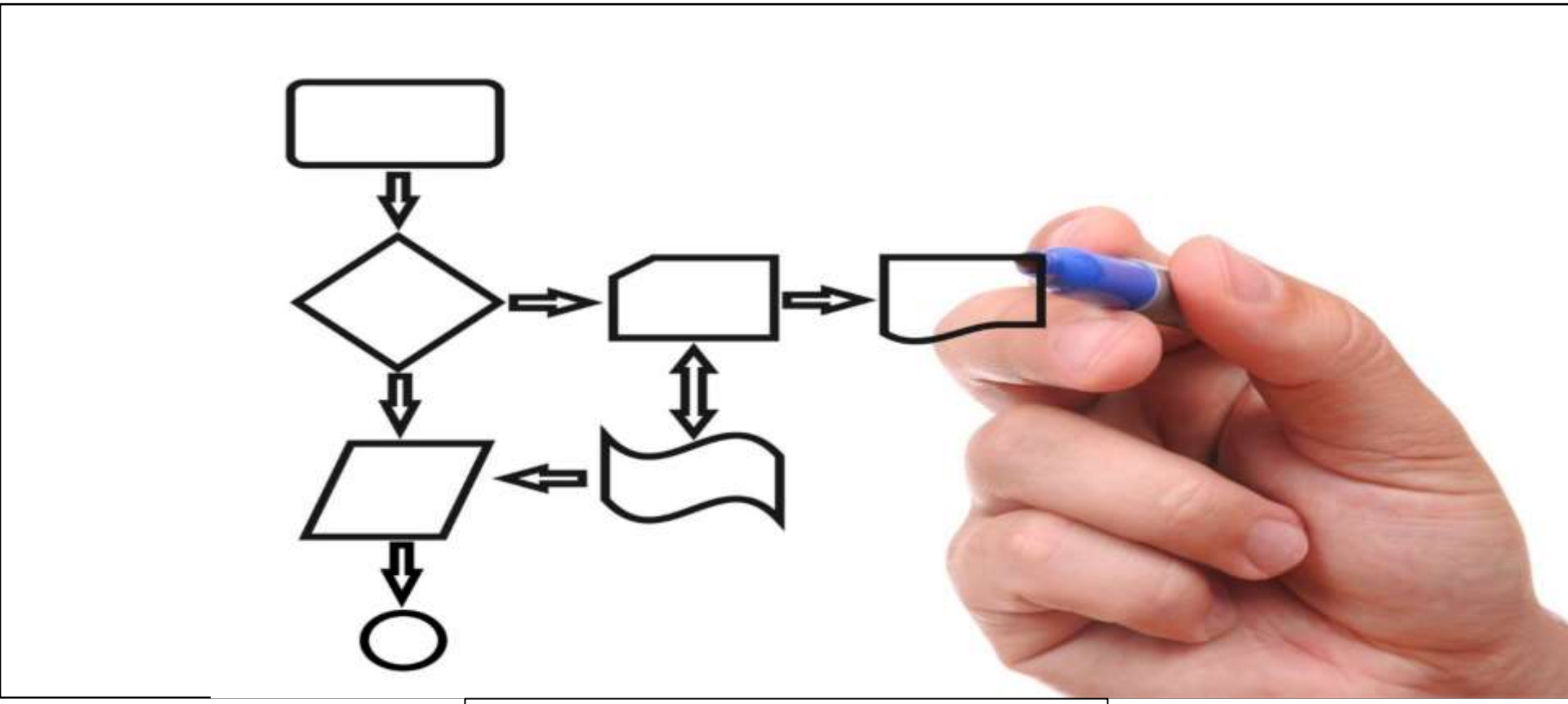
- PRETREATMENT
- CW CCM
- CW LAMINAR
- NCW HSM +CCM
- CW HSM
- ELECTRICAL ROOM

COLD MILL AREA



- NCW COLD MILL
- WASTE WATER
- ELECTRICAL ROOM

RUSSULA



PROCESS TECHNOLOGY

RUSSULA

AISTech2016

PRETREATMENT

IRON REMOVAL

DEEP WELLS		REQUIREMENTS
Iron Content 5 ppm		Iron Content 0.1 ppm

Reliable technology with low operations costs and low investment …. **NEEDED**

OXIDATION + FILTRATION → High retention time needed, civil works increasing, important power consumption, iron removal limited

GREEN SAND → High chemical consumption, high cost, iron removal limited

DMI 65 MEDIA → Not previous aerations needs. Low chemical consumption. High performance.

IRON REMOVAL

Catalytic Filtration media

- Tailor made for the removal of Manganese & Iron.
- Silica sand based granular material, its active ingredients are permanently fused into the grain
- DMI-65 performs role of catalyst to promote oxidation of iron and manganese in solution into precipitate
- Also performs highest quality mechanical filtration

Potassium Permanganate not required
Wide pH range
Up to 10 years operation

WATER QUALITY…

INDUSTRIAL WATER (IRON REMOVED)	SOFTENED WATER	DEMI WATER	EDI WATER

PRETREATMENT

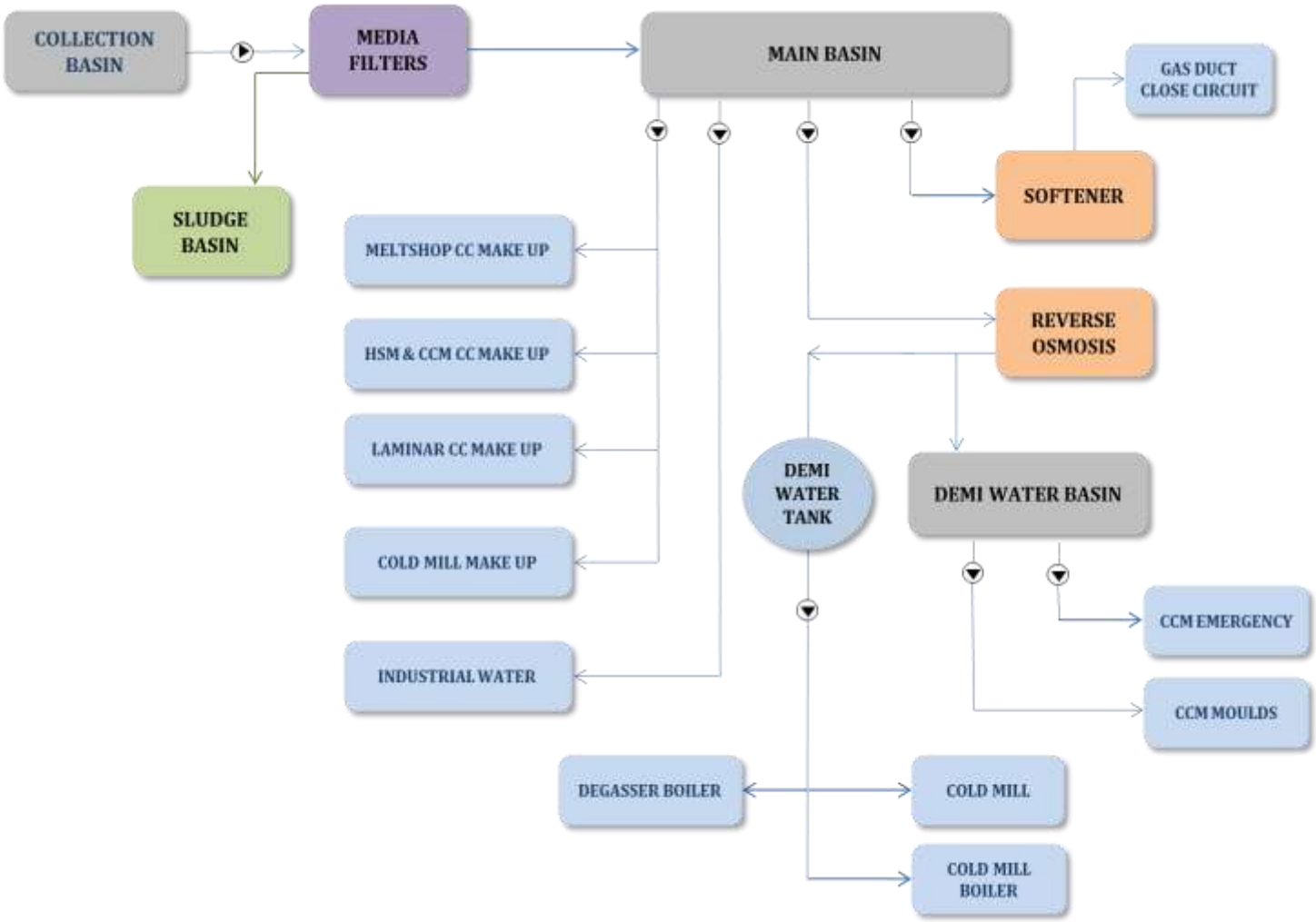
WATER: River

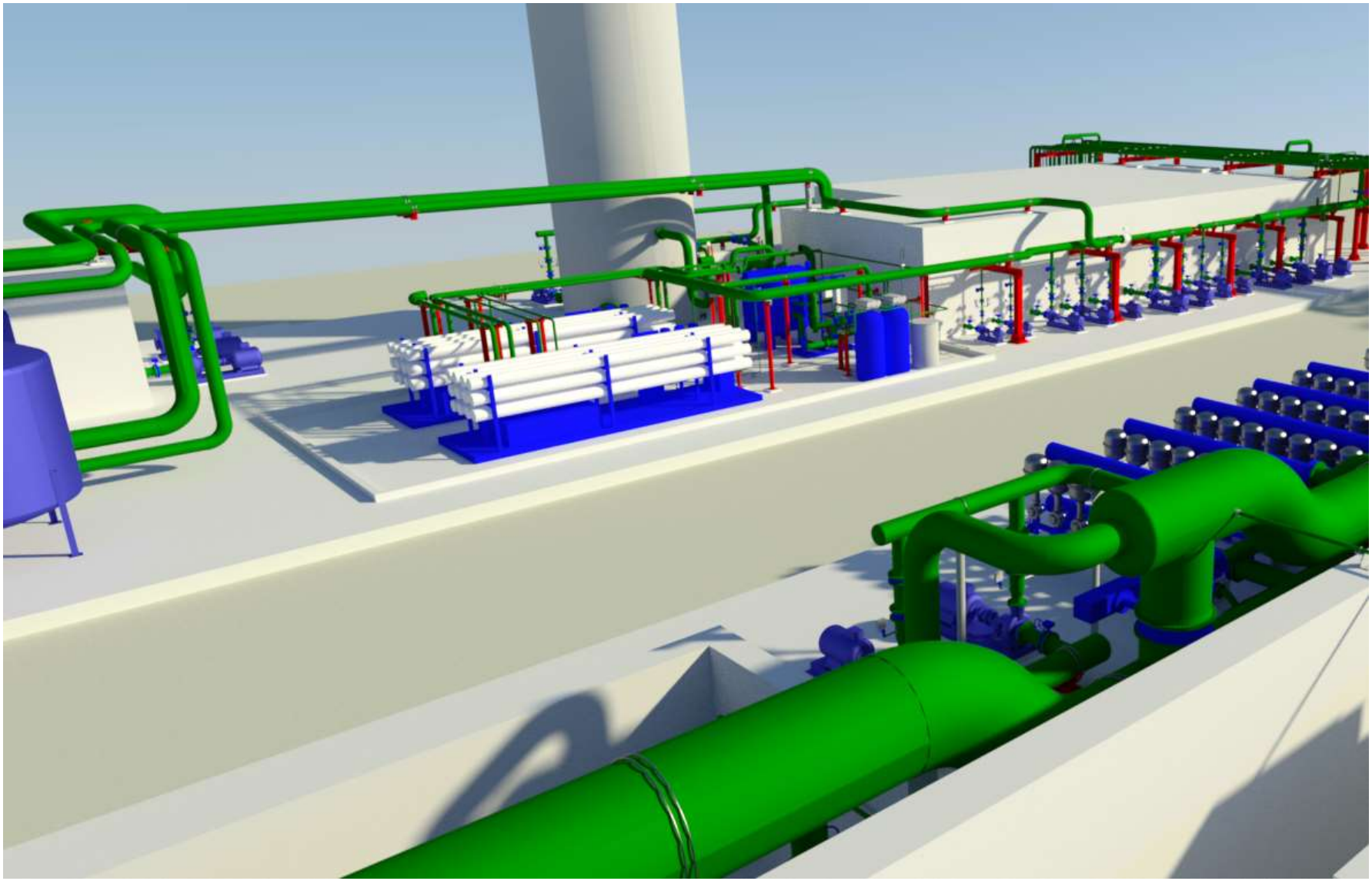
FLOW: 800 m3/h F

IRON REMOVAL

RO / SOFTENER

READY FOR FUTURE

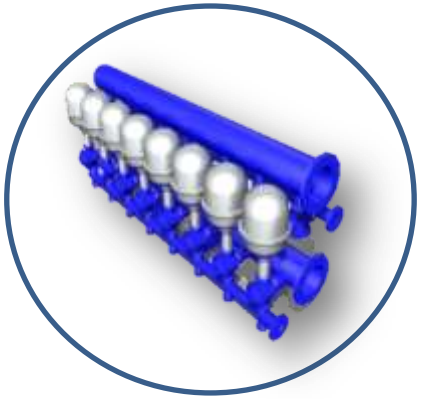




RUSSULA

PROCESS WATER

COMMON TECHNOLOGY



ALL FILTER SYSTEMS INCLUDE

RING FILTERS ONLY

Side filtration 10% NCW

Total Filtration CW

CONTACT SYSTEMS WITH DECANTING BASINS

(2 UNIT MINIMUM)

SUBMERSIBLE PUMPS IN SCALE PITS AND SLUDGE MANAGEMENT

(STAINLESS & VORTEX)

NCW EAF+LF

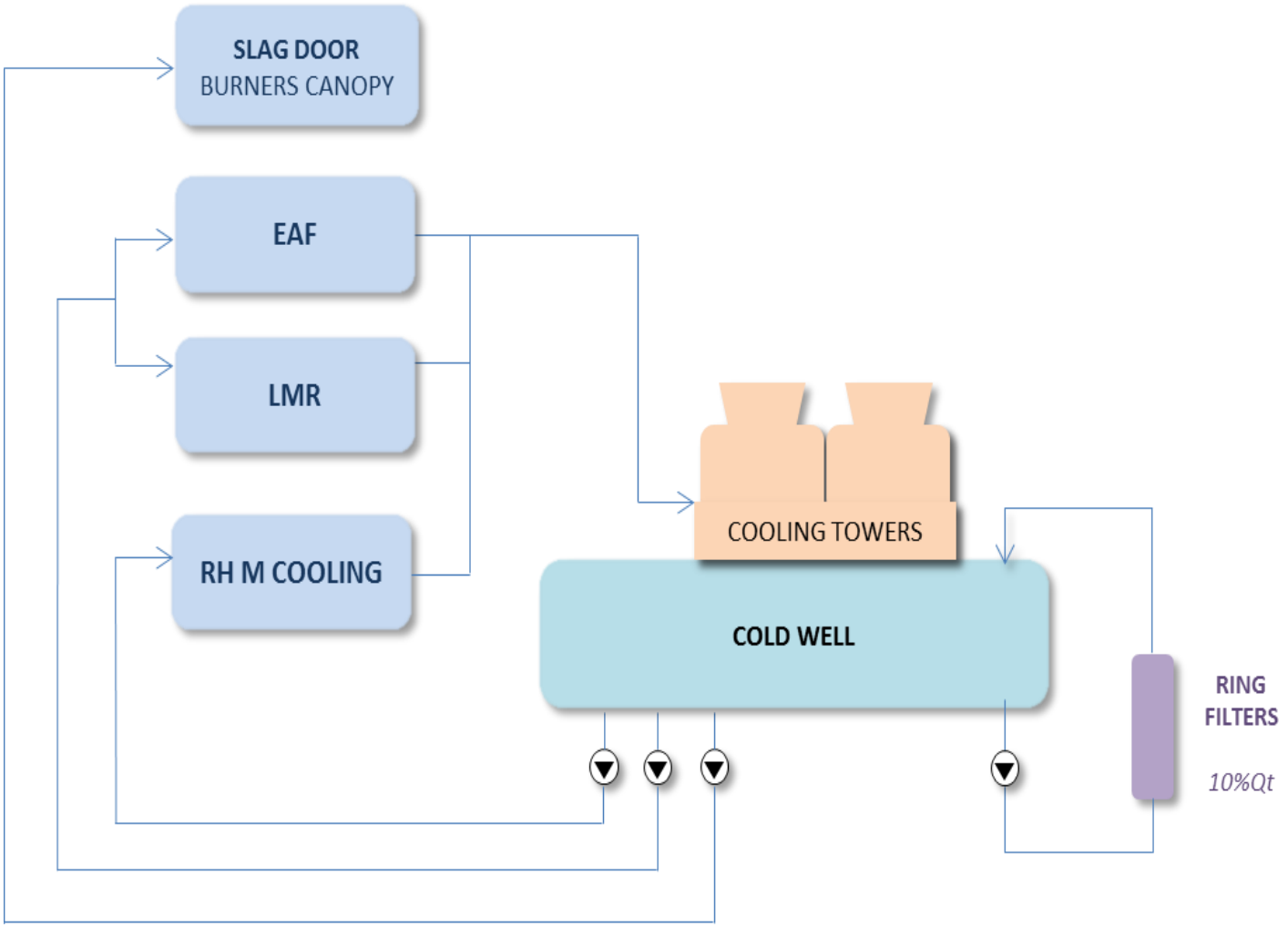
WATER: Clean

PRESSURE: 7 bar

FLOW: 1892 m3/h

T DROP: 15ºC

FUTURE EXPANSION



NCW Sprays

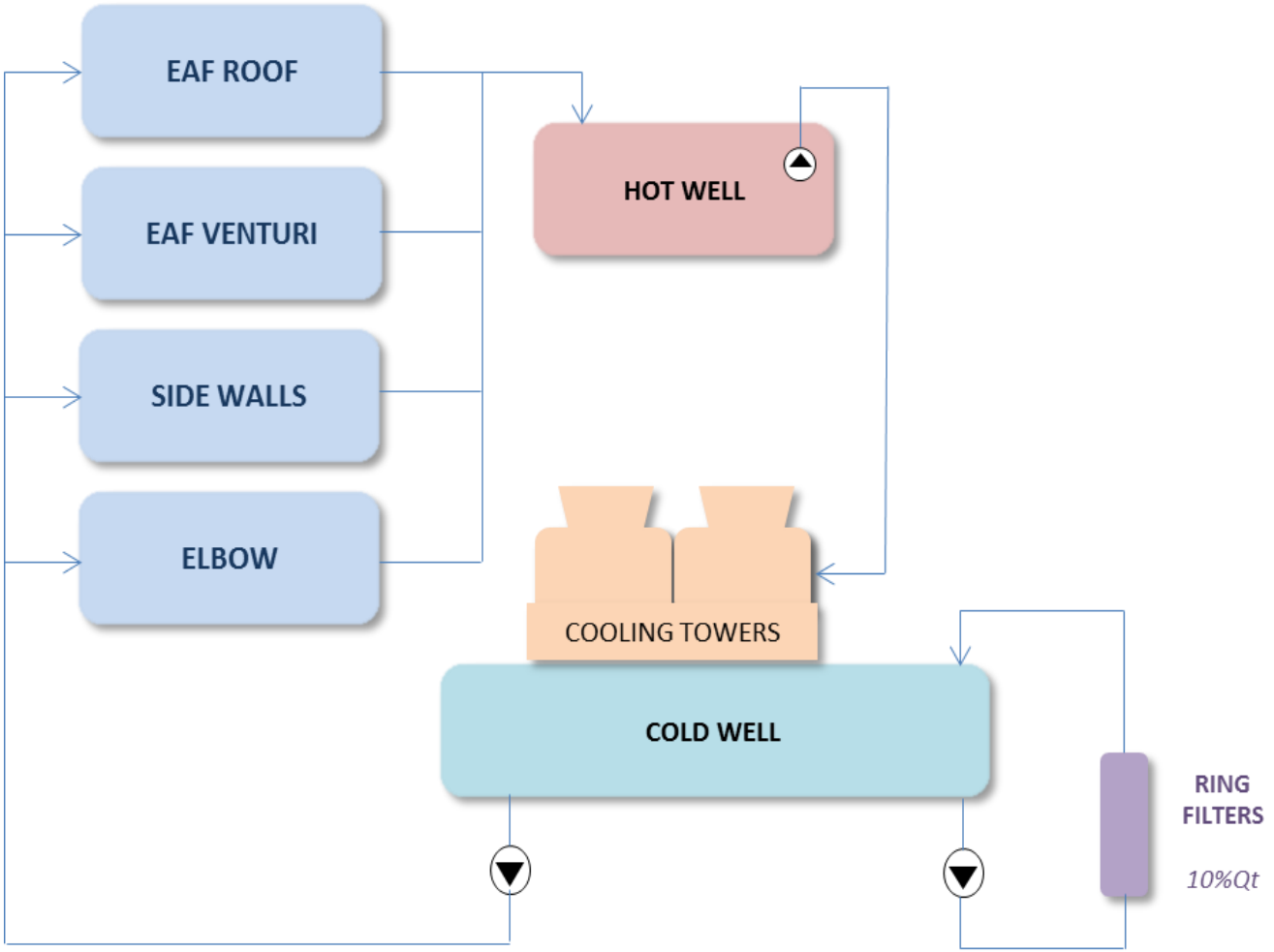
WATER: Clean

PRESSURE: 7 bar

FLOW: 3100 m3/h

T DROP: 15ºC

FUTURE EXPANSION



NCW Gas Duct

WATER: Clean

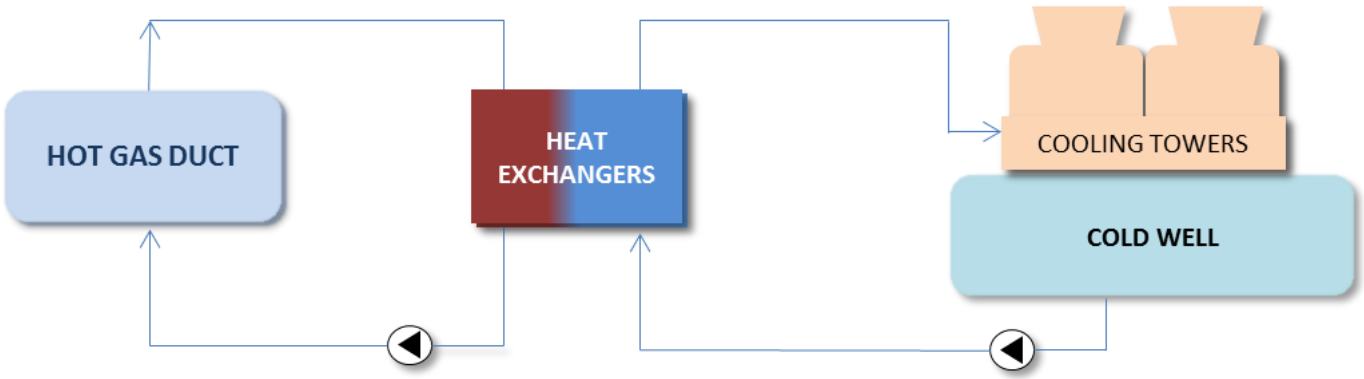
PRESSURE: 5,5 bar

FLOW: 3350 m3/h

T DROP: 25 ºC

CLOSE CIRCUIT

FUTURE EXPANSION



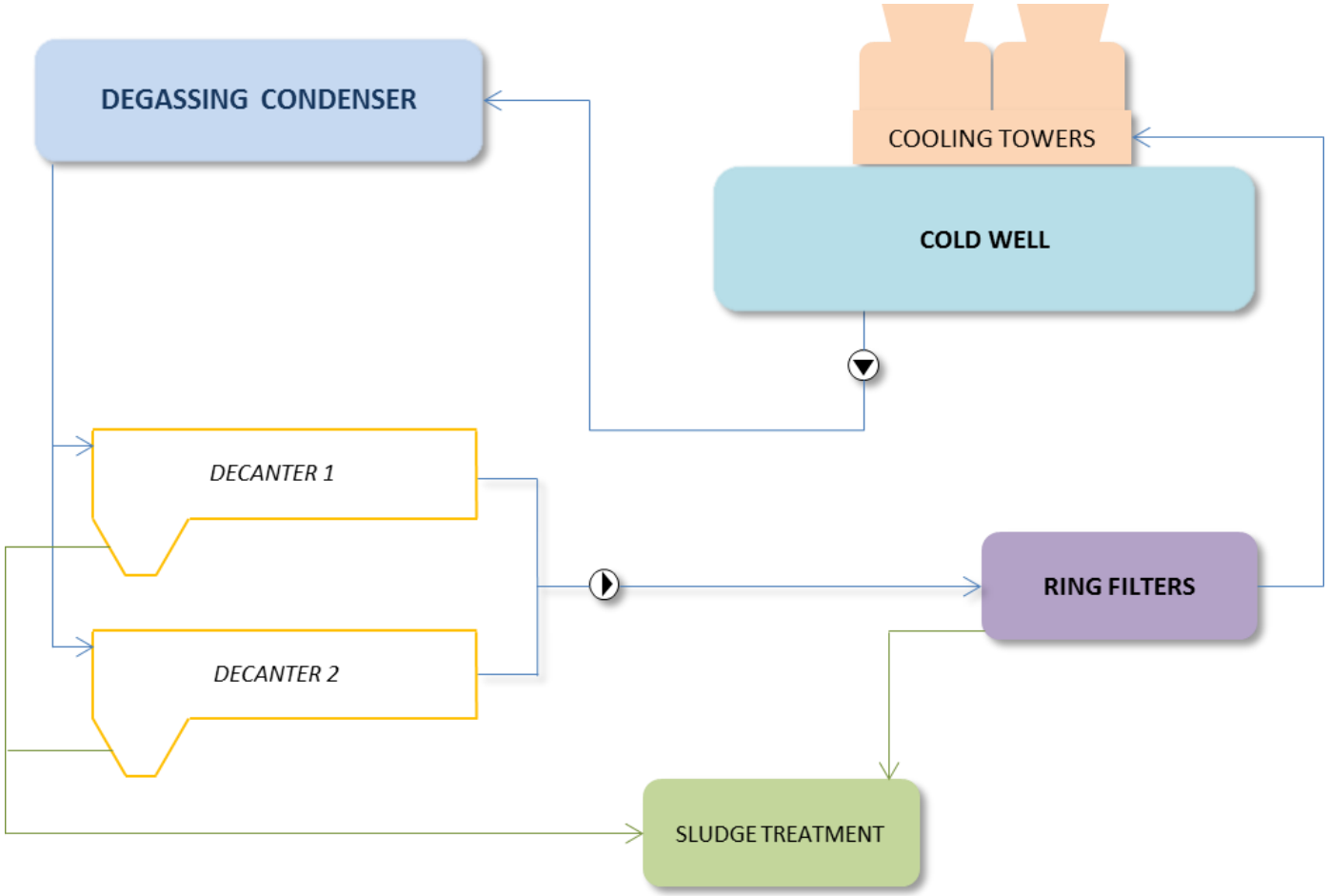
CW Degasser

WATER: Dirty

PRESSURE: 4 bar

FLOW: 1040 m3/h

TSS outlet : 80 ppm



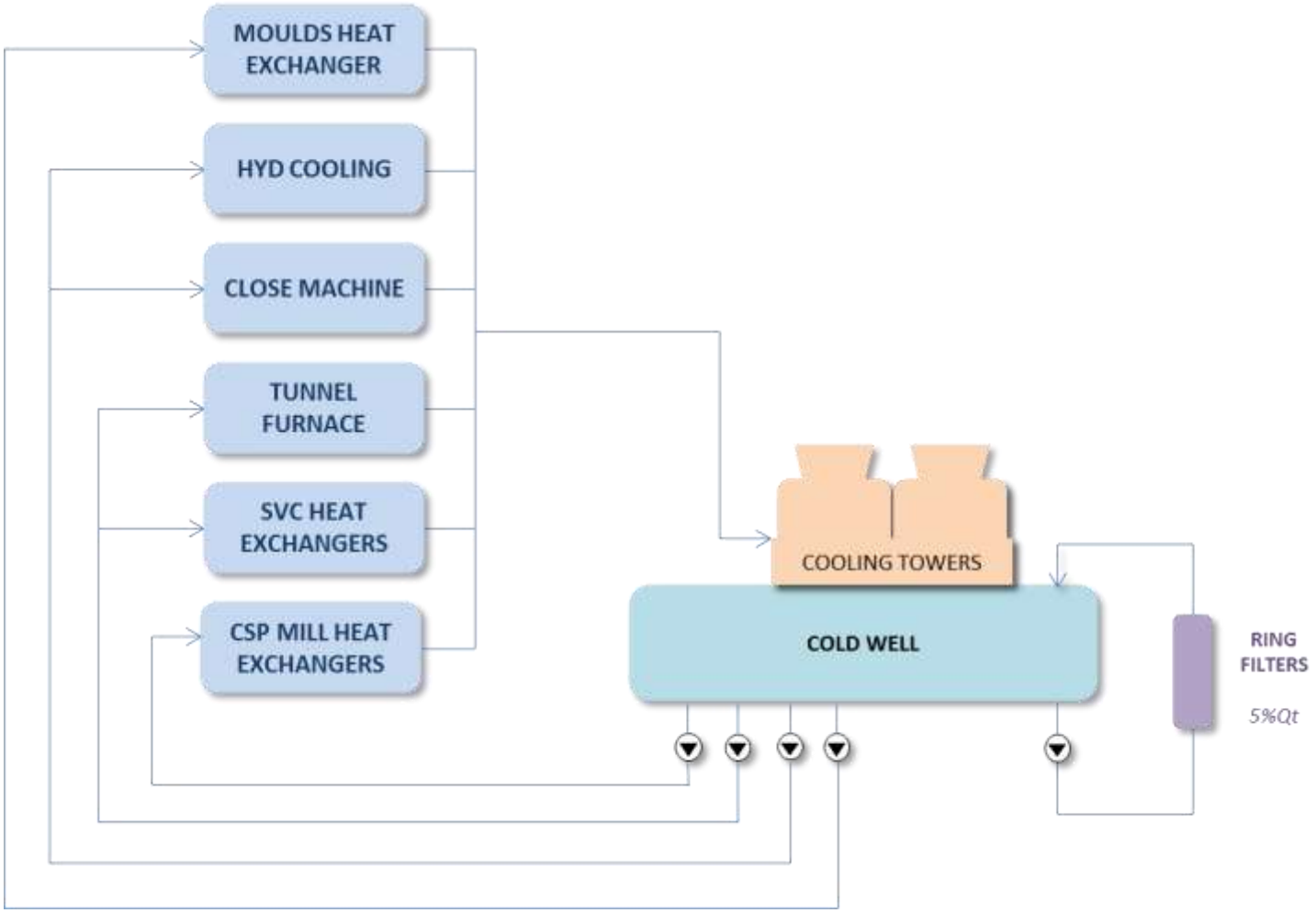
NCW HSM & CCM

WATER: Clean

PRESSURE: 7 bar

FLOW: 4180 m3/h

FUTURE EXPANSION



CW CCM

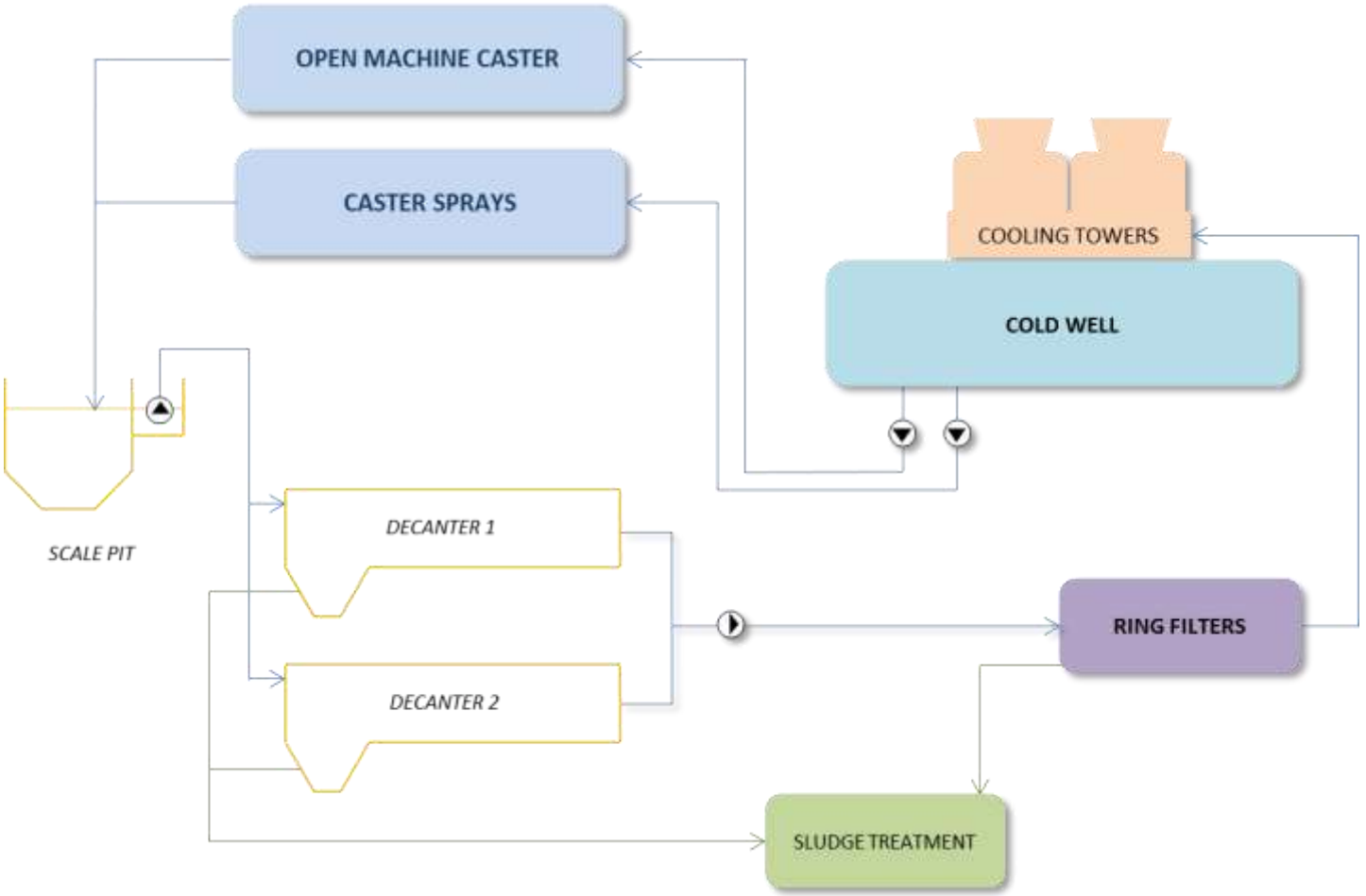
WATER: Dirty

PRESSURE: 16/8 bar

FLOW: 1165 m3/h

2x7 mts decanters

FUTURE EXPANSION



CW HSM

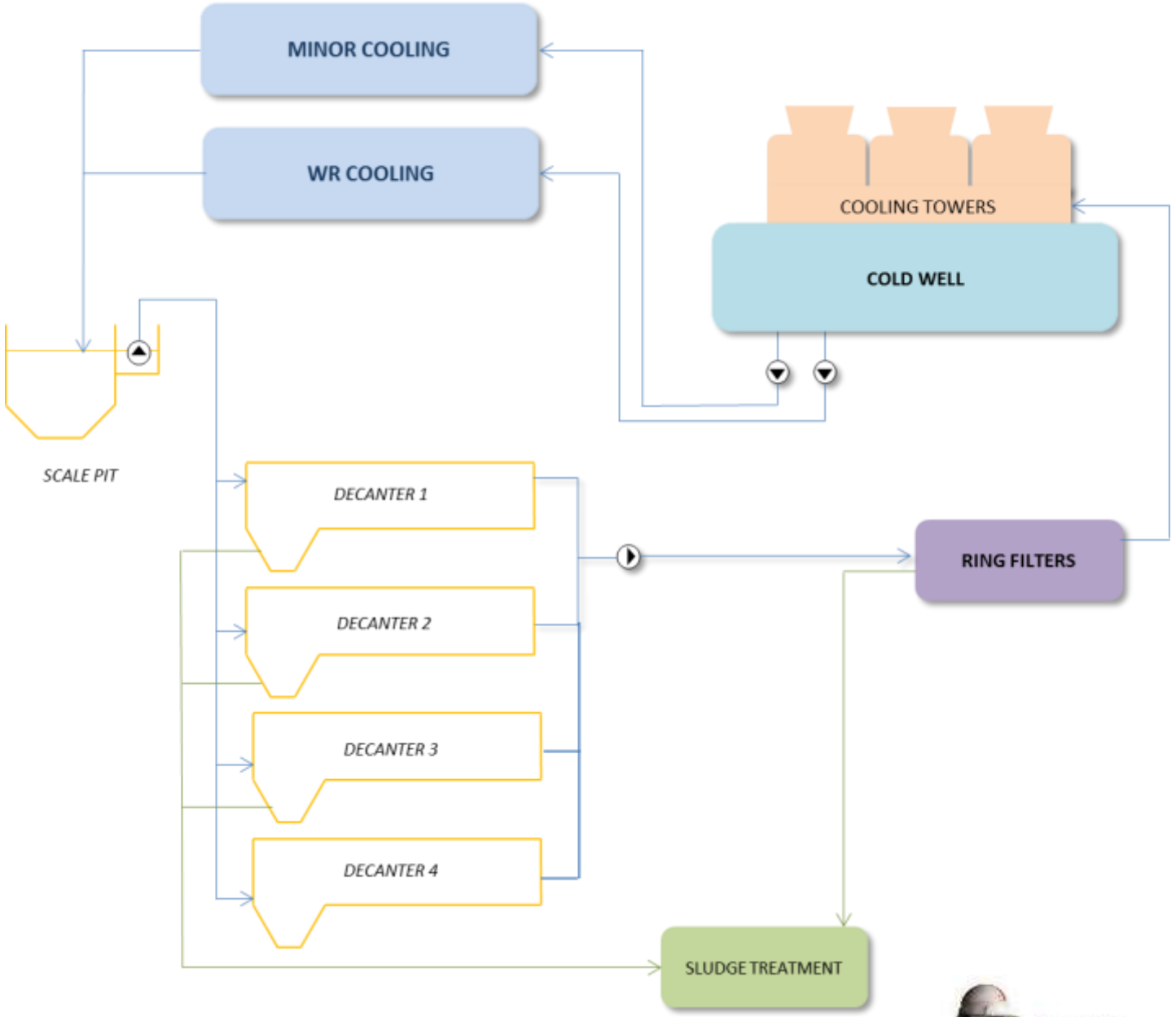
WATER: Dirty

PRESSURE: 13/6 bar

FLOW: 8000 m3/h

4X 11 mts. decanter

FUTURE EXPANSION



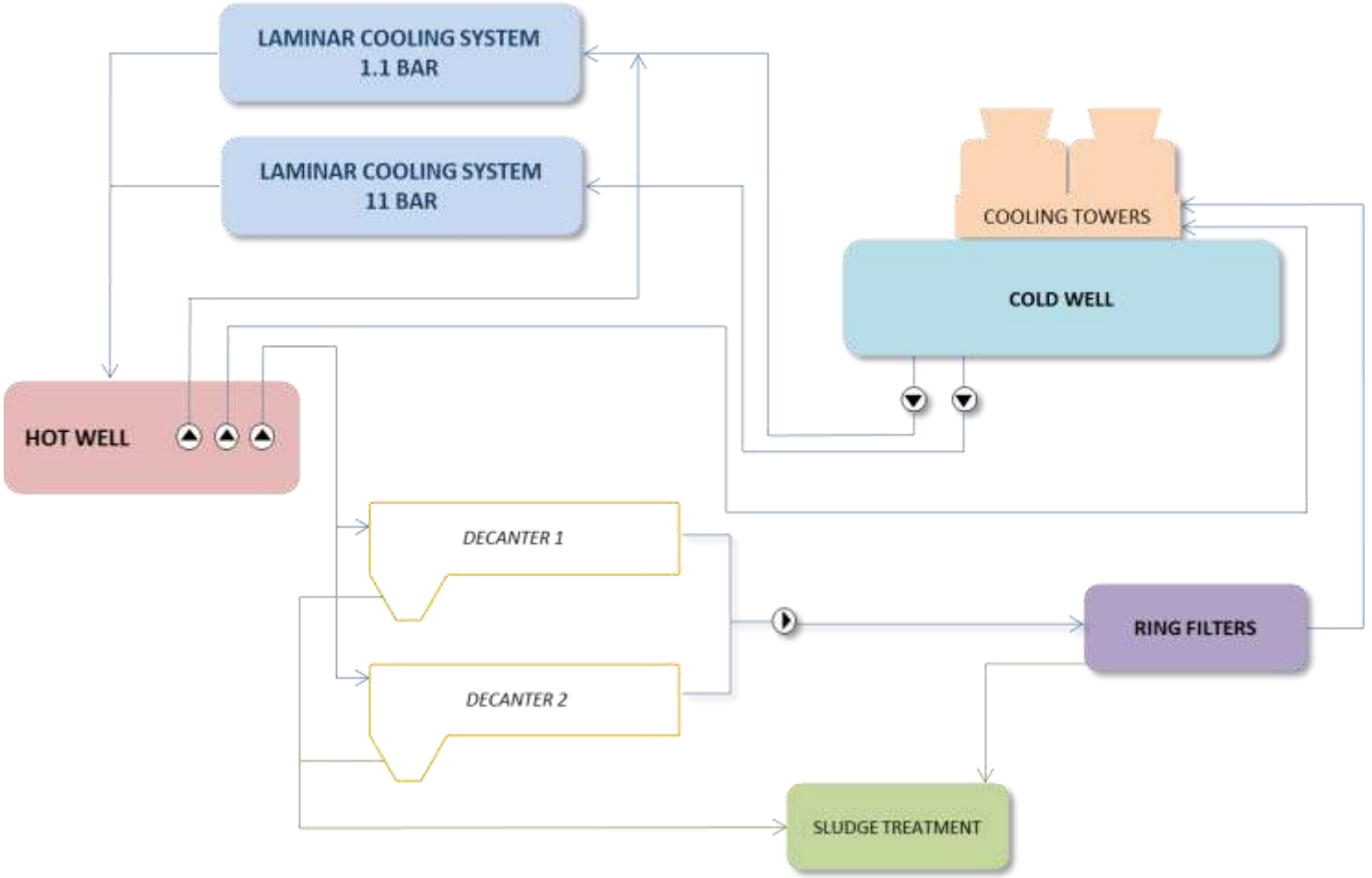
CW LAMINAR

WATER: Dirty

PRESSURE: 2/12 bar

FLOW: 7100 m3/h

25% FILTERED



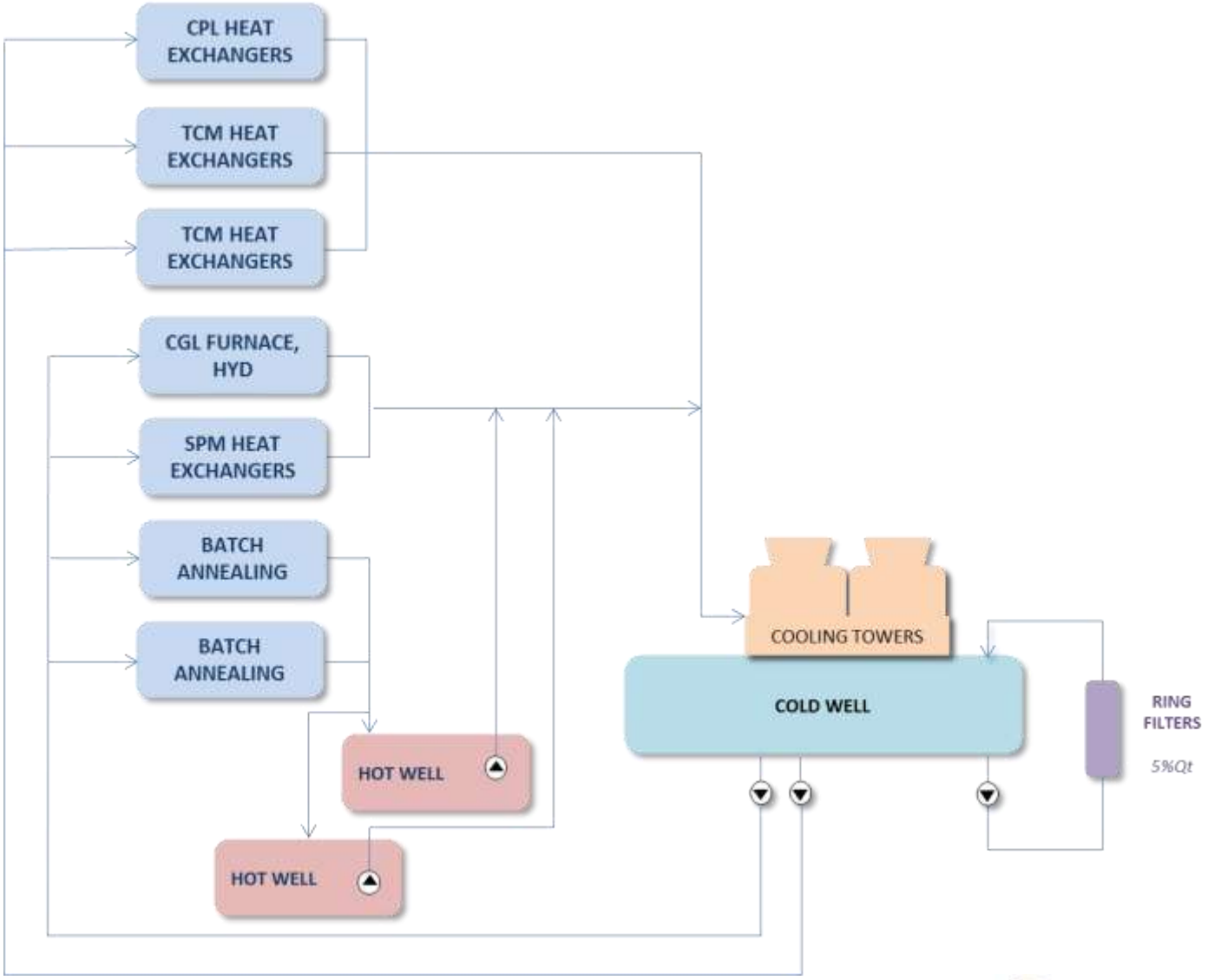
NCW Cold Mill

WATER: Clean

PRESSURE: 6,5 bar

FLOW: 3055 m3/h

FUTURE EXPANSION



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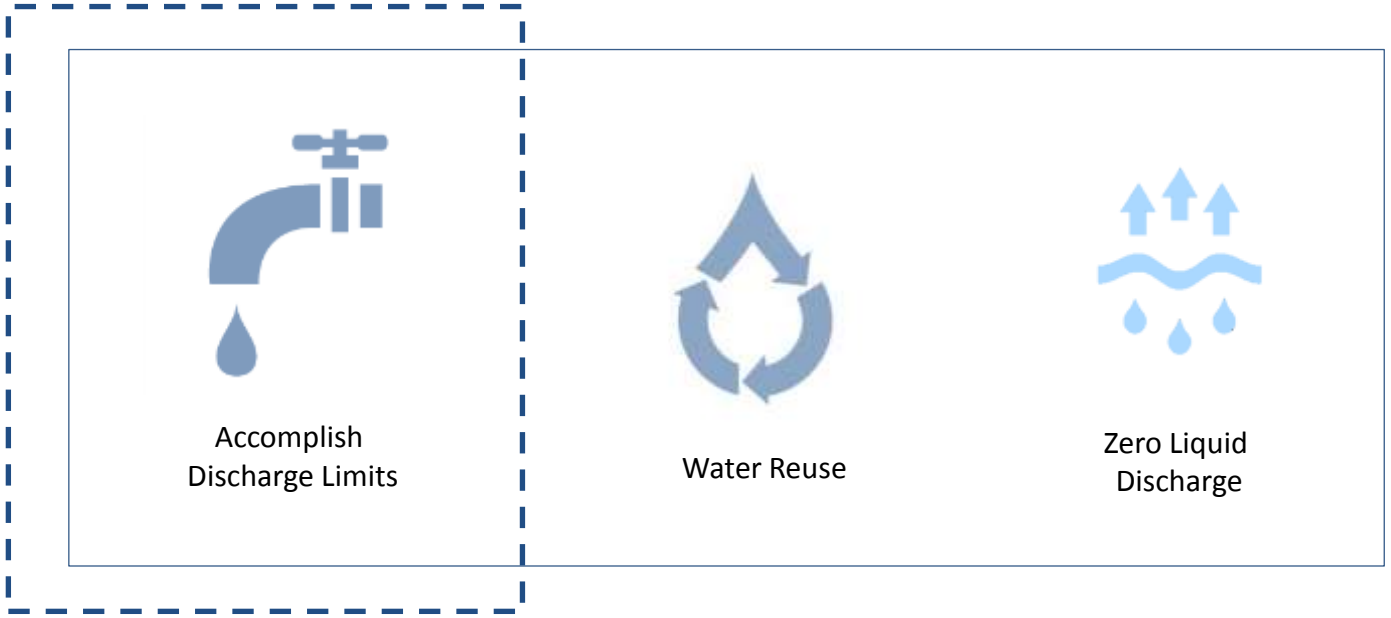
EFFLUENT DISCHARGE



Remove from the waste water and cooling towers blowdown:

- Oils
- Solids
- Heavy metals
- Adjust pH

Accomplish Discharge Permits

Waste Water

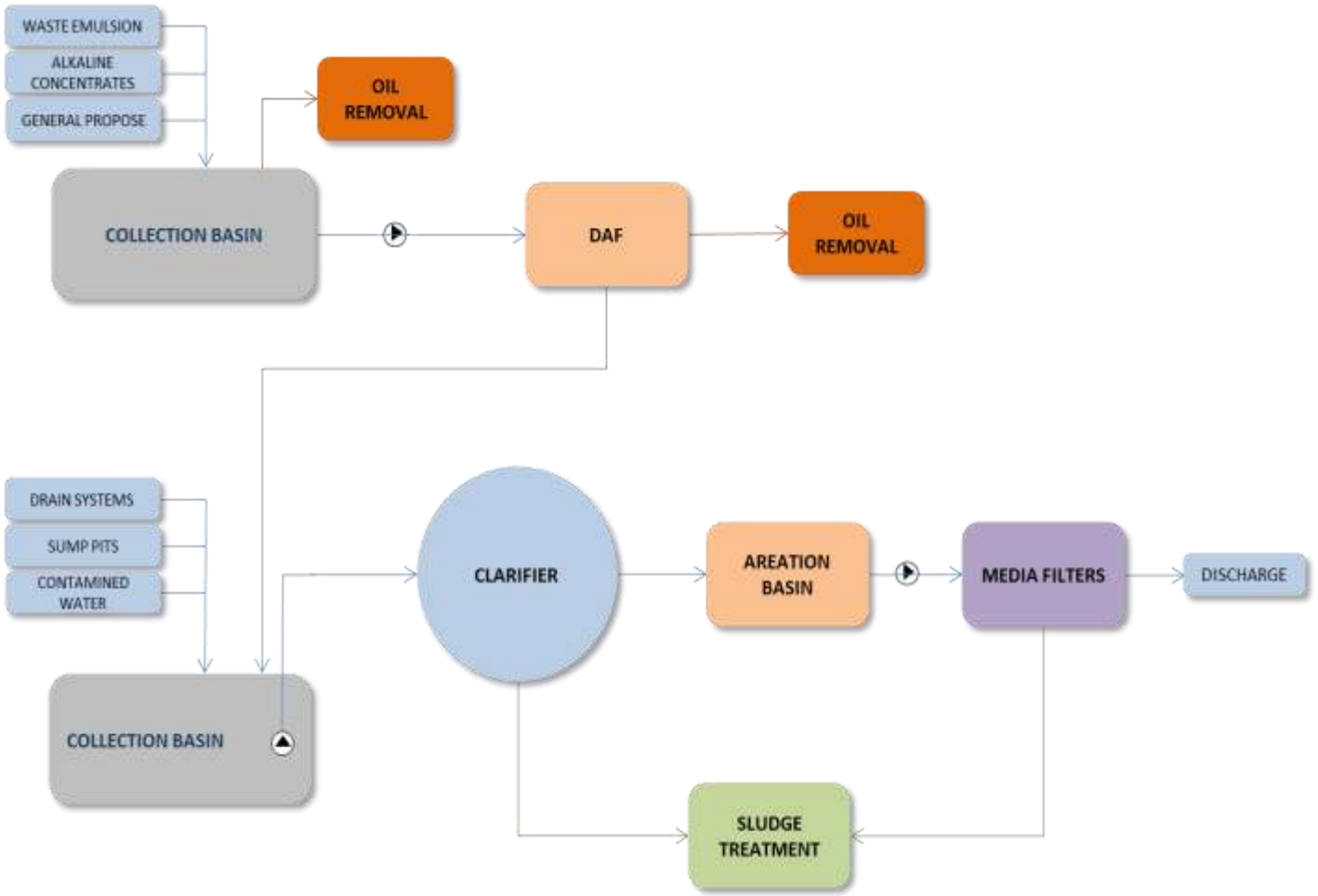
WATER: Waste

PRESSURE: 2 bar

FLOW:100/180 m3/h

OIL REMOVAL (DAF)

PH CONTROL



RUSSULA

EFFICIENCY

OPERATIONAL COSTS

WATER

MORE THAN 30000 M3/H (130,000 GPM)PUMPED !!

Low Water Consuming Equipment Selected:

- 12000 m3/h (53000 GPM) filtered.
- Ring Filters reduce drastically backwash water.
- Only 4 m3 per battery.

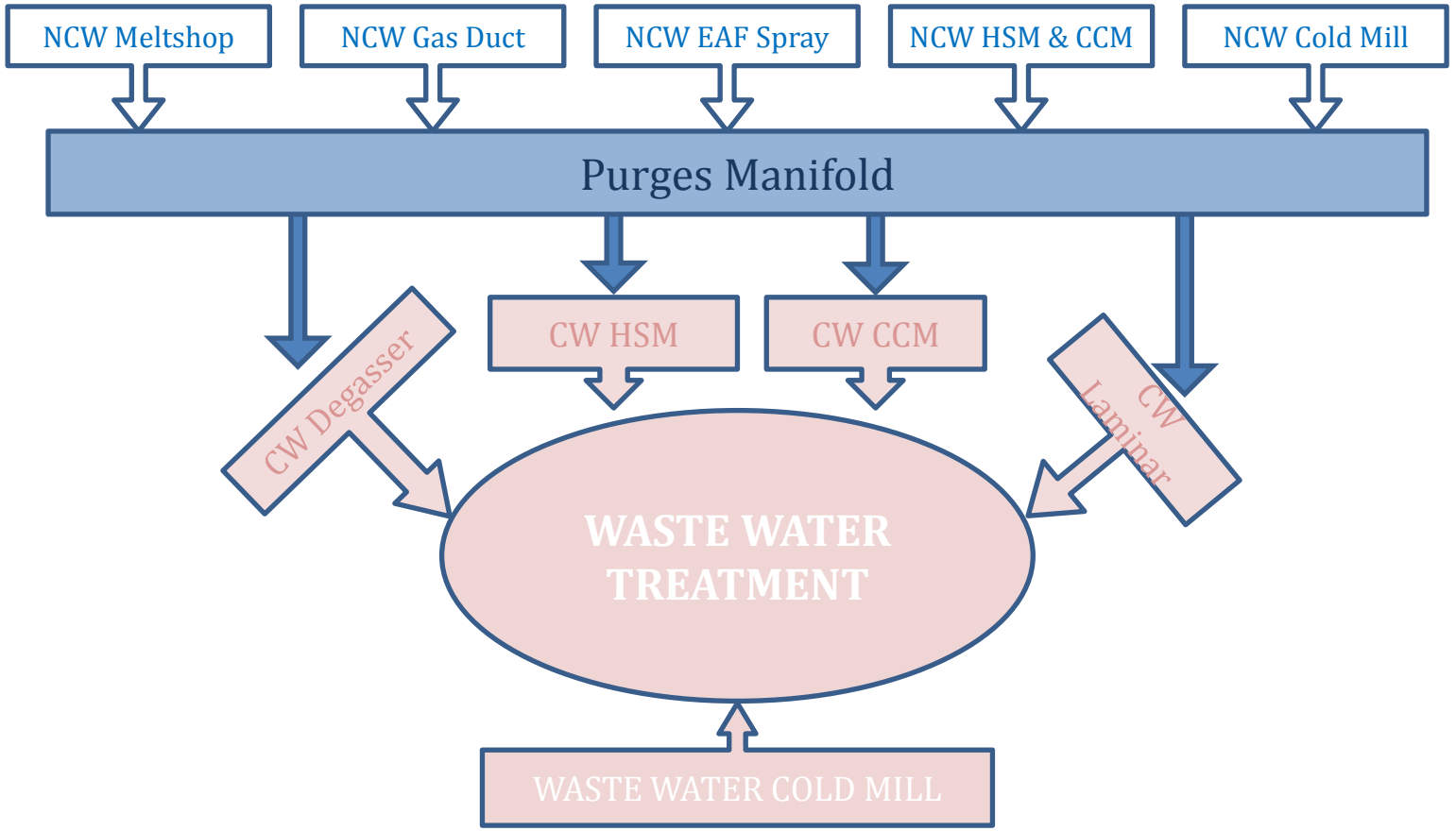
Sludge Dewatering :

- Installed a Press Plate per Contact Circuit.
- Humidity values up to 20%
- Water recovered.

Water Reuse

- Water used more than one time
- Blowdown distribution system

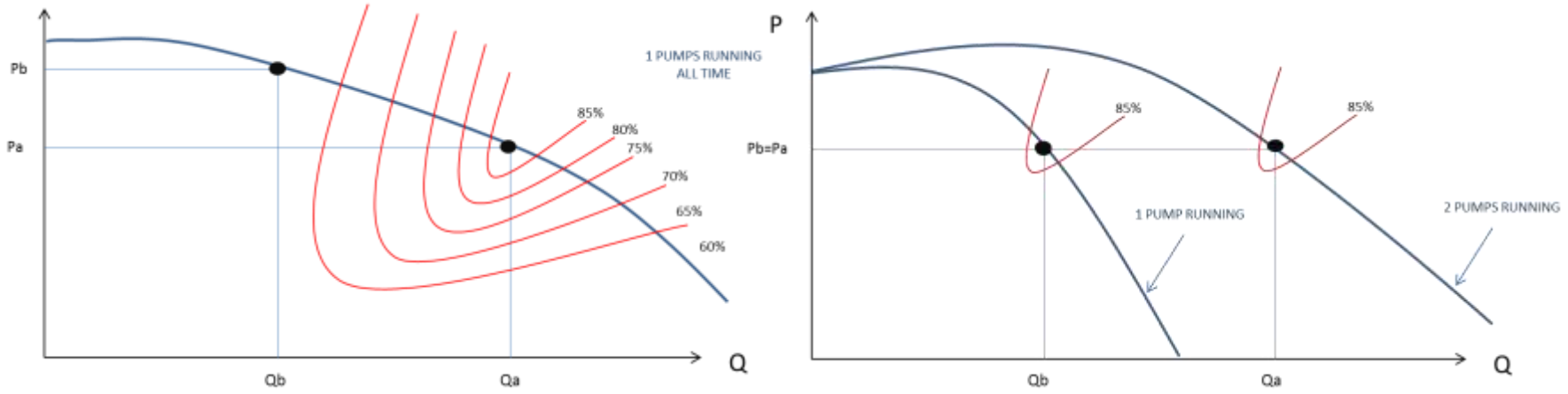
WATER


NCW Meltshop
NCW Gas Duct
NCW EAF Spray
NCW HSM & CCM
NCW Cold Mill
Purges Manifold
CW Degasser
CW HSM
CW CCM
CW Laminar
WASTE WATER TREATMENT
WASTE WATER COLD MILL

ENERGY

23 MW Installed !!

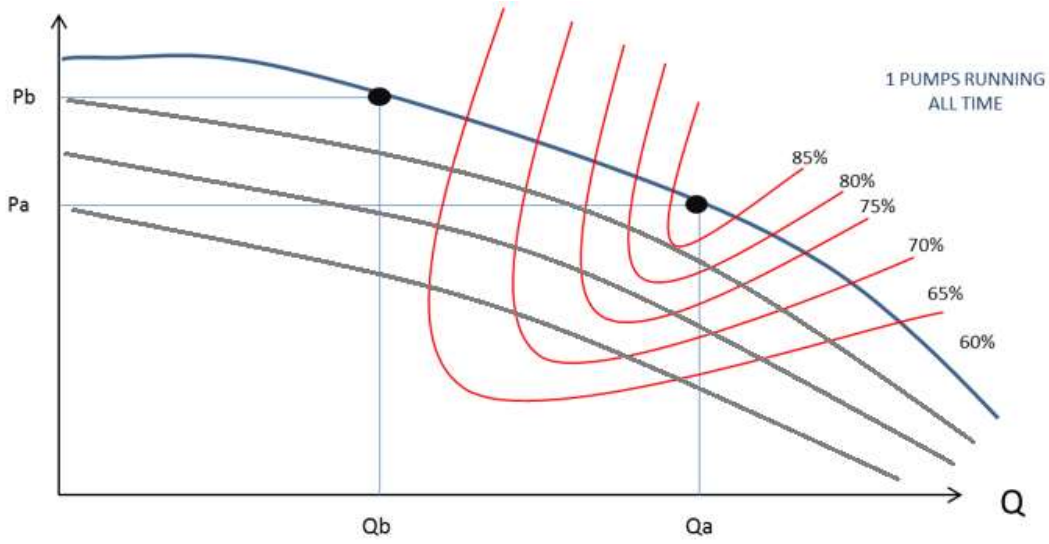
Pump Selection : "More is better" (NCW)



"NCW Pumps feed different areas with different simultaneity.
Better to split in more pumps and keep soft starter than big pump".

ENERGY

Variable Speed



- In contact circuits (CW) with flow difference depending on product mix.
- All Cooling Towers fans, due to temperature variations.

CHEMICALS

Close collaboration between BRS / Cheamtreat/ Russula

Chemical signals link to main system

Fast Response to system changes (Oil spillages, etc)


H2O


energy


Chemicals

- NEW TECHNOLOGLY IMPLEMENTED PUSHING TOWARDS MOBILE DEVICES.
- WIFI COVERAGE IN WHOLE WATER FACILITY.
- MONITORIZE WHENEVER, WHEREVER

RUSSULA

THANK YOU

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www.russula.com