KERONE
Kerone Engineering Solutions Limited

BIOCHAR
CURRENT KNOWLEDGE & OPPORTUNITIES

In Association with SVCH-Technologii, Moscow (Russia)

ISO 9001:2015 | ISO 14001:2015 | ISO 45001:2018

ABOUT US

KERONE is now renowned for serving the specialized needs of customers with the best quality and economical process of Heating /cooling and drying products, manufactured in a high-quality environment by a trained and qualified workforce (special purpose machinery)

KERONE is a pioneer in application and implementation engineering with its vast experience and team of professionals.

KERONE is devoteded to serve the industry to optimize its operations both economically and environmentally with its specialized heating and drying solutions.

KERONE is having immense expertise in manufacturing and implementing various types of engineering solutions.

KERONE is possessing employee strength of more than 280+ experts continuously putting efforts for happy industrial engineering solutions.

WHY CHOOSE US

> Enhance the value of customer operation through our customer need centric engineering solution.

With decades of expertise, cutting-edge technology, and a customer-centric approach, Kerone Engineering offers tailor-made heating solutions that prioritize quality, flexibility, and cost-effectiveness. Benefit from our commitment to excellence, post-sales support, and innovative solutions for your unique heating needs. Choose Kerone Engineering for reliability, performance, and unmatched value.

MISSION

- To enhance the value of customer operation throughi our customer need centricengineefing solution
- We are cominitted to provide our customers, unique arid best in class products in Industrial heating drying and cooling segment with strategic tie-up for the technical know-how with renowned leader in the industry specific segment

VISION

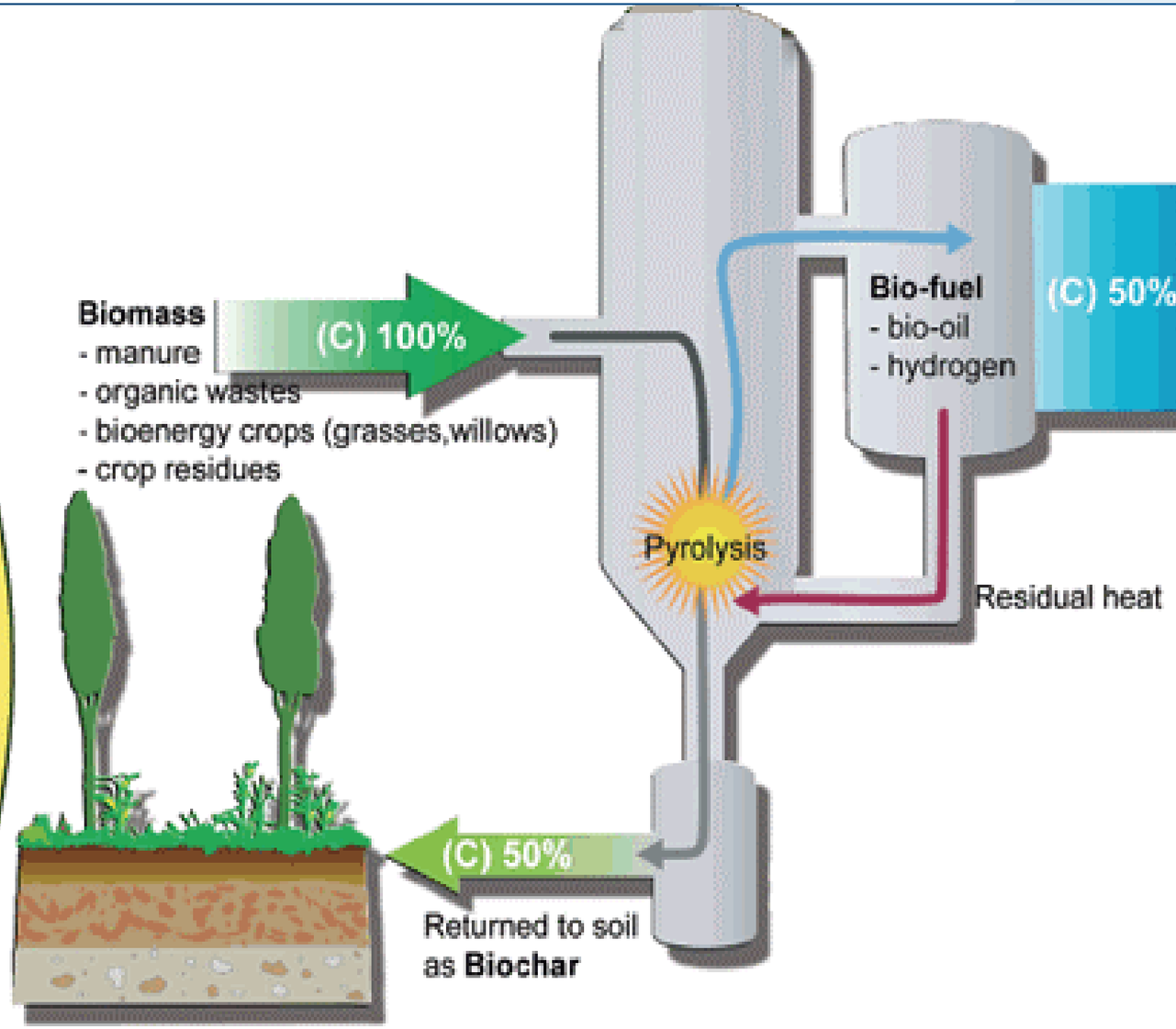
- Turn into a world leader in providing specialized, top-notch quality and ecological industrial heating, cooling, and drying solutions across the globe.
- To attain global recognition as the best of quality and environment-friendly engineering solution company.

Amazon black earth Terra Preta soils

- Higher in pH
- Higher in Phosphorus
- Higher CEC
- Higher Calcium, Magnesium

FEEDSTOCKS

Biochar production processes utilize cellulosic biomass such as wood chips, corn stover, rice and peanut hulls, tree bark, paper mill sludge, animal manure and most urban, agricultural and forestry bio-mass residues.



OUTPUTS

Besides biochar, bioenergy is also produced in the form of either synthetic gas (syngas), or bio-oils, which can be used to produce heat, power or combined heat and power.

Biochar – What is it?

- Stable form of charcoal produced using pyrolysis – high temp / low or no O2 conditions- may last 100’s or 1000’s of years

Syngas – What is it?

- Syngas includes a variety of gases inc carbon monoxide, hydrogen and methane
- Bio-oil can be used to heat the system or for fuel for heaters or biolers
- Electron microscope showing porous nature of biochar (Krull, CSIRO)

Biochar plants - big and small

- Possible to have portable on-farm Bio-char pyrolysis system
- Or Large capacity slow pyrolysis industrial system
- Both now exist in Australia- not aware of them in SA
- Aware of some smaller furnace types- gas capture?/

Variations to Biochar

- Variable product based on source material, temperature and time
- Source Carbon - wood>chicken manure> straw
- Higher temp biochars more stabile, better for toxin absorption but less agricultural value
- Lower temp less stable but more fertile, better for production
- If temperature too low can create toxic compounds – as per India

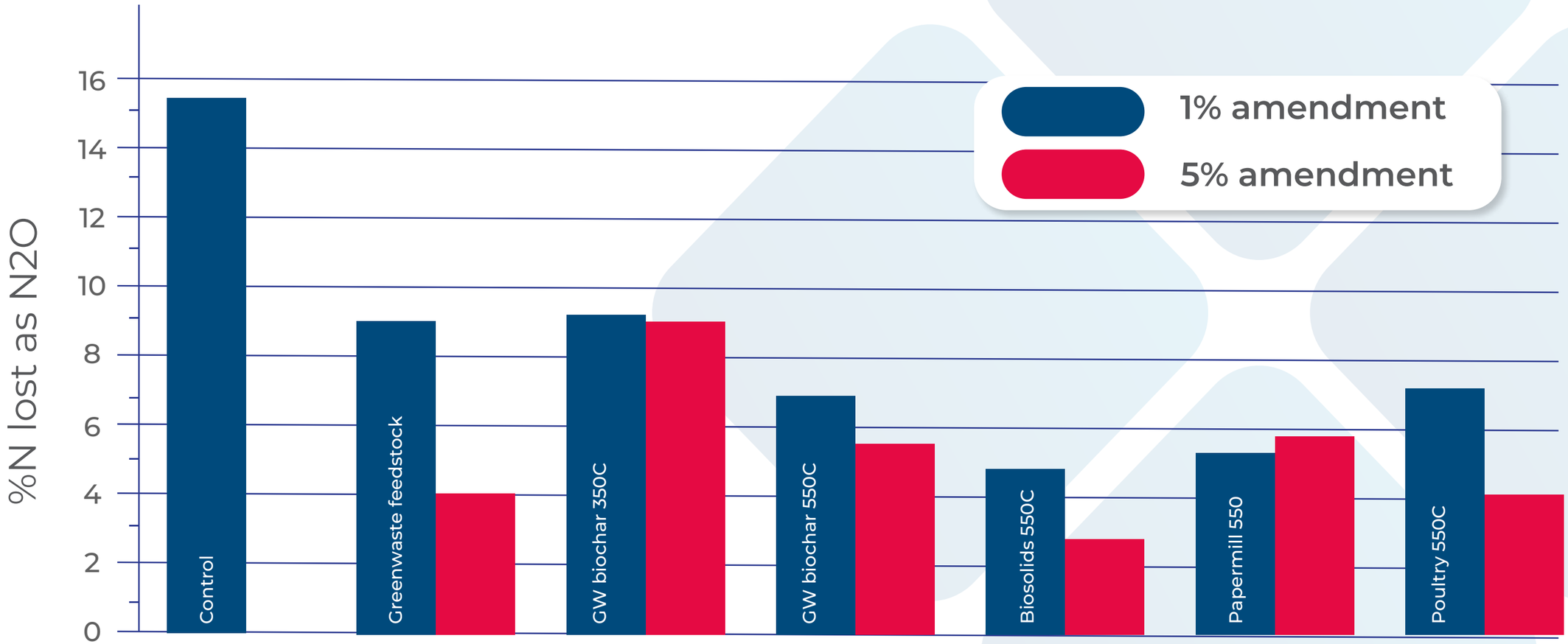
Variations to Biochar - cont

- Mostly alkaline and have a Neutralising Value unless using wet pyrolysis
- Higher levels of N and P in source can result in more in the biochar but not always available
- CEC biochars vary from 15-300
- CEC soil charcoal vary from 300-500
- Research to see if new biochar CEC will increase over time

Biochar – Potential Benefits

- Carbon Farming
- Increases Soil Carbon
  But who gets the credits?
- Could help mitigate greenhouse gas emissions
  Some reductions in Nitrous oxide emissions reported

Summary of N2O emission



Biochar – Potential Benefits

Soil fertility/productivity

- Improves soil structure in some soil layers including decreasing bulk density
- On some soils increases biological activity, soil fertility, water holding capacity, pH, yield

DAFF/CSIRO Biochar Project Summary

- Comparing chicken manure and straw biochars
- Soil types – Deep sand WA, Red Brown Earth NSW, Vertisol NSW, Mallee Soil SA
- Found soils responded differently to types of biochar
  - Best yield with chicken manure for Mallee 5t/ha and RBE 10t/ha
  - Best yield with wheat chaff for deep sand 5 t/ha
  - No response on black vertisol

DAFF/CSIRO Biochar Project Summary

Biochar and effectiveness of herbicides

Glasshouse experiments have shown;

- low levels of fresh biochar in the soil rapidly deactivate herbicides =poor weed control
- also reduced rate of herbicide decay

herbicide sorption and subsequent deactivation is dependent on type of biochar

Biochar use will need to be carefully managed in agricultural situations that rely on herbicides applied to the soil

Likley place to apply biochar in MLR

Soils with bleached infertile layers

Likley place to apply biochar in MLR

Soil with low organic matter from vegetables or naturally

Likley place to apply biochar in MLR

- Need waste sources or grow your own
- Waste sources need to be close to sources with biochar plants or manufacture your own
- Waste Sources – periurban Adelaide

Likley place to apply biochar in MLR

- Greenwaste - ??
- Grape marc- ??
- Forestry waste - ??
- Biosolids – 80,000t/yr
- Manures- 40,000t/yr

Grow your own from liquid waste or paddock scale

- SANTFA looking at growing reeds from dairy liquid waste for biochar in the Lower swamps
- SARDI (C Williams) did something similar in the Riverland several years ago with winery waste
- When combined with gas manufacture cereals, straw or pastures maybe source
- 10,000 ha @ 8 t/ha could produce 80,000 tonnes

Where to with Biochar?

- Better understanding of different products from different sources
- Potential positive effects of biochar for climate change and improving certain soils- needs to be beneficial!
- Negative effects of biochar need to be understood- reduced efficiency and binding of some ag chemicals
- Finally, understanding the economics of production and use of biochar and comparison with other uses of products

TRUSTED PARTNERS

AFCONS

Technip

TÜV ISO 14001:2004

TOYO ENGINEERING

EIL

LLOYD'S

ZEPPELIN WE CREATE SOLUTIONS

Reliance Engineering Associates Pvt. Ltd.

TATA CONSULTING ENGINEERS LIMITED

SC Shroff Consultants

STERLING & WILSON

THANK YOU

UNIT I

4 & 5, Marudhar IndustrialEstate, Panchal Road, Opp. Syndicate Bank, Bhayander (E), Mumbai-401105. (India)

Contact Us
+91-22 48255071, 48255072

UNIT II

Kerone Engineering Solutions LTD., Plot No. B-47, Addl. Midc Anandnagar, Ambernath (E), Dist. Thane (India)- 421506

Contact Us
+91(0251)2620542/43/44/45/46

Our Mails

info@kerone.com
sales@kerone.com
marketing@kerone.com

Website

www.kerone.com
www.kerone.net
www.keroneindia.com

SCAN HERE