



# Technology & engineering for the nut industry

Mr. Andras Nagy

Launceston (Head Office) - Perth - Bundaberg

[www.enerbi.com.au](http://www.enerbi.com.au)

# Introduction

- ▶ Nut industry in Australia and globally is undergoing significant growth
- ▶ Key challenges;
  - ▶ Sustainability;
  - ▶ Value adding;
  - ▶ Information/data;
  - ▶ Efficiency and quality...to name a few
- ▶ How does the industry keep up?



# Enerbi's Role

- ▶ Established engineering company
  - ▶ 6+ years working in the nut industry
  - ▶ Other industries include; water, oil extraction/refining, food processing, bioenergy
- ▶ Focus areas
  - ▶ Technology and engineering
  - ▶ Energy
  - ▶ Control systems and data acquisition
- ▶ Core approach
  - ▶ Innovation
  - ▶ Mindful of CAPEX

**...and keeping up with marketing and trends!**

# Drying Systems

- ▶ Where it all began!
- ▶ Established methods in industry (25+ years)

...were they based on sound theoretical and practical principals?



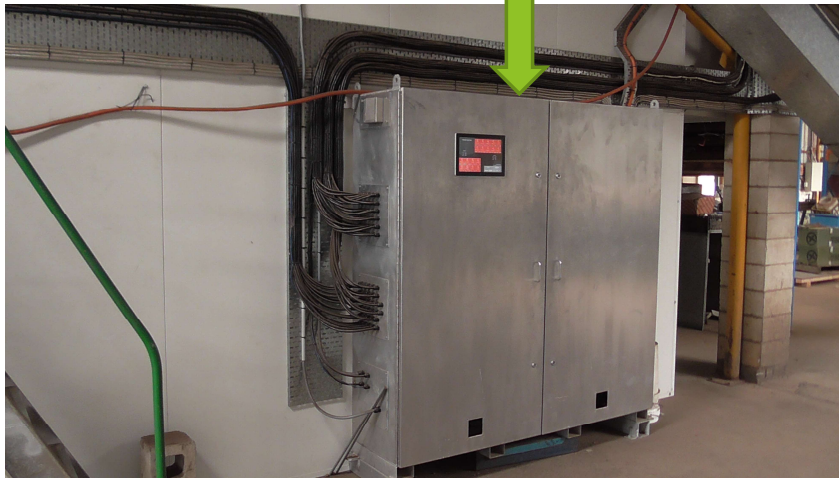
# Traditional Design

- ▶ Lack of ventilation
- ▶ Reduced air flow
- ▶ Inadequate control



# Enerbi design

- ▶ Improved ventilation
- ▶ Unrestricted air intake
- ▶ Modern control system



# Drying Systems

- ▶ Case Study - Drying system 5 years in operation
- ▶ Stage 1
  - ▶ Improve aerodynamics, modification of air inlets and exhaust systems
  - ▶ RESULT - 25 - 50 % reduction in drying times
- ▶ Stage 2
  - ▶ Implementation of control system
  - ▶ RESULT - 40 - 60 % reduction in energy use & reduced labour costs
- ▶ PAYBACK PERIOD 😊

**Innovation requires change & Change should be innovative**

# Drying Systems

- ▶ Key to our approach
  - ▶ Hot water heat exchangers
  - ▶ Bottom and top temperature/RH measurement
  - ▶ Variable air inlet
- ▶ Simple components integrated and controlled in a way to achieve powerful outcomes!
- ▶ Preferred approach - eliminate direct fired LPG burners in silos...why?
  - ▶ Improve OH&S
  - ▶ Reduce compliance costs
  - ▶ Improve carbon footprint
  - ▶ For every 1 kg of LPG burnt ~0.9kg of water vapour is generated!!



# Energy

- ▶ Nut industry is a large source of biomass
- ▶ Variety of uses including;
  - ▶ On-site energy
  - ▶ Bio-char production (through gasification)
  - ▶ Pyrolysis (bio-char, pyrolysis oil, wood vinegar and syngas)
- ▶ Too many possibilities and many challenges!!
  
- ▶ What is best for your situation? How do you decide?

NO SILVER BULLET!!

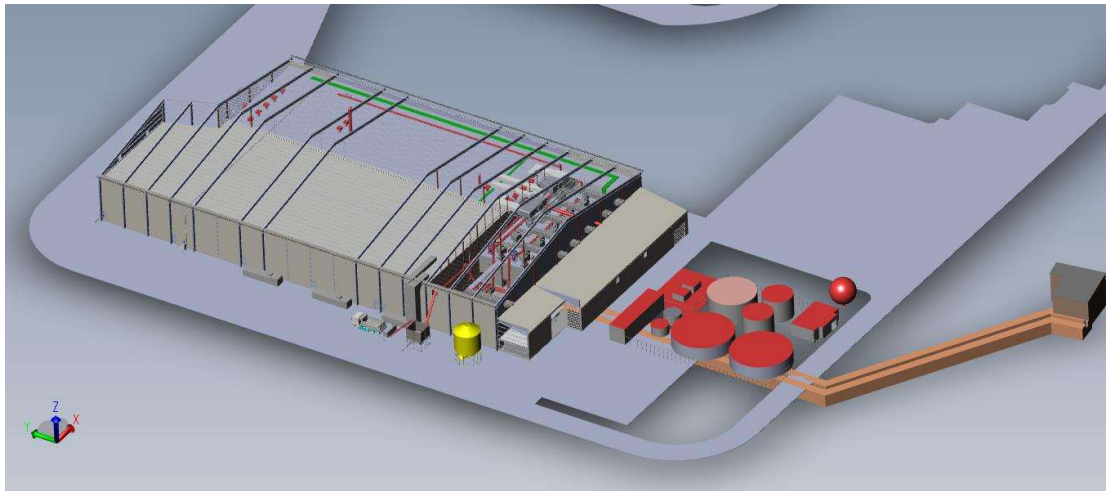


# Technology

- ▶ Process design and engineering
- ▶ Pilot plant development
- ▶ Facility design and planning

# Focus areas

- ▶ Value added production
- ▶ Oil extraction
- ▶ SCADA (control and data)
- ▶ Drying technology



# Process control

▶ Two key principles...

- ▶ Consistent outcomes
- ▶ Traceability
- ▶ Process monitoring
- ▶ Evaluation and optimisation
- ▶ Reporting/decision making

Controlling your process



Understanding your process



PROCESS CONTROL

# Summary

- ▶ Innovation is necessary to develop new opportunities and improve bottom line
- ▶ Technology will help to improve efficiency and decision making
- ▶ Enerbi is here to work with the industry to develop new and innovative solutions



# Thankyou



- ▶ [andras@enerbi.com.au](mailto:andras@enerbi.com.au)
- ▶ Mob: 0427 136 501