



ENGEMAN[®]

ENGEMAN ENERGY USA LLC



WE LIVE IN A TIME
WHEN THE KEY WORD IS:

SUSTAINABILITY

IN CONTRAST TO THIS DEMAND

WE USE MORE ELECTRICITY EVERYDAY



Industrial
Production



Internet



Electronic Devices
And appliances



Cars



AND WE GENERATE
MORE WASTE
AND RESIDUES.



CAN YOU IMAGINE THE AMOUNT OF **AGRICULTURAL RESIDUES** DISPOSED OF DAILY IN THE ENTIRE WORLD?

Eucalyptus sawdust, sugarcane bagasse, soybean residues, corn cob, rice husk, coffee pods, peanut hulls, peach pit, avocado pit, corn stover, African palm, oat hulls, cottonseed, etc...

TONS and TONS OF “TRASH” THAT INCREASE COSTS FOR COMPANIES AND PROBLEMS FOR THE ENVIRONMENT:

**HOW AND WHERE TO
OF THIS MUCH RESIDUE?**

IN A WORLD WHERE
RESIDUE GENERATION
AND ENERGY
CONSUMPTION REACH
CRITICAL LEVELS

THE SEARCH FOR CLEAN
AND RENEWABLE
TECHNOLOGIES IS MORE
THAN AN OBLIGATION
IT'S A NECESSITY!



**WITH THAT IN MIND,
WE PROPOSE AN INNOVATIVE SOLUTION**

**TRANSFORMING RESIDUES
INTO ELECTRIC POWER.**

A CLEAN, SUSTAINABLE AND ECONOMICALLY VIABLE OPTION

POWER GENERATION THROUGH WASTE

A FLEXIBLE
AND
INNOVATIVE
SYSTEM:

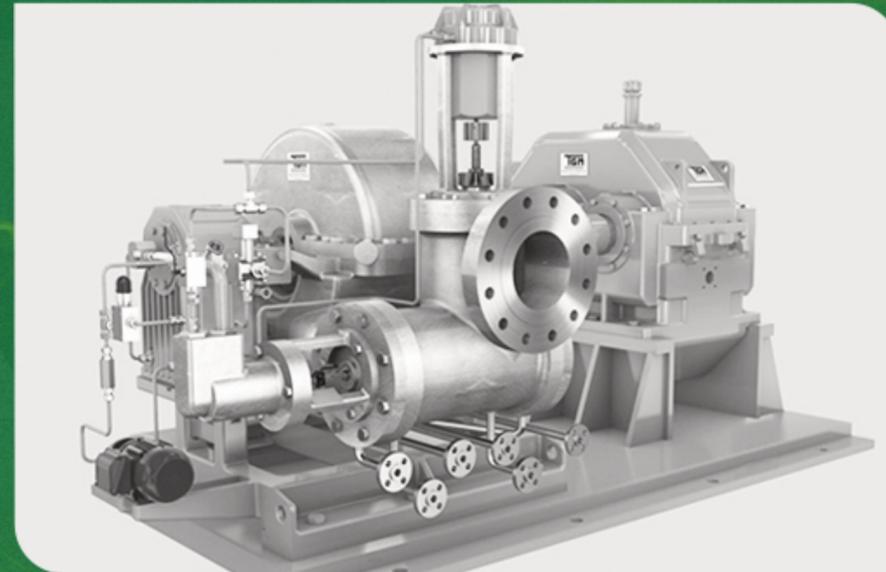
With competence to
burn many types of
biomass

It allows Project
customization
according to the client's
needs

Greater versatility in
burning other types of
residues, such as
animal waste

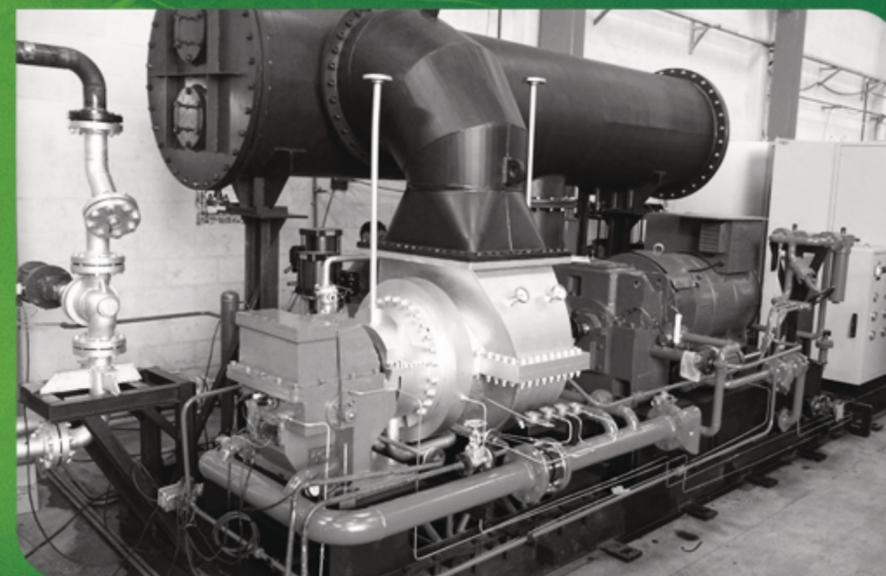
There are two production options:

1.COGENERATION



- Power Generation through the use of boilers installed in industrial process.
- Backpressure steam turbine usage or with controlled-extraction steam system.
- Lower MWh costs, since the steam used in the process is the same used in the cogeneration

2.PURE GENERATION

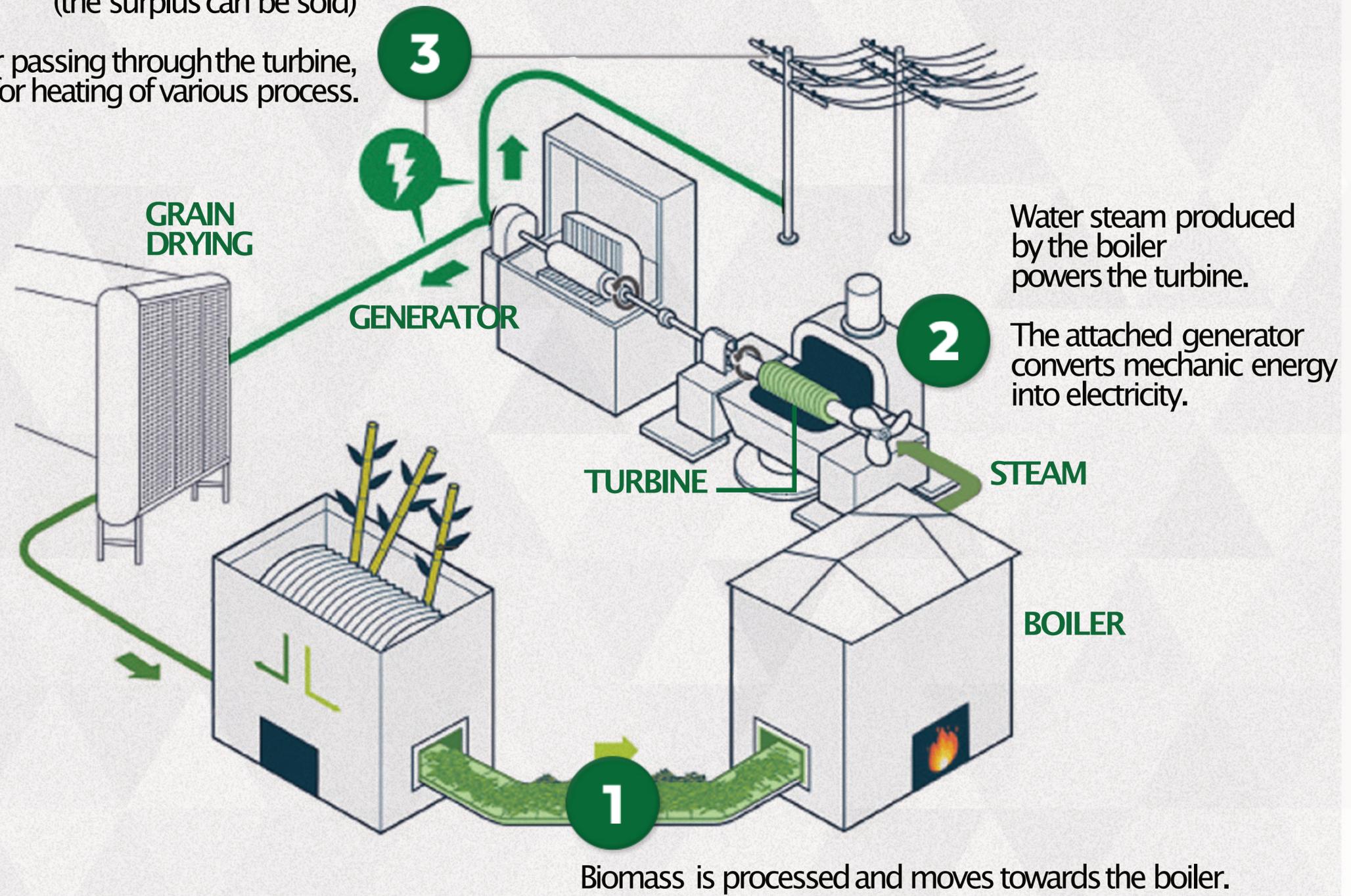


- Boiler setup for exclusive use in power generation
- Power dealership independence
- Power generation stability for industrial process
- Vacuum steam condenser turbine use.
- Quick payback over investment

Part of the electricity is used by the power plant itself
(the surplus can be sold)

The steam, after passing through the turbine,
can be used for heating of various process.

HOW DOES IT WORK?



WHY RECYCLE YOUR WASTE AND GENERATE YOUR OWN POWER?



Solution of an environmental problem



Saving in transport and disposing of residues



Profit in the recycling of exceeding biomass



Independence from electric power dealership



Commercialization of Excess energy

PROJECT IMPLEMENTATION

1



VIABILITY ANALYSIS

Available biomass residues
Local electricity costs
Payback Analysis
Site check for implementation

2



DESIGN SOLUTION

Understanding of the client's needs.
Definition of which technology to be used
Conceptual Project

3



IMPLEMENTATION

Regime TurnKey
Project and equipment manufacturing.
Mechanical and electric gear assembly.
Project managing
Commissioning and Start-up

4



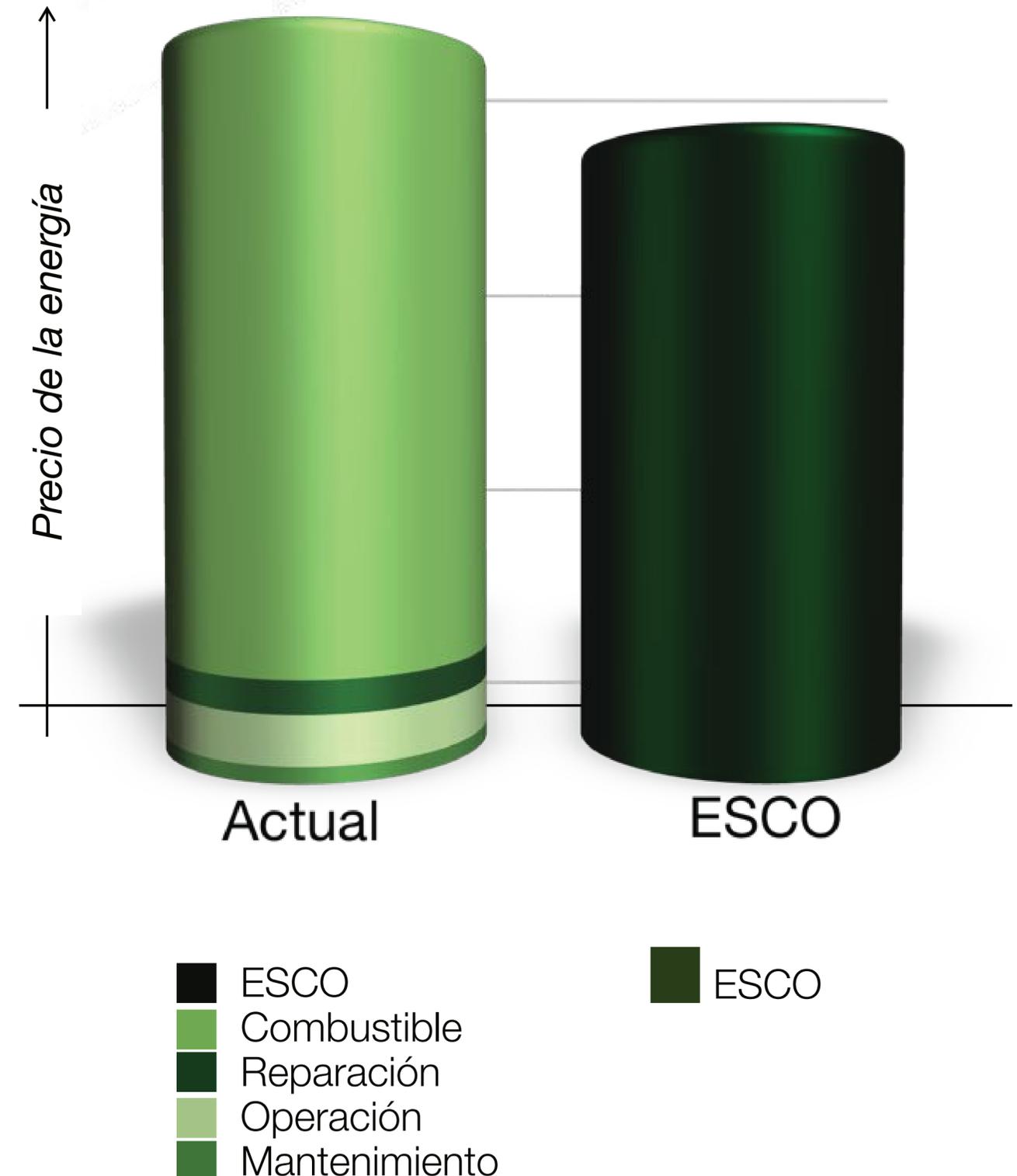
OPERATION AND MAINTENANCE

Qualified local team
Training and formation of operatives and staff
Maintenance with high performance focus

LEASING, FINANCE OR ESCO (Energy Services Company)

Advantages

- ▶ **No direct investment** from our client.
- ▶ Direct Sale, Lease, Finance or ESCO model are possible solutions to any project.
- ▶ The client outsources a service: reduction of fixed costs and their budget on CoreBusiness.
- ▶ Cheaper and more stable energy acquisition cost.
- ▶ CO2 neutral emission and environmental improvement with the replacement of the current fossil fuel.
- ▶ Local energy, favors the development of the economy of the area and reduces external energy dependence.
- ▶ Stop dependence on Landfills
- ▶ Generate New Jobs and Circular Local Economy



WHY IS **ENGEMAN** THE BEST OPTION?

WE HAVE PIONEERING, EXCELLENCE
AND KNOW-HOW

WE KNOW WHERE TO FIND APPROPRIATE RAW MATERIALS

WE CULTIVATE IMPORTANT PARTNERSHIPS

AND VALUE A CLOSE BUSINESS RELATIONSHIP WITH

THE AGRIBUSINESS MARKET.

With
+800
Renewable Energy
Projects

We export to
+18
Countries





WASTE TO ENERGY (WTE)

WHY IS WTE THE BEST OPTION?

We believe that innovation has the power to transform the world.

WASTE IS THE SECOND LARGEST ENERGY SOURCE IN THE WORLD

Currently, the power generation using Biomass from Municipal and industrial waste corresponds to around 121TWh of the world's energy use. The information comes from the website World Energy.

Sources: <http://www.worldbioenergy.org/uploads/201210%20WBA%20GBS%202020.pdf>

WASTE TO ENERGY ENGEMAN AND CWPC

ENGEMAN/CHINA WESTERN MSW (Municipal Solid Waste Plants)

**1KG
WASTE**

Each Person
produces 1Kg
per day of Waste

**10%
GROW**

The Grow of
Waste is 10%
per Year in the World

**Millions
Of Tons**

Each Year
every city in the
World have millions
and Billions
of tons of waste

**Air
Pollution**

Waste Contaminates
Air with Gas as Methane
and others

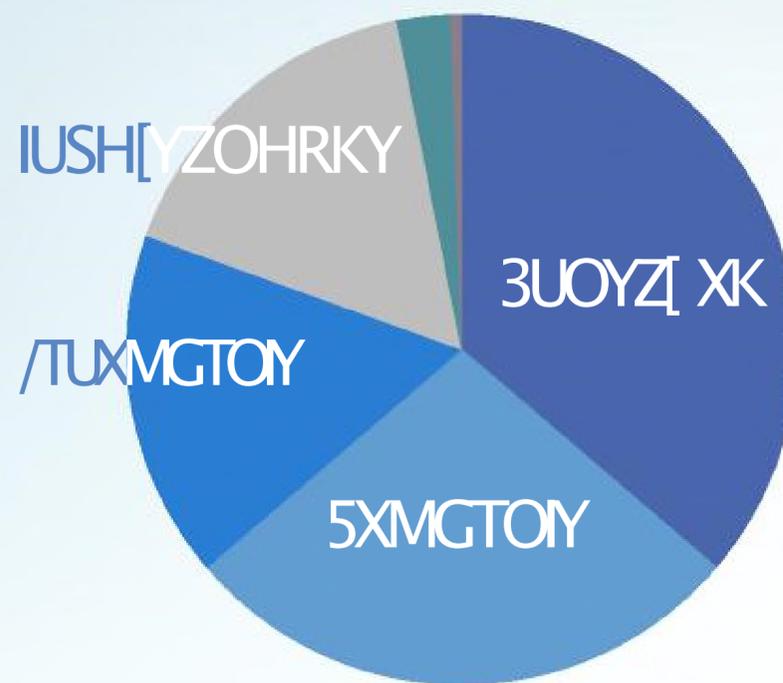
**Landfills
FULL**

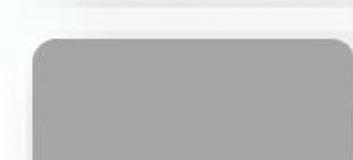
Landfills are not
sustainable solution
in long term

**Water
Pollution**

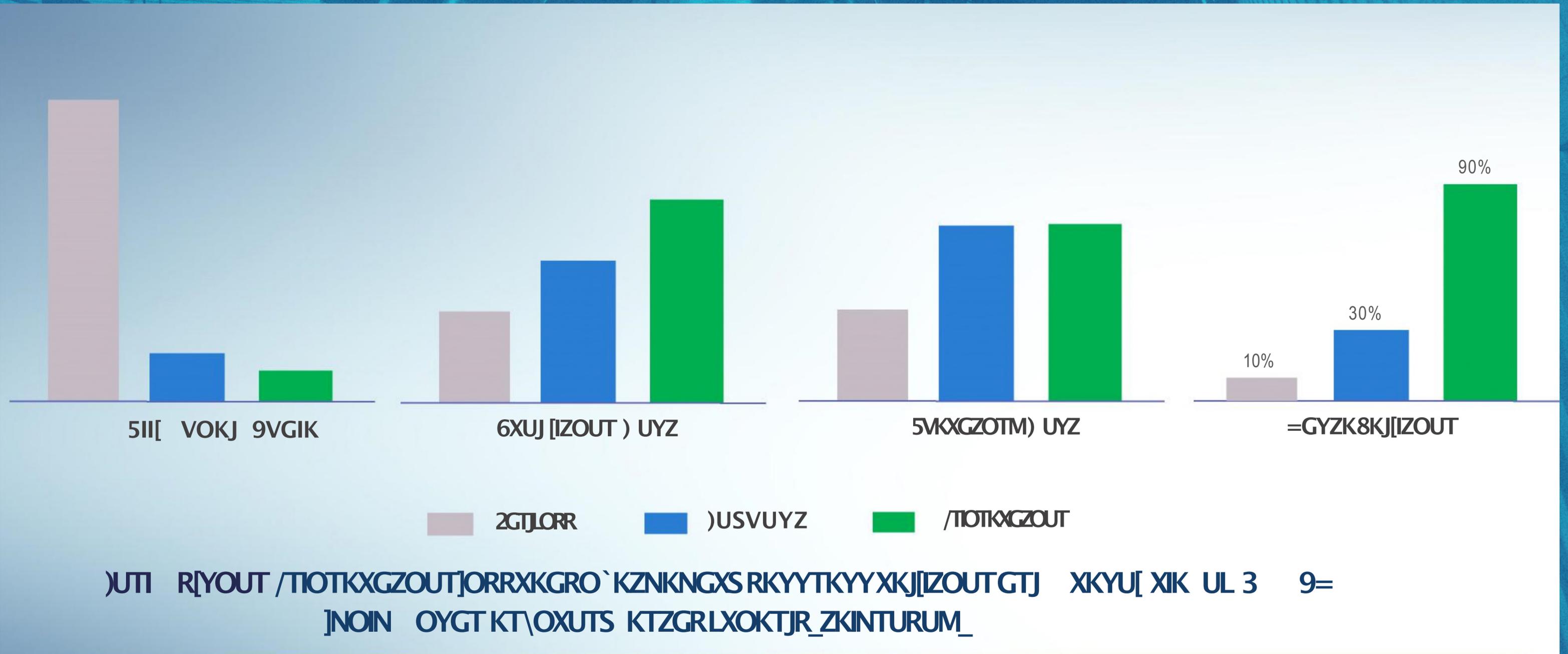
Landfills
contaminates Lands
and Water

COMPOSITION OF WASTE



-  Leachate
Zero Emission
-  Organic Compound Fertilizer
Incineration to Energy
-  Wood & Plastic (can be recycled)
Incineration to Energy
-  Incineration to Energy
-  Plastic
Be Recycled
Incineration to Energy
-  Rubber, Glass, Metal
Be Recycled

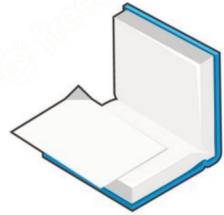
COMPARISON OF DISPOSAL METHODS



RECYCLE AND SEPARATION



ORGANIC



PAPER



E-WASTE



PLASTIC



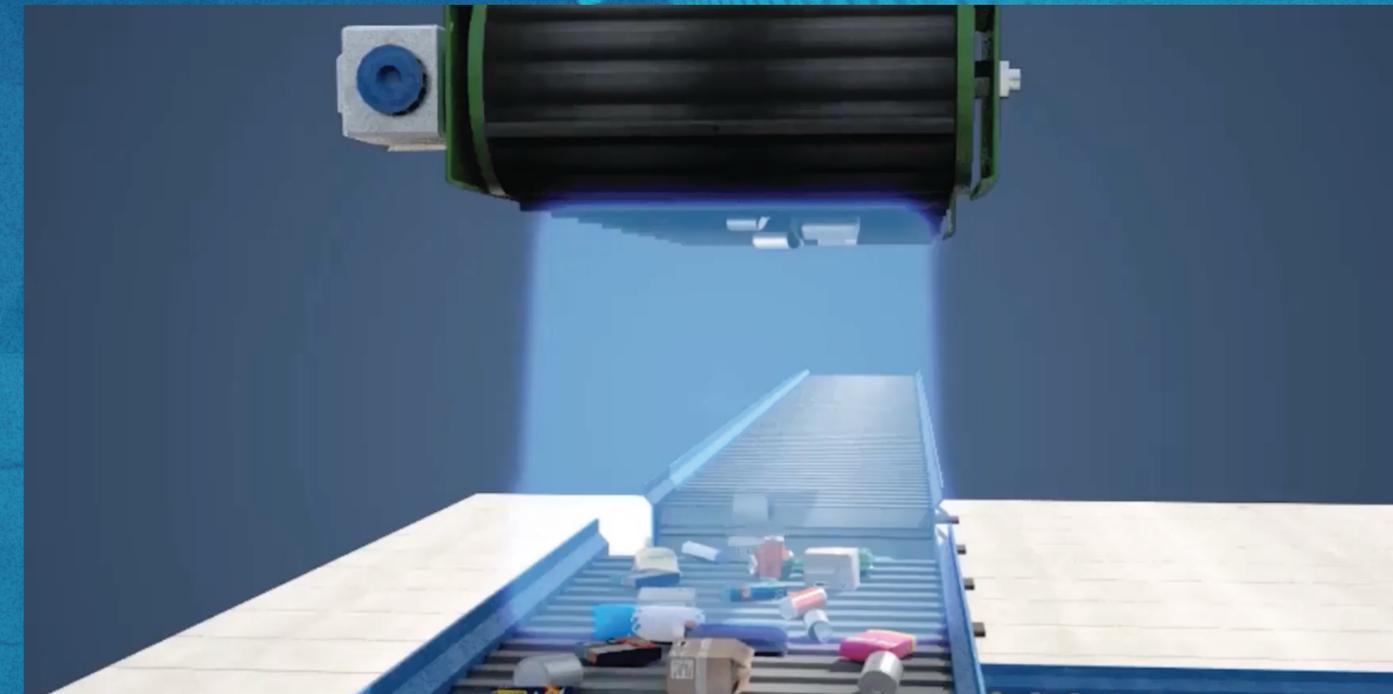
GLASS



METAL



MIXED WASTE



SOLUTION WASTE TO ENERGY

YURRKI ZOUTGTJ
: XGTVMUXZGZOUT
9_YZKS

8KIKO\OTMGTJ
9ZUXGMK9_YZKS

/TI OTXGZOU
T9_YZKS

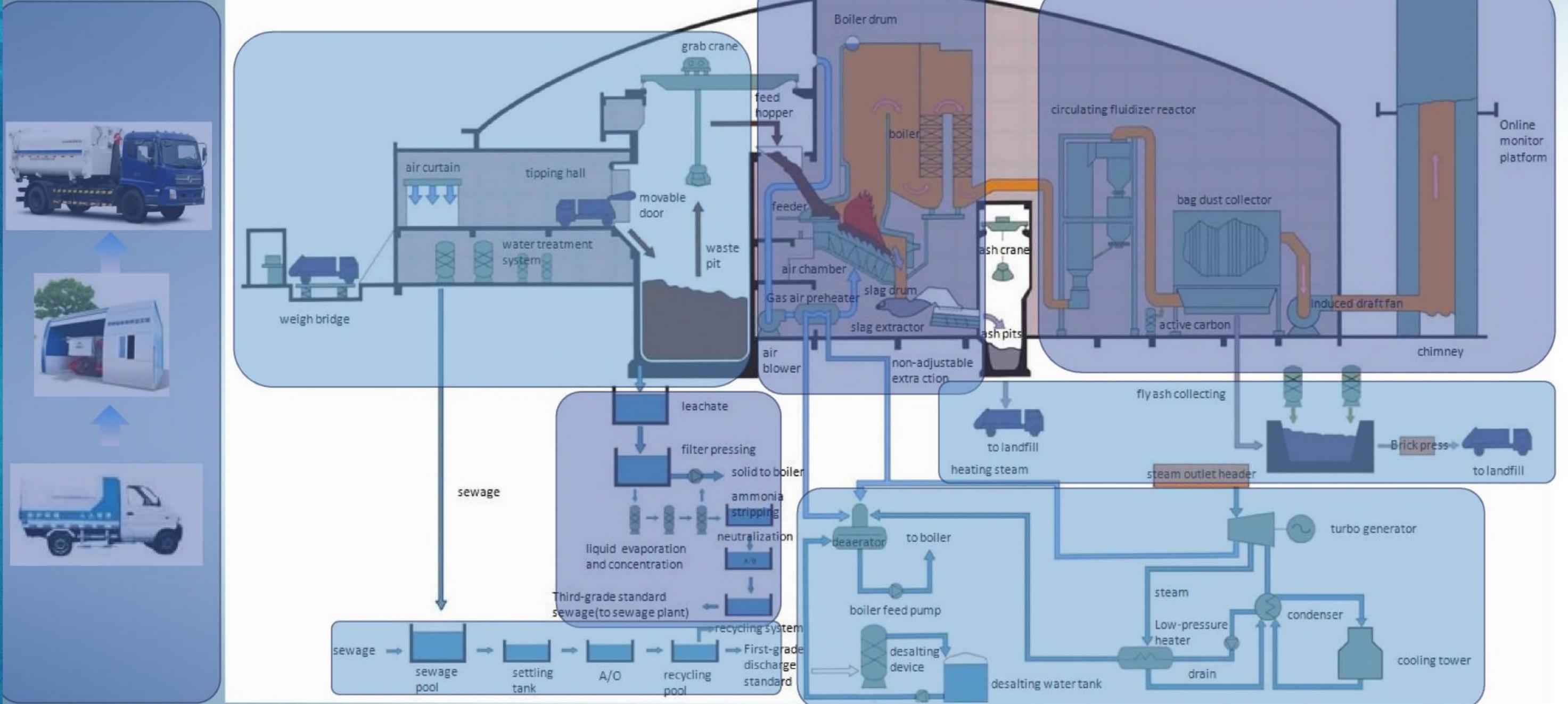
.KGZ
; ZORO`GZOUT
9_YZKS

,R[K MGY
: XKGZSKTZ
Y_YZKS

'Y N
.KGZOTM
Y_YZKS

2KGI NGZK
ZXKGZSKTZ
9_YZKS

9KJ GMK
: XKGZSKTZ
9_YZKS



SOLUTION WASTE TO ENERGY

=GYZK ZX[I QYGXK] KOMNKJ UT ZNK
]KOMN HXQJMK HIKLUXK KTZXOTMVRGTZ

Be weighed with automatic, fast, high-precision.
Truck number will be recognized by snapshot
automatically.

Infrared radio frequency of vehicle registration
system.

Unattended operation.

Waste weighing data can be uploaded to local
environmental authorities.



=GYZK OY[TRUGJ KJ GTJ
YZUXKJ OTZNK]GYZK VOZ

It is sealed and slightly negative pressure in
waste pit.

The pit shall store MSW of 5~7 days.

The grab crane is controlled in semi-automatic
mode accurately.

The grab crane is equipped with anti-collision
system to avoid wall damage effectively.



39= ZOWOTM
NGRR

Air curtain prevents soot emission.
All the doors open simultaneously to
realize fast unloading.



-XGH IXGTKY GXK
UMXGZKJ OTIUTZXUR
XUUS

Control room is designed outward
without vision blind area.

Intelligent management system is used for
Mixing, stocking and feeding to ensure
effective combustion and maximum heating
value.

INCINERATION SOLUTION

Bottom Ash System

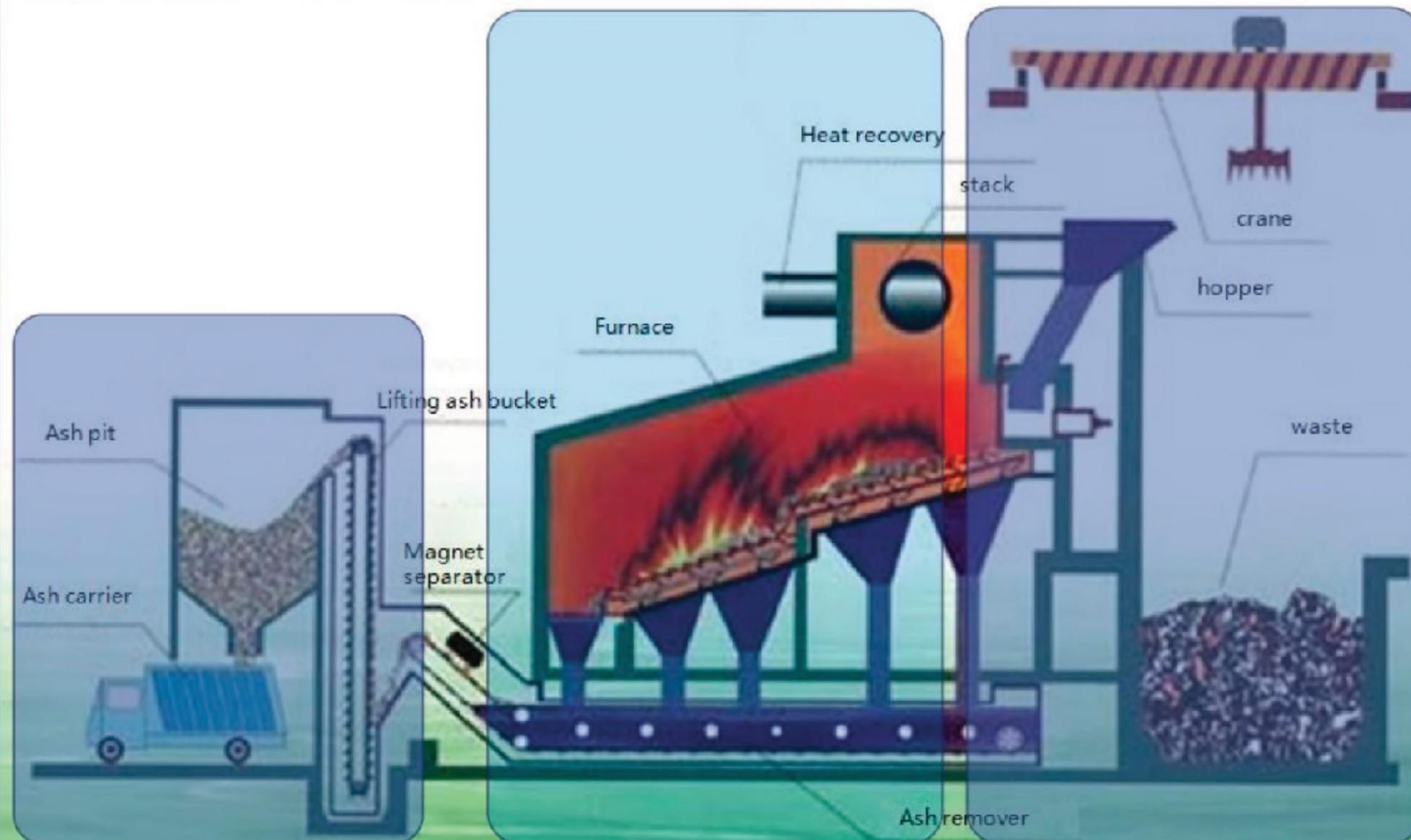
Incinerator

Feeding System

Combustion System

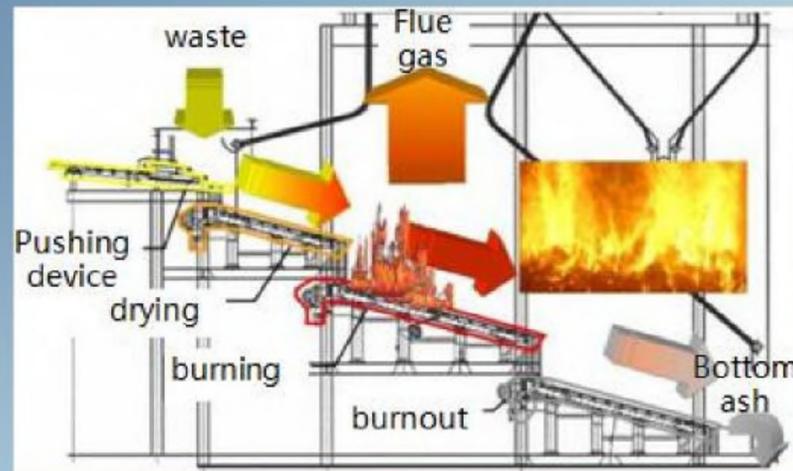
Ignition System

Hydraulic Transmission System

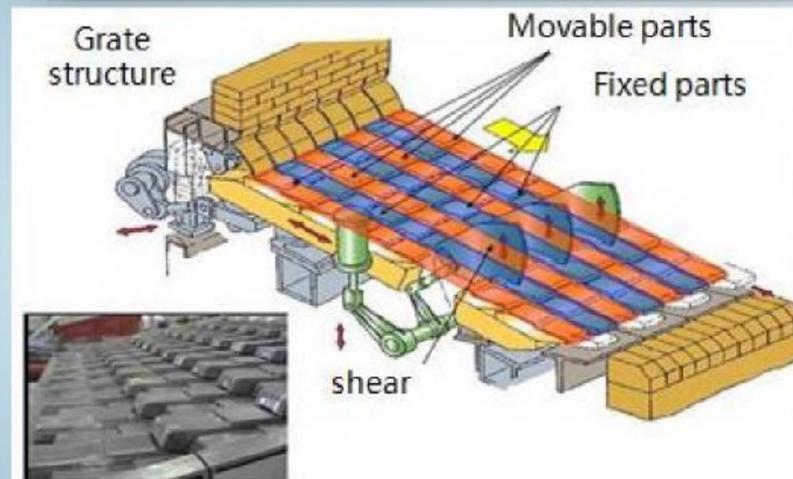


Annual Work Time	≥8000h
Load Variation Range	70~110% B-MCR
Rated Superheated Steam Pressure	4MPa
Rated Superheated Steam Temperature	400°C
Incinerator Efficiency	80%
Residence Time at Zone >850°C	≥2s
Bottom Ash Cauterize Reduction Rate	≤3%
Flue Gas Emission Requirement	Meet EU2000 standard

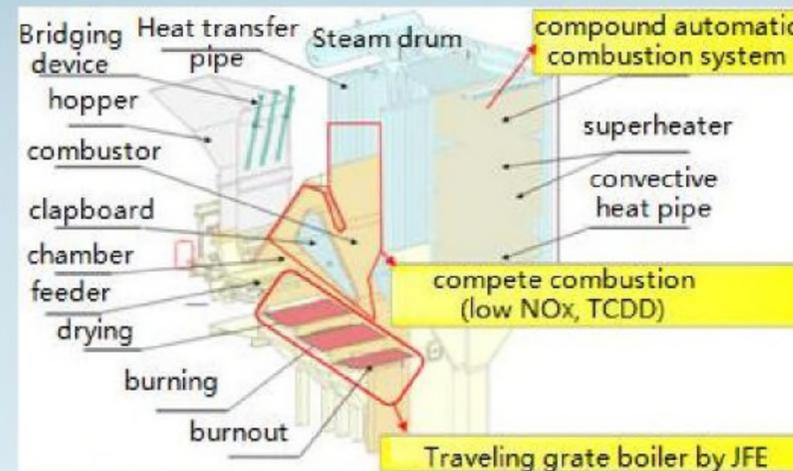
MECHANICAL GRATES SYSTEM



-KXS GT_ 3GXZOT0GVGT
3OZYH0YNO5 KI NGTOIGRMXGZK
HUORKX



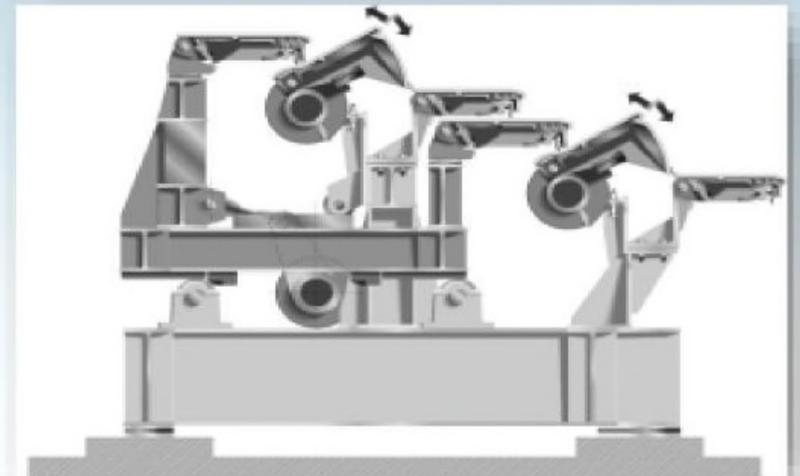
.OZGINO@UYKT S KINGTOIGRMXGZK HUORKX



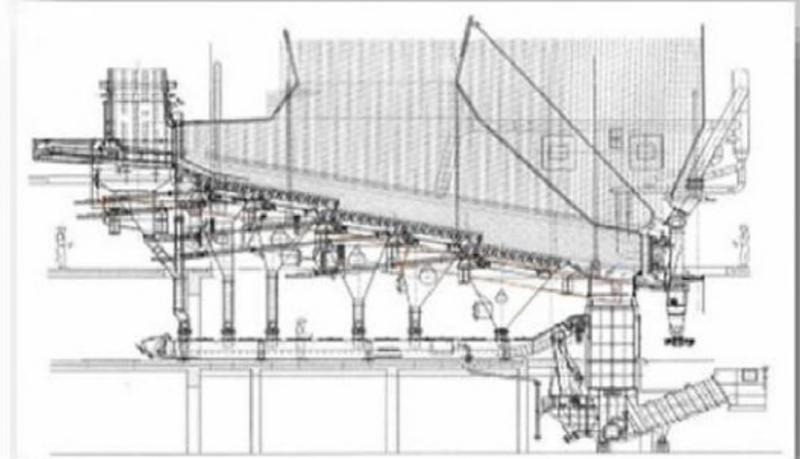
*KTS GXQ<52; 4 *0GVGTYK
0,+ S KI NGTOIGRMXGZKHUORKX

v4U TKKJ VVKZKXGZSKTZY_YZKS GTJ NG\KYZUTM
GJ GVZGHOROZ_ZU39=] OZN\GXOUJYKNGZ \GR[K
vJUS H[YZOUTZKS VXXGZ\XKGTJ UMXGZOTMYZGHRK
v.OMN ZNKXS GRKLOIOKTJ_ GTJ YZUTMXKYOYZGTIKZU
U\KXH[XJKT
v.OMN RK\KRG[ZUS GZOUT') Y_YZKS
v+GY_ ZUS GOTZGOTGTJ RUJ IUYZ
v2U] KSOYYOUT

9KRKIZ GWAUVXOGZKGTJ GJ\GTI KJ MXGZKZKI NTURUM_
GI I UXJ OTMZUI [YZUS KX
YTKKJ Y



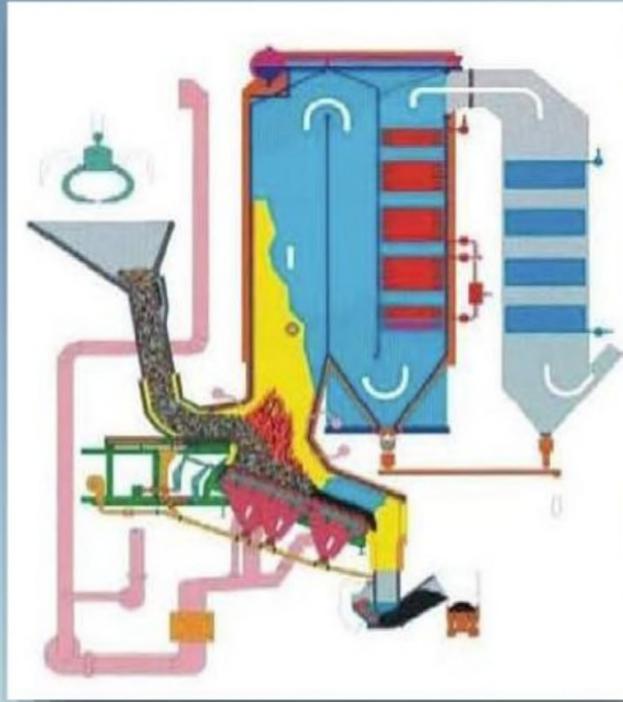
(RMOGT 9OMLXYS KI NGTOIGRMXGZKHUORKX



-KXS GT_ 9: +/43;22+8 S KI NGTOIGRMXGZKHUORKX

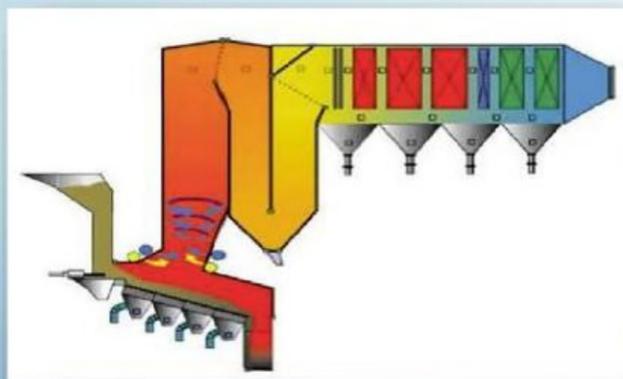
3 KINGTOIGR MXGZKHUORKXOYZKNSUYZ] OJKR_ [YKJZK RGMKYZGTJ ZNK
SUYZ VXGIZOIGR3 9= OTIOTKXGZUXOTZK] UXRJ

GENERATION WITH HIGH PRESSURE STEAM



<KXZOIGRNKGZ XKIU\KX_ HUORIX

) USVGI Z YZXI ZI XK RKYY RGTJ UI I [VGZOUT
 GTJ RU] OT\KYZSKTZ
 9ZKGS I RKGOTMOMYI YKJ OTYZKJ UL XGWOTM
 I RKGOTM] NOIN] ORRIUTYISK NOMNM[GROZ_
 YZKGS GTJ GHXGJK I UT\KI ZOUTVOVKTKGXH_
 YUUZ HRU] OTMM[T'TJ ZNK SGOTZKTGTI K
 IYZ OYNOMN



.LXO`UTZGRNKGZ XKI U\KX_ HUORIX

SI I [V_OTM RGXMKGXKGNOMNOT\KYZSKTZ
 8GWOTM I RKGOTMOMYI[OZGRK] NOIN I GT
 KLLKI ZO\KR_XKJ [I K ZNK NOMNZKSVKXGZ] XK
 IUXUYOUTUL ZNK IUT\KIZOUT YKIZOUT



9ZKGS Z[XHOTK MKTKXGZUX[TOZY

+LLOIOKTZVU] KX MKTKXGZOUT ZKI NTURUM_

R/SVXU\KNKGZXXIU\KX_KLLOIOKTI_

3KGY[XK 2U] GOXL[KRXGZOU I USH\YZOUT ,R[K MGY XKI] ROTM2U] ZKSVKXGZ[XK
 KI UTUSO`KXKZI

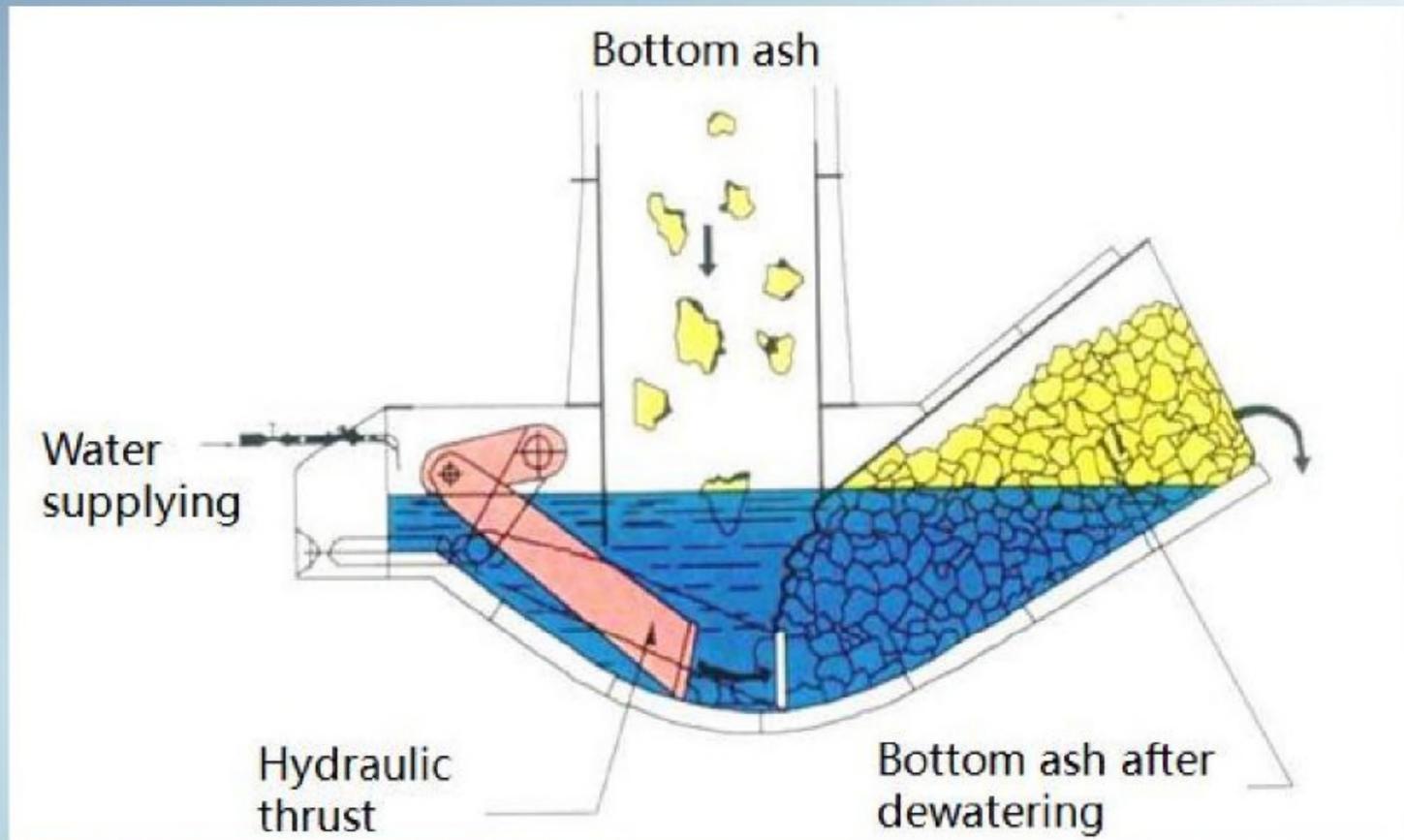
R/SVXU\KYZKGS Z[XHOTKLLLOIOKTI_

3KGY[XK] UVZ NOMNZKSVKXGZ[XK GTJ VXKYY[XK HUORIX NOMNYVKKJYZKGS
 Z[XHOTKGT] XKJ [I K HGI QVXKYY[XK UL YZKGS Z[XHOTK KZI

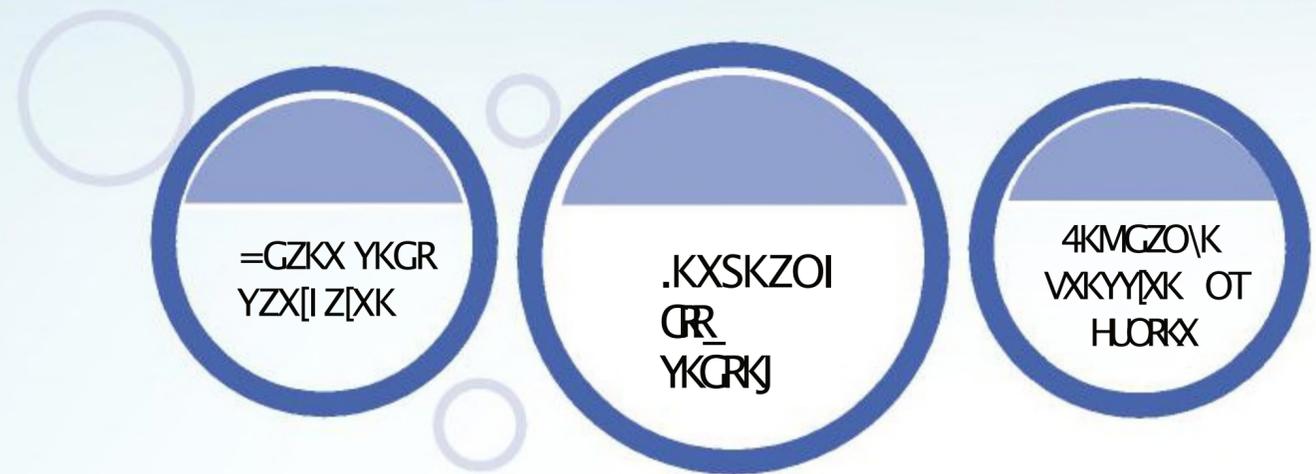
R 8KJ[I K VRGTZVU] KXI UTY[SVZOUT

3KGY[XK ; YOTMKLLOIOKTZSUZUXKTKXM_YG\OTM ROMNZOTMKZI

ASHES TREATMENTS SYSTEM



9RGVXKSU\KX



=GZKX YKGR
YZX[I Z[XK

.KXSKZOI
CR_
YKGRKJ

4KMGZO\K
VXKY\K OT
HLORX

Bottom ash transporting system

'IIUXJOTM
ZU\YKX` Y
XKW\OXKSKTZ

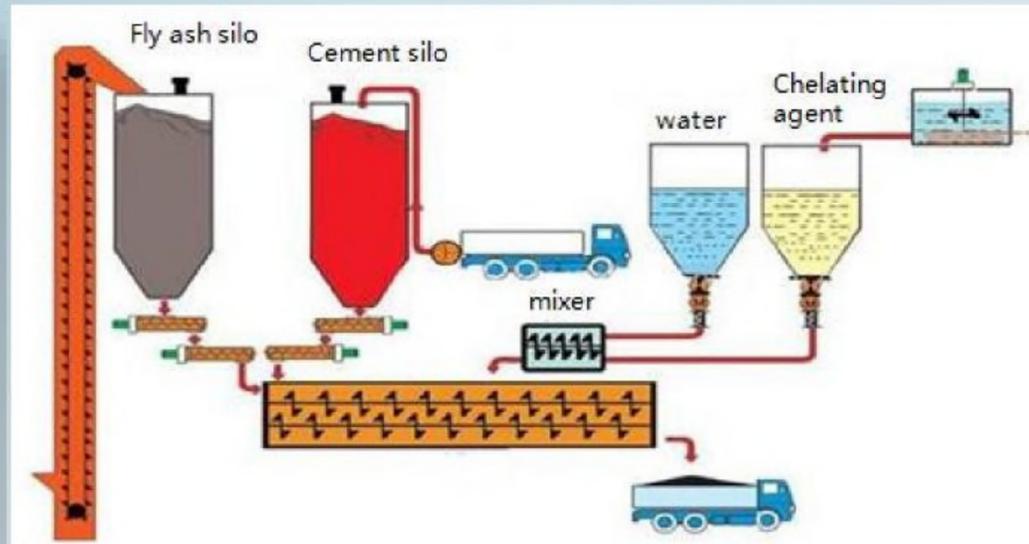
(K ZXGTYVUXZKJ ZU GYN YORUH_HKRZ

(K I UT\K_KJ ZU GYN YORUH_ \OHXGZOUTZXGTYVUXZKXGTJ
RUGJ KJ ZU ZX[I QY H_ I XGTKYGTJ ZNKT YKTZ GYN ZU RGTJLORR
UX HK [ZORO`KJI USVXKNKTYO\KR_

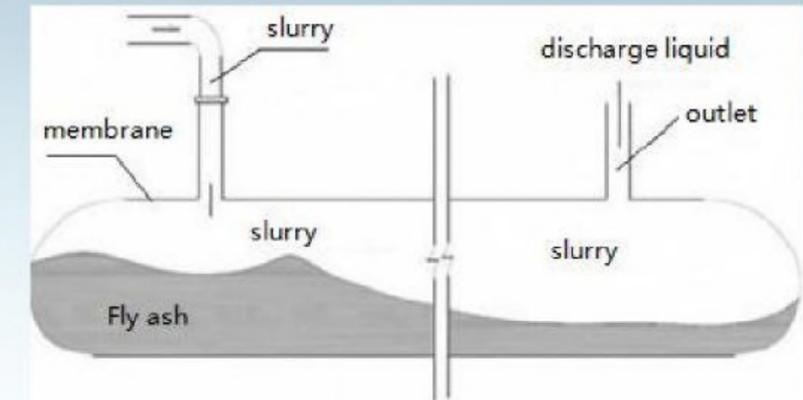
FLY ASH SYSTEM



R_ GYN YUROJOLOGZOUTJK\OIK



JKSKTZYZGHORO`KXYUROJOLOGZOUTY_YZKS VXUIKYY



Flyashwetmembranelandfilltechnology

R_ GYN YUROJOLOGZOUT

=KZ NKS OGRZXKZSKTZ
ZKNTURUM_

)NKSOIGR
YZH-CRO`GZOUT
ZKNTURUM_

)KSKTZ
9ZH-CRO`KX
YUROJOLOGZOUT

)KSKTZ YUROJOLOGZOUT

Flyashwet
membranelandfill
tech.

Meltingsolidification

R6XUIKYYOYTUZIUSVROIGZKJ GTJTUTKKJ
GIXGZKR_ XKW[OXKSKTZYLUXKW[OVSKTZY!
R2U] IUYZ :NKIUTY[SVZOUTULIKSKTZGTJ
YZGHORO`KXOYRUJ]KXGTJ KSKTZ GTJ YZGHORO`KX
IGT HK UHZGOTKJ KGYOR_!
R2U] KTKXM_IUTY[SKJ GTJ TUTKKJ
NKGZOTM
GTJ KRKIZXUR_YOYKW[OVSKTZY

LEACHETE TREATMENTS SYSTEM

)UGM[RGZOUT ' S S UTOG
9ZXOVVOTM ;(, 9(8 3 (8

The 1st
generation

*XGOTOTM VGXGTUXS GRR_VUUX UMKXGZOTMKT\OXUTSKTZ
RGXMKUII[VGZOUTGXKGNOMNUMXGZOUTI UYZ

The 2nd
generation

6XKZXKGZSKTZ /5)
' 5 ;, 4 , 85

/ZOYZXGJOZOUTGRZKINTURUM_]OJKR_[YKJ!]GZKX]ORRHK
VXUJ[IJK] H_ ZNOY ZKINTURUM_H[Z
IUTIKTZXGZKJ
]GZKX] ORRGYUHKIG[YKJ]NOIN OYUL VUUX W[GROZ_!2GXMK
GXKG] ORRHKUI I [VOKJ RKG] OTMZU G NOMNUMXGZOUT I UYZ

6XKZXKGZSKTZ /5) ' 5
;, 9ULZKTOTM 85 *:85

The 3rd
generation

6[XK U^_MKT GXGZOUT!UMXGZOTM YZGHR_4 OYRKY ZNGT
S M 2!VXUJ[IOTM GYS [IN GY d] GZKX GTJZNK
IUTIKTZXGZKJ] GZKX OYUL MUJ W[GROZ_!NOMNK LLOIOKTI_
YG\OTM KTKXM_UMXGZOTM YZGHR_

LEACHETE TREATMENTS SYSTEM



ZNK ZNOXJ MKTKXGZOUTRKGINGZK ZXKGZSKTZ ZKI NTURUM_
RHOUIINKSOYZX_VN_YOIGR INKSOYZX_ZXKGZSKTZ
R(OUIINKSOYZX_ZXKGZSKTZOTIRJJKYGTGKXUHOIXKGIZOUT 3(8Y_YZKS]NOIN]ORR
XKSU\K (5* 4 GTJ 6
R6N_YOIGR INKSOYZX_ZXKGZSKTZOTIRJJKY[RZXGLORZXGZOUT

XK\KXYKUYSUYOYY YZKS

JNOI N]ORRXKS U\K OUTGJ] 5*

R:NKSKZNGTKVXUJ[IKJ OTZKNGTGKXUHOIXKGIZOUTOYZXGTYVUXZKJZUIUSH]YZOUT
INGSHKX UX ZU ZNK OMTOZOUTY_YZKS
R:INK USOYYOUTSKKZY ZNK OTJ]YZXOGR]GZKX XKW[O KSKTZY
R)UTIKTZGZKYOHGIQPKZZKJ ZU]GYZKVOZ =GZKXO YKJ LUXJKY[RLXO GZOUT
RZXGLORZXGZOUT
RHOIINKSOYZX_VN_YOIGR INKSOYZX_ZXKGZSKTZ

XK\KXYKUYSUYOYJK\OIK



ODOR CONTROL SYSTEM

:XGTYVUXZOTM
2GTKY

9KZ YVXG_
JKUJ UXO`OTMY_YZKS

:OWOTM
.GRR

9KZ COX [XZCOTZU
VXK\KTZUJUX
J OLL[YOUT

=GYZK 6OZ

1KKV TKMGZO\K
VXKYY[XK ZU VXK\KTZ
ZNK RKCCQGMK UL YZOTQ

2KGINGZK
:XKGZS KTZ
9ZGZOUT

9KZ YVXG_
JKUJUXO`OTM Y_YZKS

4KMGZO\K
6XKYY[XK
'MGOTYZ
5J UX
2KCGQGMK

HUORIXOTUMKXGZOUT

5J UX OTZNK VOZOYY[I QKJ ZU
HUORIXZNXU[MN VXOSGX_ GOXLGT

HUORIX OTXKVCOX

5J UX OYK^ANG[YZU[ZJ UUX
ZNXU[MN GI ZO\GZKJ I GXHUT
JKUJUXGTZ J K\OIK
*KZKI Z ZNK UJ UX I UTI KTZXGZOUTOT
ZNK V[XOLOKXU[ZRKZGTJ XKTQ] ZNK
GI ZO\GZKJ I GXHUT OTZOSK



'I ZO\GZKJ I GXHUTJKUJUXGTZ JK\OI
K

SIMPLE NUMBERS



4U	6XUPKIZY	;TOZ	90IMRK OTI OTKXGZOUT ROTK
	*GOR_ZXKGS KTZ IGVGIOZ_	ZUJ	2x750
	'TT[GRZXKGS KTZ IGVGIOZ_	ZUTY_KGX	500,000
	RUJ NKGZ \GR[K	kJ/kg	9000
	5VKXGZOUT NU[XYVKX_KGX	N	>8000
	-XOJ VUJ KX MKTKXGZOUT	--N_KGX	~178
	6UJ KXI UTY[S VZOUTUL VRGTZ		18~20
	9ZKGS Z[XHOTKU[ZV[Z	3 =	2x15
	:NKXS GRKLOIOKTI_]NURK VXUI KYY		22~23
	9XXOK ROLK	_KGX	>30
	=GZKXIUTY[S VZOUT	ZUTY_KGX	1,240,000
	6RGZGAKG	YW[GAKS KZKXY	75,000
	+S VRU_KK	VKXYUTY	60
)UTYZX[I ZOUTVKXOUJ	SUTZN	24

CASE 1-50MMh

MINAS GERAIS

US\$
80 MI

Investment

US\$
22 MI

Annual Revenue

US\$
20 MI

Annual Profit

TON
660

Daily Fuel Consumption

420.000
MMWh

Annual net power
generated

±4
YEARS

Payback



Acesse a tabela
completa
clikando aqui

CASE 1

WD
MINAS GERAIS



CASE 1 WD MINAS GERAIS

BRASIL , Patos de Minas MG 2017 - 43 MWh of electricity with Sugar Plant residues and waste.



CASE 2

GENERADORA LA UNION

US\$
6,0 MI

Investment

US\$
3,5 MI

Annual Revenue

US\$
3,0 MI

Annual Profit

TON
86

Daily Fuel Consumption

21.000
MMH +
35.000 t/y
steam

Annual net power
generated

±20
YEARS

Payback



Acesse a tabela
completa
clikando aqui

CASE 2

2.5MWh

GENERADORA
LA UNION
HONDURAS



CASE 3

AGROSUPER
BIOMASS
CHICKEN AND PORK
SLUDGES

US\$
6,0 MI

Investment

US\$
3,0 MI

Annual Revenue

US\$
3,0 MI

Annual Profit

TON
48

Daily Fuel Consumption

82.000
TON/yr
STEAM

Annual net power
generated

±20
YEARS

Payback

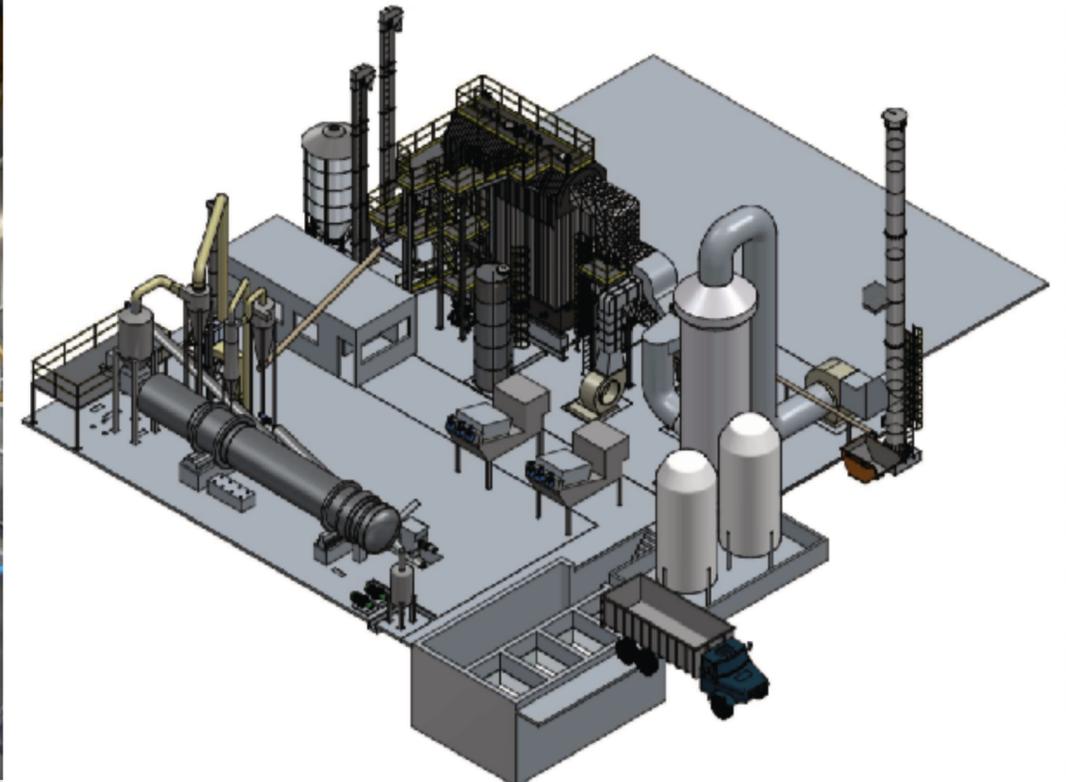


Acesse a tabela
completa
clikando aqui

SLUDGES

CASE 3

10 TON/H



ENGEMAN®

CASE 4

Sri Lanka

WASTE TO
ENERGY
WITH CWPC



CASE 4

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ENERGY
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ENGEMAN



The flood of domestic waste in Sri Lanka has become a serious social problem in the local area, especially in the Western Province where Colombo is located, where more than 3,500 tons of domestic waste is generated every day. Before the completion of waste incineration power stations, domestic waste was mainly piled up in landfills, which seriously polluted groundwater and the environment.



As an important local people's livelihood project, the Colombo project has always been highly valued by the local government and given various policy support. After the project is completed, it will be able to incinerate 600–800 tons of domestic waste every day, and provide 10MW of electricity for Sri Lanka's national grid, realize the conversion of local domestic waste from the traditional landfill treatment method to the incineration power generation mode, and realize the reduction of urban domestic waste. Chemical, resource-based, and harmless treatment.



Ms. Rosy Senanayaka, Sri Lanka Colombo's Mayor, said in her speech that the Colombo WtE Power Plant is an important local livelihood project, which burns domestic waste and turns waste into treasure for reuse.



Emissions in Waste Power Plant at Sri Lanka

The emission of WtE in Colombo, Sri Lanka complies with Directive 2000/76/EC of the European Parliament and of the Council on the incineration of waste. The specific limit values are listed out as followings:

Pollutants	Value
Total dust PM 10-2,5	10 mg/m ³
Total organic carbon	10 mg/m ³
Hydrogen chloride (HCl)	10 mg/m ³
Hydrogen fluoride (HF)	1 mg/m ³
Sulphur dioxide (SO ₂)	50 mg/Nm ³
NO _x	200 mg/Nm ³
Cadmium (Cd) + Thallium (Tl)	0.05 mg/Nm ³
Mercury (Hg)	0.05 mg/Nm ³
Other heavy metal	0.5 mg/Nm ³
Dioxins and furans	0.1 ng/Nm ³

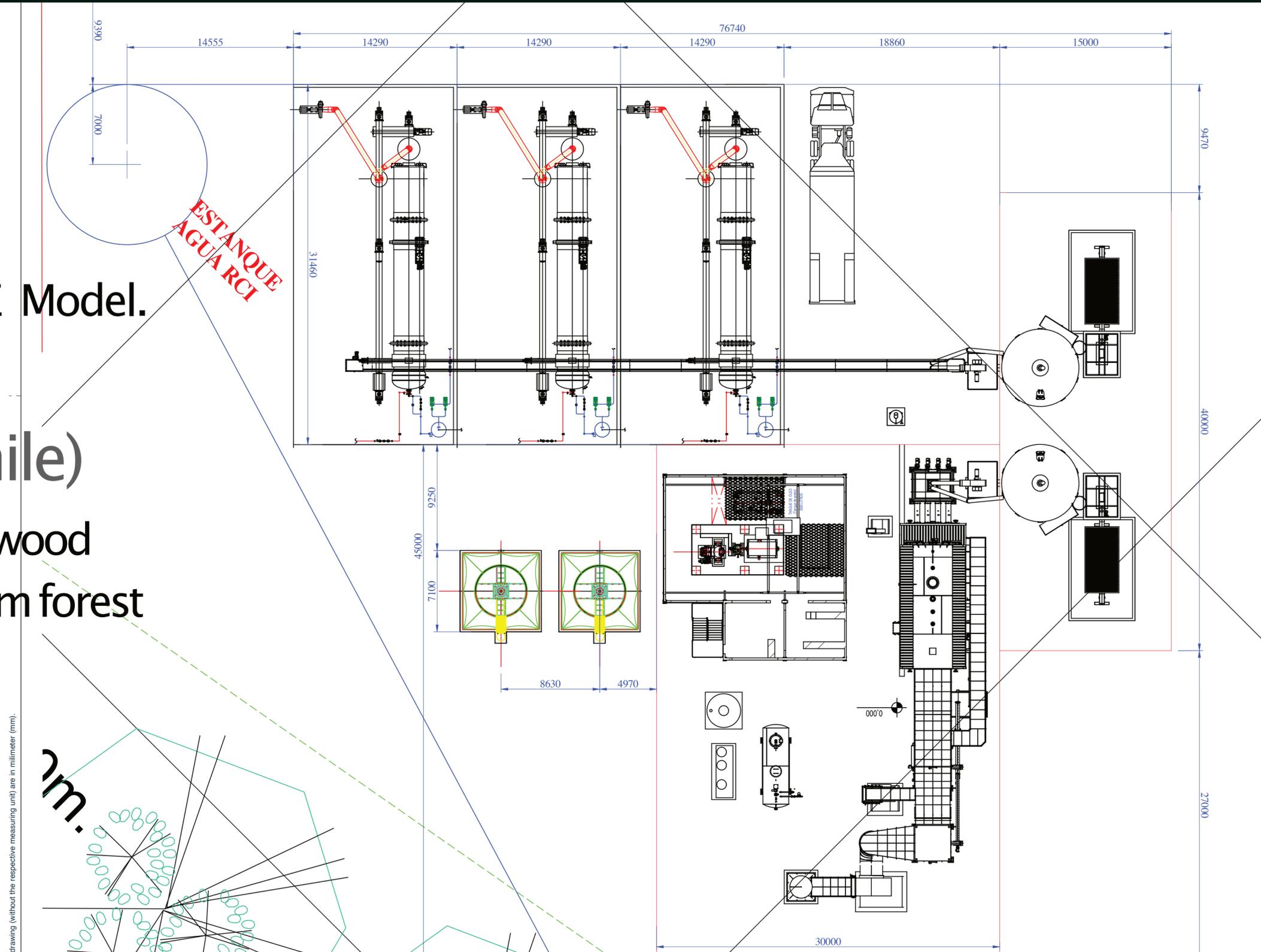


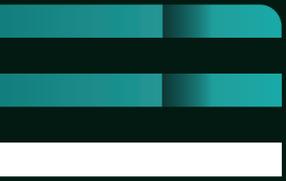
Project under contract ESCO LEASE Model.

INDEF

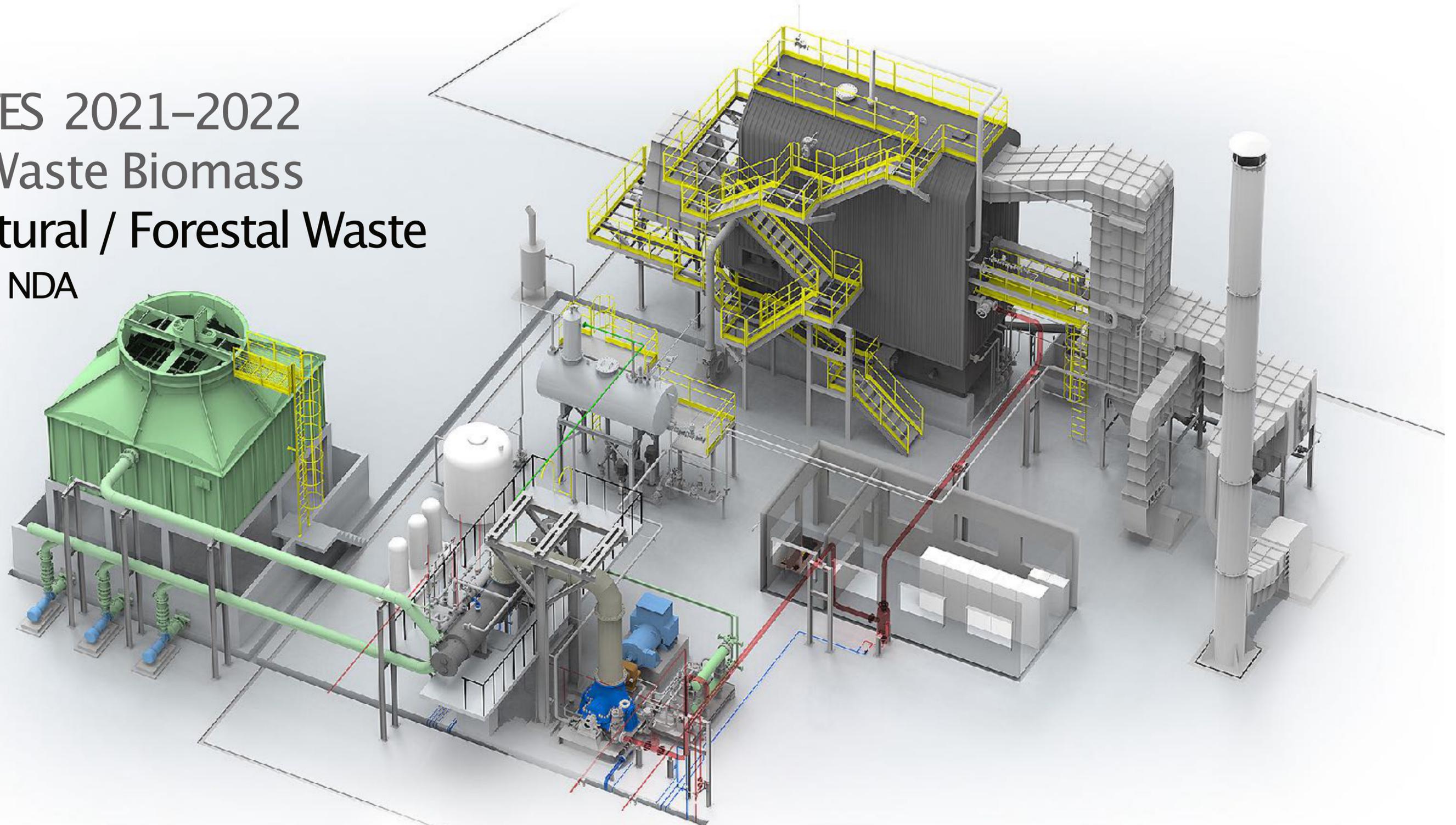
(Los Angeles BíoBío, Chile)

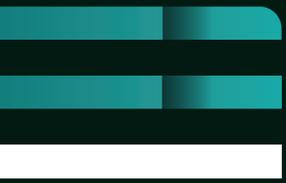
5 MWe and 20 ton of steam to dry wood sawdust for pellet manufacture from forest industry waste.





CALIFORNIA
UNITED STATES 2021-2022
5MWe With Waste Biomass
Mixed Agricultural / Forestal Waste
Under contract and NDA





AGRARIA (Curitiba, Brasil). 2016

35TVh20Bar Mixed Agricultural Waste

Corn, Crops, Woodchips, WoodWaste



Our customers



INVESTING IN POWER IS ONE OF THE BEST VENTURES IN TODAY'S AGE

3 WAYS TO MAKE THIS TYPE OF INVESTMENT VIABLE

1



Client sets deals for biomass sales for both Engeman and Investidors. The power is then sold on the free market.

2



The client sets the biomass donation in exchange for a power bill reduction

3



The client becomes a investment partner at UTE

Form the Man
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THAT MAKE
THINGS HAPPEN.

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