Pelletizing Marine Nylon

Reclaiming Old and Unusable Commercial Fishing Gear and Ghost Gear

By: Randy Gue, BEng, MBA and Leo Wang, Pres., SOP Richmond Recycling
SOP Richmond Recycling History

- Located on #6 Road Richmond
- Incorporated in 2014
- Permitted by MV as Brokering Facility
  - Carpet and under padding
  - Fish nets and rope
  - Airbags
  - Mixed plastics
Focus on Capturing and Recycling Nylon 6 and 6.6
Carpet Components

Facing material
• Nylon 6 or 6.6
• Polypropylene
• Polyethylene

Backing
• Polypropylene weave
• Latex adhesive
• Calcium Carbonate
Testing for Material Type
Shearing Off the Facing
Facing is Bailed and Stored for Further Processing
Backing is shredded for alternative fuel.
Marine Nylon Addition

- Need for addition sources of nylon by-products or waste streams to increase utilization of the recycling plant.
- Ghost gear
- Unusable gear stored onshore.
Ghost Gear Sources and Challenge

• Snags on reefs, rocks or spires
• Entanglement or conflict with other gear
• Severe weather where gear must be abandoned for safety
• Accidental cutting by other marine traffic
• Remainder ends up on shore at Marinas
Ghost Gear Challenge

In 2009 the United Nations Environmental Program (UNEP) estimated that 640,000 tonnes per year was lost or abandoned.

Recent studies suggest over 50% of macro plastic in ocean is fishing gear.
Work with Steveston Harbor Authority (SHA)

SOP started working with SHA in 2018. Stockpiles of unusable nets on site. Replaced previous non-active recycler and landfilling.
Pelletizing Process for Nets

Nets are spread out and cleaned:
• Lead weights
• Corks
• Wood
Pelletizing Process for Nets

Cut and Sheared to the reduce size
Pelletizing Process for Nets

Fed to a pelletizing machine:
• Heated
• Pressurized
• Forced through a die
• Chopped
• Cooled
Pelletizing Process for Nets
Pelletizing Process for Nets
Pellets to Products
Pelletization Challenges

• Plastics contamination / product quality
• Processing is costly
• Market prices for recycled materials
• Sourcing enough material to keep equipment utilized