

Facing the challenges and opportunities of the Industrial Wood Pellet Industry.

Andrew Johnson
Vice President - TSI Inc
ajohnson@tsi-inc.net
www.tsi-inc.net



Presentation Summary.

1. Challenge - Technology Development.
2. Opportunity – Markets.
3. Opportunity - Creating a positive image for Wood Bioenergy.



Who is TSI?

US Company based in the Pacific NW. (Washington State).



Supplier of “Dryer Islands” to Industrial Wood Pellet Plants.



Part 1 - Technology Development

A new industry with growing pains and we have the need for technical innovation to increase productivity and reduce costs = Challenge.

Technology - Old tech on a new scale.

- Chippers
- Debarkers
- Bins and Conveyors
- Dryer, Heat Energy and Pollution Control
- Hammer Mills
- Presses

Wood Pellets have been around a long time but the above list could be describing a Particle Board Mill as well.



Why so challenging?

- Still a relatively new industry...
- Attracted engineers from related industries such as “Pulp and Paper”, and “Power”, but very few people from “Engineered Wood”.
- Created a new learning curve on an old topic.
- Subtle differences such as SYP (Southern Yellow Pine) and 10% mc target instead of 2%.



Responsible Innovation

- Incremental innovation that optimizes or enhances production without unduly risking the success of the investment.
- Safety and Productivity.
- The “Supersized” dryers.
- The search for optimum. emission control goes on.
- Tighter moisture control.
- Better pellet quality.



Emerging Technology

- Pelletizing agricultural residues.
- Gen II pellets.
 - Steam exploded or torrefied.
- Alternative process technologies.



Managing the capital cost of pellet plants.

Negative drivers

1. As the economy gets busy fabrication costs soar.
2. Real or imagined trade wars drive up the cost of material and components – steel tariffs.
3. Customized designs for plants always cost more.

Positive antidotes?

1. Seek out lower cost manufacturing centers in which to build equipment.
2. Standardize equipment designs.
3. Simplify equipment and plant design/control.



Part 2 - Markets

The established European market versus the emerging Asian market and the Sleeping Giants. Who's going to make the pellets and who's going to buy them. = Opportunity.

Supply – Demand Established Markets

- European Union and the UK – a 20,000,000 ton market.
- More projects slated to come on line and increased demand likely from some Northern EU countries.
- Residential pellet market continues steady growth.
- **EU political support continues with sustainability strings attached.**
- This will result in new capacity being built in North America.
- Demand Europe – Supply North America.



Supply – Demand Emerging Markets

- Korean Market continues to grow – will it mop up SE Asian production.
- Japan projected to import 8,000,000 tons (or more) of pellets. – sourced from North America?
- China's current 5 year plan projects a market for 40,000,000 tons of pellets but also bans imports of white wood pellets - but Torrefied are allowed!



Supply – Demand Latent Markets

- North America is the largest producer but also has the potential to be the largest consumer.
- Russia has the largest forest resource but lacks the infrastructure to fully exploit it.
- Brazil has all the natural resources to be a major player but is hamstrung by onerous bureaucracies, interstate tax burdens and political instability.
- What about Africa?



Part 3 - The image problem

We are being pilloried by an unholy alliance of environmental lobbyists and the fossil fuel industry. How stepping up our game could accelerate the growth curve
= Opportunity.

An Image Problem?



When you say things like “power stations” or “industrial pellets this is what people think of...



Versus this for “Solar Power” or “Wind Energy”.



Getting the Environmental message out?

- “Scientific” reports that have a predetermined agenda are recirculated and rehashed ad-nauseum by supposedly respectable news outlets. (Chatham House, Manomet etc.)
- Environmental groups claim the moral high ground and lobby politicians to withdraw support for our business.



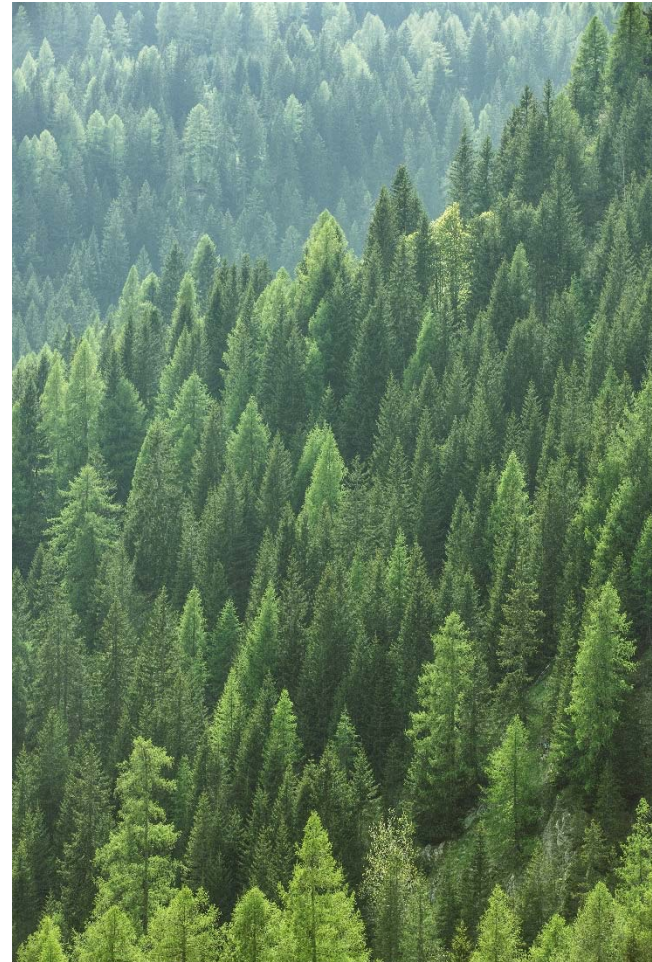
Getting our Environmental message out?

- We have a positive story to tell...
- Wood Pellets are...
 - Energy efficient and renewable.
 - Produced in green, clean and modern plants.
 - Located in rural communities bringing investment and creating jobs.
 - Creating value and income for landowners.



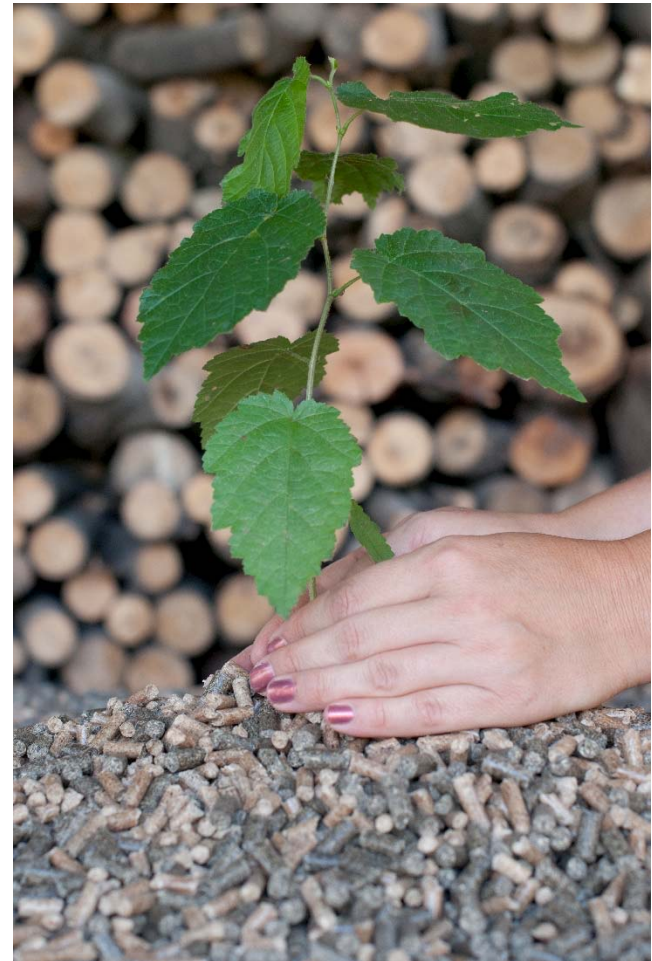
Getting our Environmental message out?

- **We have a positive story to tell...**
- There are about 750 million acres of forest in US (an area about 15 times the size of Britain) and even more than that in Canada. (A large chunk of which the Queen theoretically owns).
- 553 million of those acres are certified as being sustainably managed with millions more not certified but nevertheless in compliance.



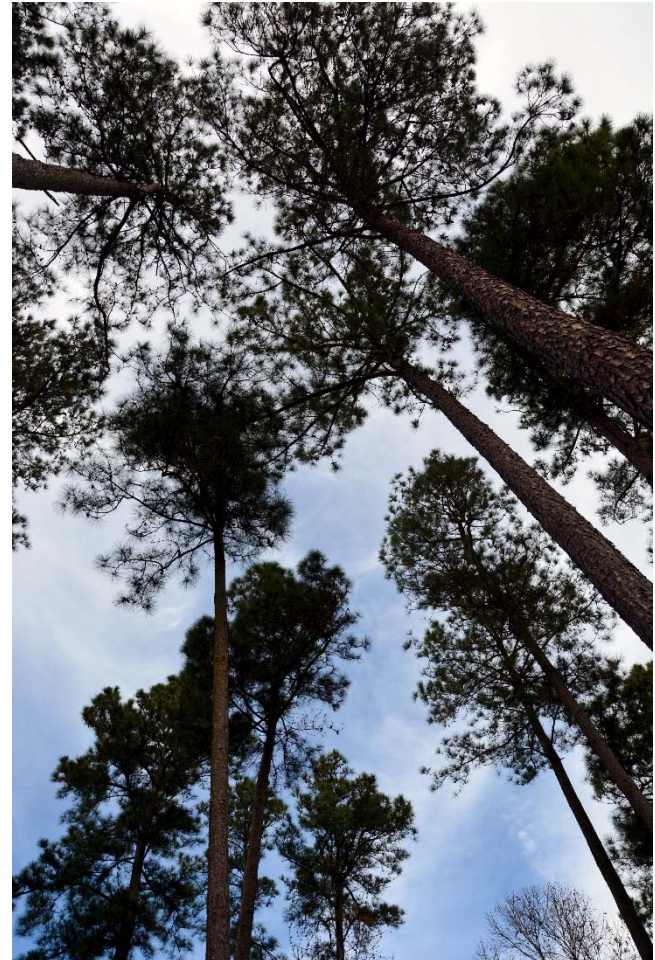
Getting our Environmental message out?

- We have a positive story to tell...
- Volume of biomass in forests is increasing – not decreasing – protecting not degrading the carbon sink and sustaining a recreational and wildlife haven.
- The alternative is more fossil fuel, nuclear or variable power generation supported by battery technology which is probably not so green.



Getting our Environmental message out?

- Political lobbying is important but politicians listen to voters.
- **So here's my suggestion...**
- Let's do more to engage the public...
- Reach out to environmental organizations (we are environmentalist too).
- Generate educational material.
- Engage the news media with facts, stats and our own scientific reports.



Challenges and Opportunities - Summary

- Challenge
 - The industry has had a history of technological challenge and the need for further innovation and cost reduction continues.
- Opportunity
 - Current markets show steady growth and new markets in Asia likely to boost demand.
- Opportunity
 - Environmental messaging will impact the growth curve so a more engaged and informed approach will benefit all.

