



IOI EDIBLE OILS

Vent Economizer Heat Recovery

IOI EDIBLE OILS SDN BHD

Ir. Shyam Lakshmanan
CEng, CSci, FIChemE



Awards won in 2018



IOIEO / IOIBE COMPLEX



Commissioning of plants and export since early Year 1998

REFINERY & FRACTIONATION

Refinery



1,000,000mt CPO / Annum

Physical Refining Plants (3 production lines)

Dry Fractionation Plant



1,000,000mt RBDPO / Annum

Dry Fractionation Plants (4 production lines)

PKDF PLANTS



118,800mt / Annum PKO

Dry Fractionation Plants (2 production lines)

KERNEL CRUSHING PLANT



300,000mt / Annum

Palm Kernel Crushing Plants (3 production lines)

BIOMASS PLANTS

Biomass Complex



Biomass Boiler



25 t/hr Biomass Boiler Plant & 10 MW Power Plant
Palm Fibre and Palm Kernel Shells as Biofuel
(Installation in progress for new 60t boiler)

TANK FARM



173,000 MT Bulking Installation (64 Tanks) –

- **Uncoated, epoxy coated and stainless steel**
- **Nitrogen gas provision and Segregation facilities**

CURRENT PRODUCTS

RBD Palm Oil, RBD Palm Olein and RBD Palm Stearin

RBD Palm Olein – CP8 for domestic packers

Crude Palm Olein

PFAD and PKFAD

CPKO, PKOL and PKST

RBDPKO, RBDPKOL and RBDPKST

Palm Kernel Expeller

RSPO / ISCC Certified Palm & Palm Kernel Oils

Steam and Electrical Power

IOIEO / IOIBE COMPLEX



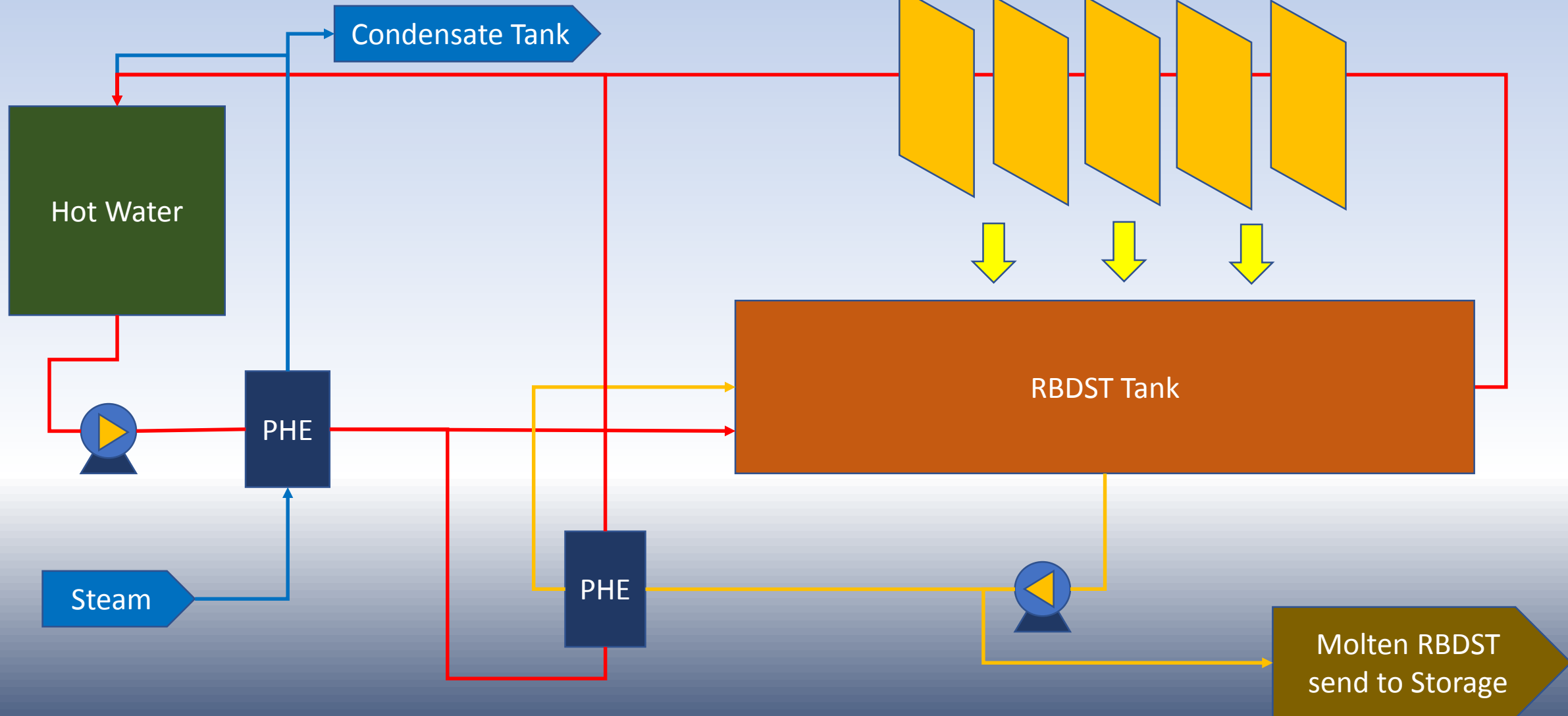
**Complex
fully
equipped
and built up
over 62
acres**

Image © 2019 DigitalGlobe
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Potential of Energy Recovery

- Condensate generated in all the plants are recovered back to condensate tank and fed back to the boiler or used for other heating.
- Steam vapour generated from vent of condensate tank is released to the environment

Plant Process (Before)



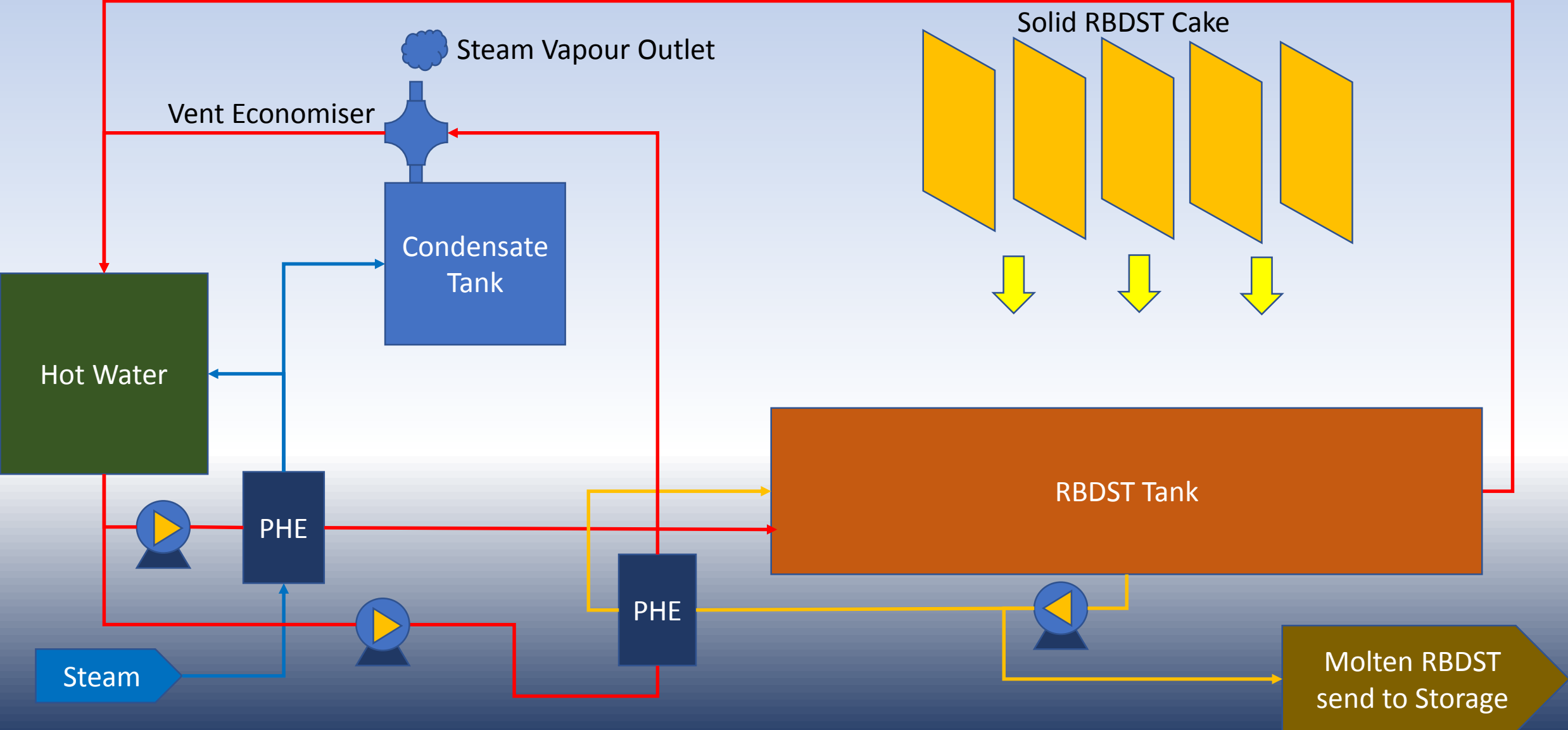
Vent Economiser



Implementation

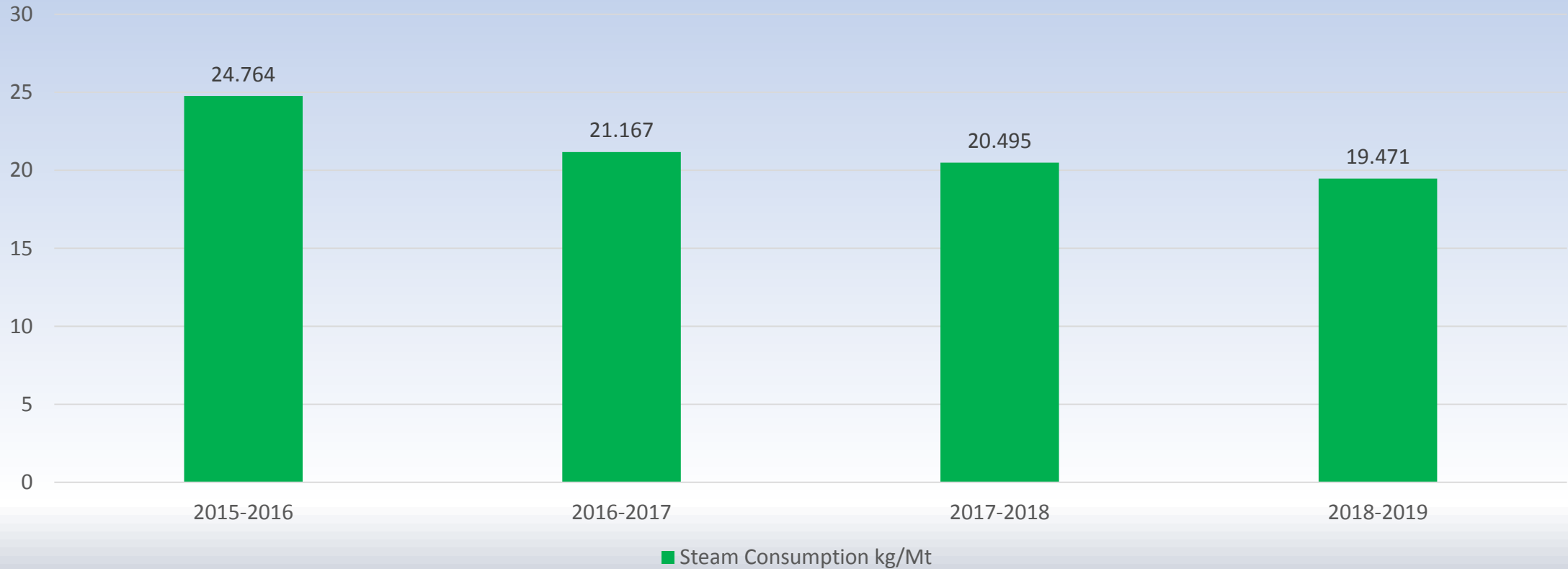


Detailed Flow Diagram (After)



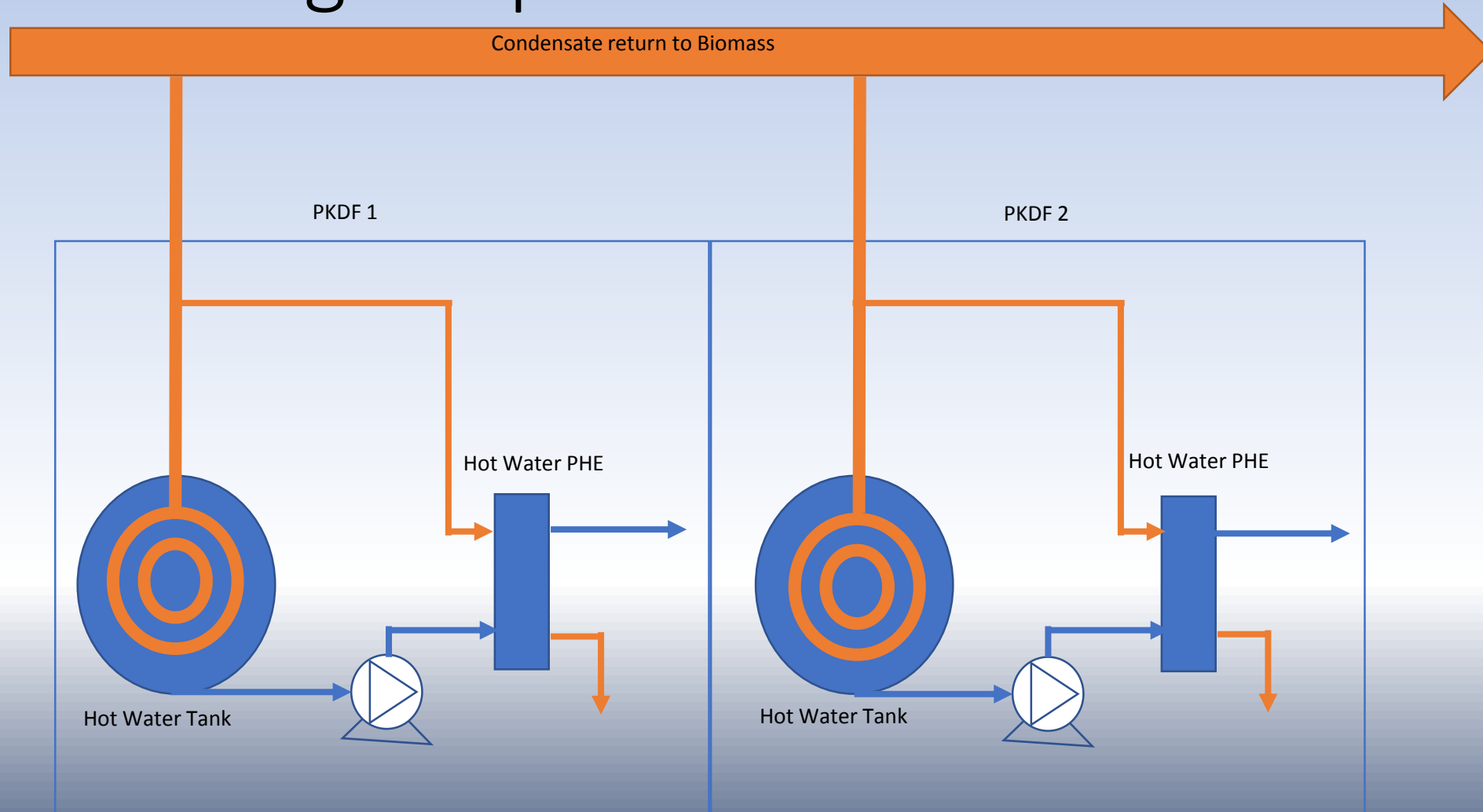
Energy Saving

Steam Consumption kg/Mt



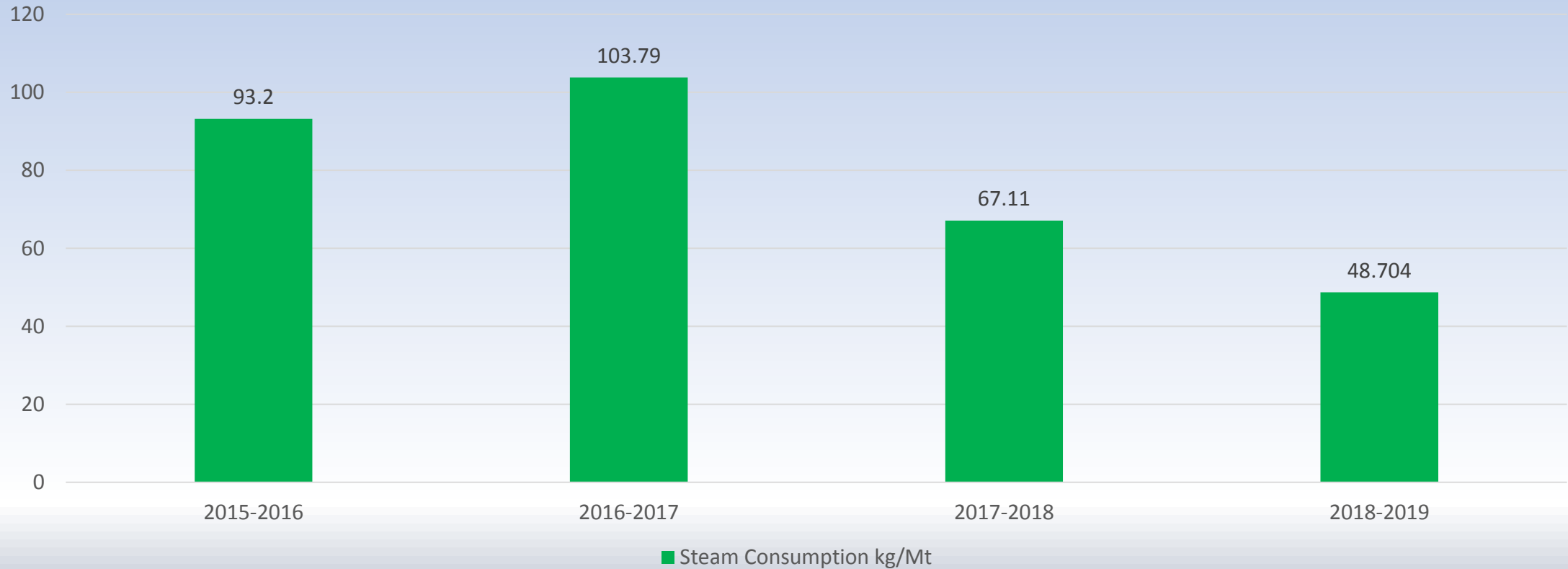
Vent Economiser installed by November 2016
Modified for improvement by December 2017
Total Steam Saved: 1,702.6MT
Total Cost Saved: RM178,773.94
Total Recovery Project Invested Cost: RM86,262.40
Payback Period: 1.15 years
Payback Status: Achieved

Second Stage Implementation



Energy Saving

Steam Consumption kg/Mt



Vent Economiser installed by November 2016
Modified for improvement by December 2017
Total Steam Saved: 5,051 MT
Total Cost Saved: RM530,351.44
Total Recovery Project Invested Cost: RM15,495.10
Payback Period: 16.14 Days
Payback Status: Achieved

Energy Committee



Ir Shyam Lakshmanan (Certified Energy Manager)

General Manager works as team leader to guide the team members in all aspects from reducing consumption, improving efficiency, learning and knowledge sharing from the result achieved by respective plant or department



Chung Su Kong

Technical Manager supports the team for all the technical issue and is involved actively in all the electrical energy saving activities



REF / FRAC / PKDF
Chan Boon San
(Production Manager)



KERNEL CRUSHING PLANT
Pang Kien Yeung



EFFLUENT/ UTILITIES
Ku Kin Wing/ Yung Yen Li



BIOMASS
Herbert Devan
(Power Plant Manager)



OPERATION
Ho Yun Tat



REFINERY
Chong Zhe Haw



OPERATION
Ling How Kee



ELECTRICAL
Yahaya Ajak

UNIDO Conduct Instrument Training for Thermal Energy Audit



Conduct Thermal Energy Audit with Unido



Unido Thermal Energy Expert Training at Penang



Technology Supplier being invited for Energy Meeting to Share Knowledge



Energy Efficiency Training conducted by Centre of Extension Education at IOI

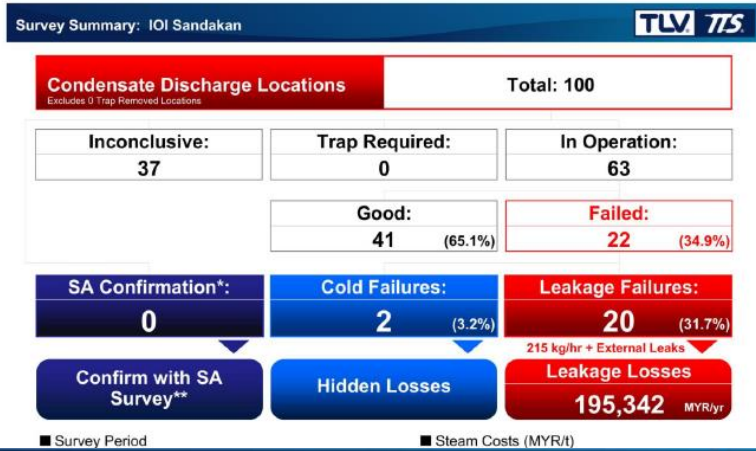


Training Conducted by Spirax Sarco on Steam Trap Monitoring Instrument



Steam Trap Surveillance Conducted By TLV

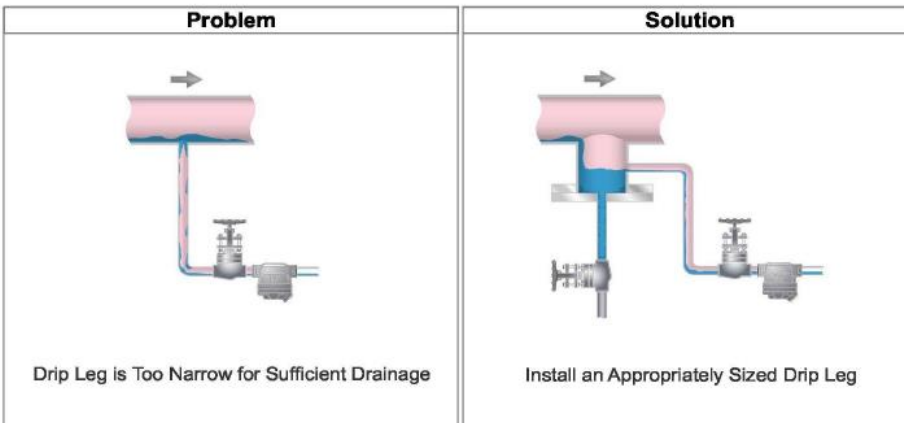
Survey Results Analysis (3rd Survey) Area IBE & IEO in IOI Edible Oils Sdn Bhd



CDL Problems: Improper Drainage (Condensate Logging)

TLV TTS

- Condensate cannot enter to steam trap smoothly.



Site Finding 1 Improper Condensate Drainage Pocket.



Finding:

-Improper condensate drainage pocket

Problem:

-Condensate will carry over by the fast steam flow.
-Piping easily clogged by dirt, rust or scale.



Recommendation:

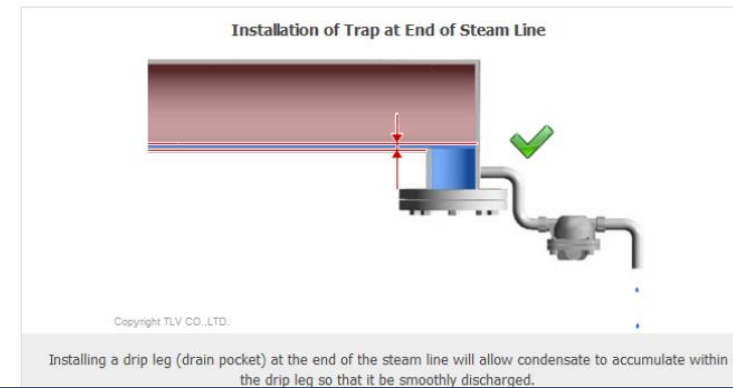
-A bigger/proper drip leg should install according to the steam header size.

Location {Area_(No)}:

Steam Header at Biomass Plant, F1-Main Steam Line, F3-Steam Header, Steam Blowing Niagara Filter.

Recommended Solution

Remove condensate at Steam Main End Point





IOI EDIBLE OILS

Thank You

Questions

