

Parts Unplanned: Managing Heat, Risk, and R&M Spend in the Forestry Industry

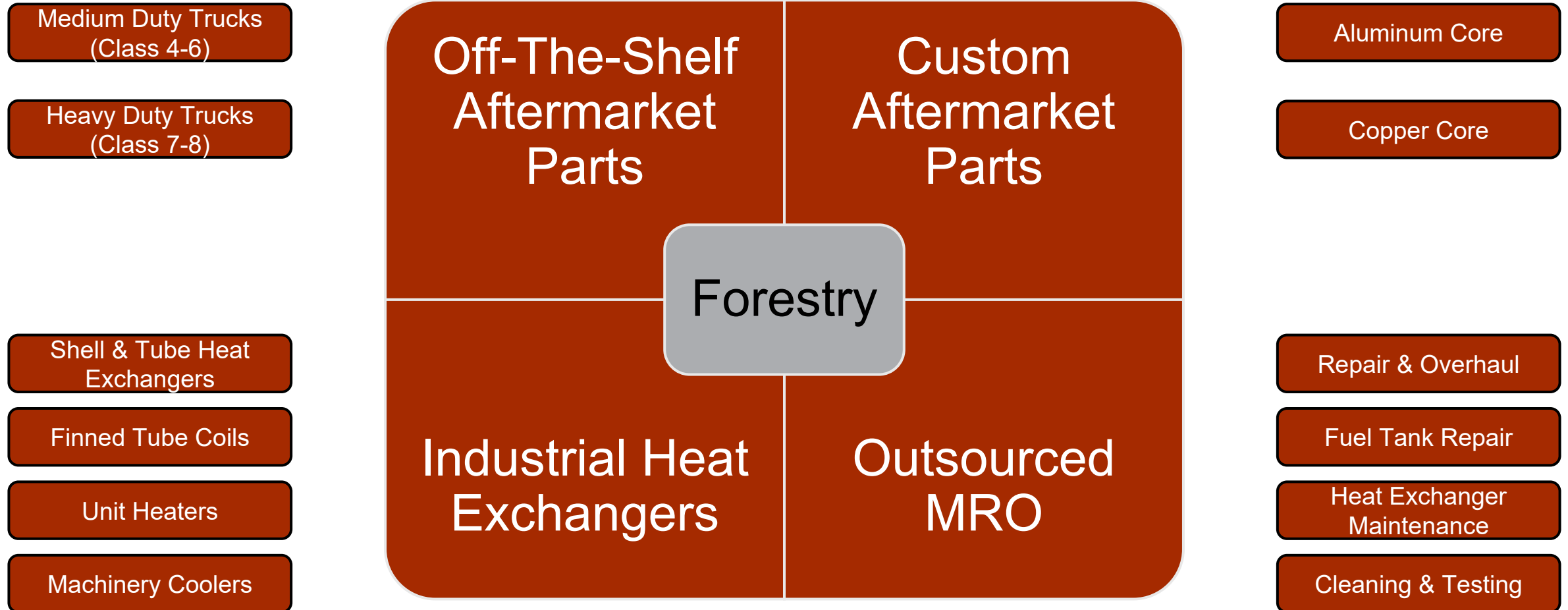
Presented by: John MacDonald



NS Radiator Overview



Serving Atlantic Canada since 1992, NS Radiator & Heat Exchange Ltd. is a full-service provider of industrial and heavy-duty heat transfer solutions.



Why Unplanned & Infrequent



40%

Of Annual Repair & Maintenance Spend Is ***Unplanned***

80%

Of Unplanned R&M Spend is for ***Infrequent*** Items (1-5x / Year)

32%

Of Annual R&M Spend is for ***Infrequent*** and ***Unplanned*** Expenses¹

You have minimal leverage in 32% of your repair and maintenance spend,

1) Granger Consulting Services, W.W. Granger Inc

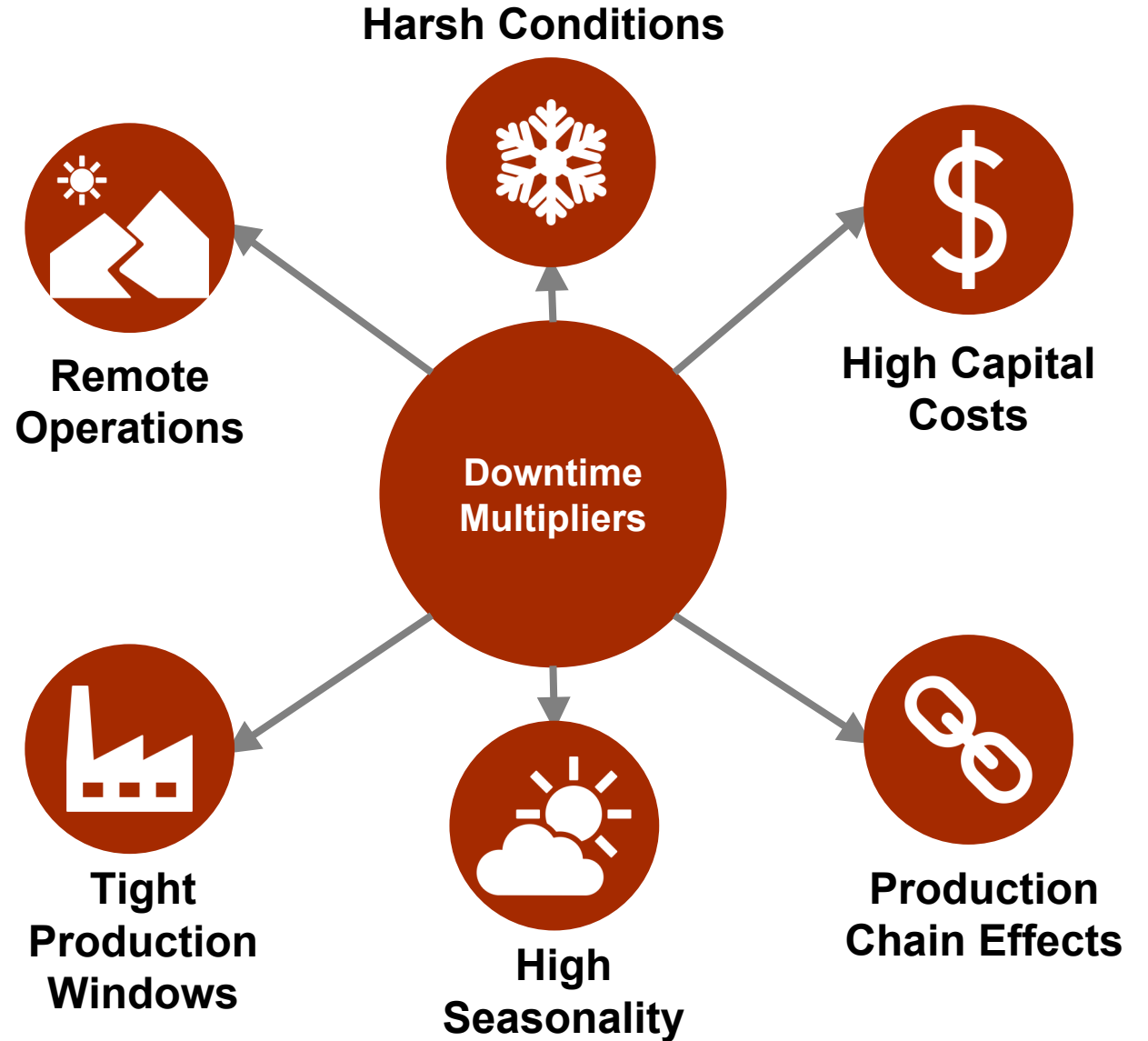
Downtime in Forestry

Downtime is multiplied in the Forestry sector

Harvester Down \neq Lost Revenue

- = Lost Revenue
- + Idle Crew
- + Downstream Disruptions
- + Seasonality Impact
- + Capital Cost of Equipment

One day of downtime can cost thousands directly and tens of thousands indirectly



The Importance of this 32%

\$1M/year on R&M = \$320K is spent on unplanned & infrequent items

This is \$320K where:



Specialist Suppliers Outside Current Base

- You don't know the right suppliers



Immediate Urgency

- You don't have time for extensive quoting



Costs Compounding

- Decision made under pressure

***Sub-Optimal
Procurement
Decisions***

Goal of Presentation



3-part playbook to reduce the impact of unplanned & infrequent R&M spend

Part 1: Identify Risk

- Identify these infrequent, mission critical parts
 - Cooling systems are a key constituent in this category

Part 2: From Unplanned to Planned

- Determine best pathway to achieve this outcome
- Understand your supplier universe

Part 3: Maintaining Margin

- Apply a consistent cost framework to make better decisions under pressure

Cooling System Overview

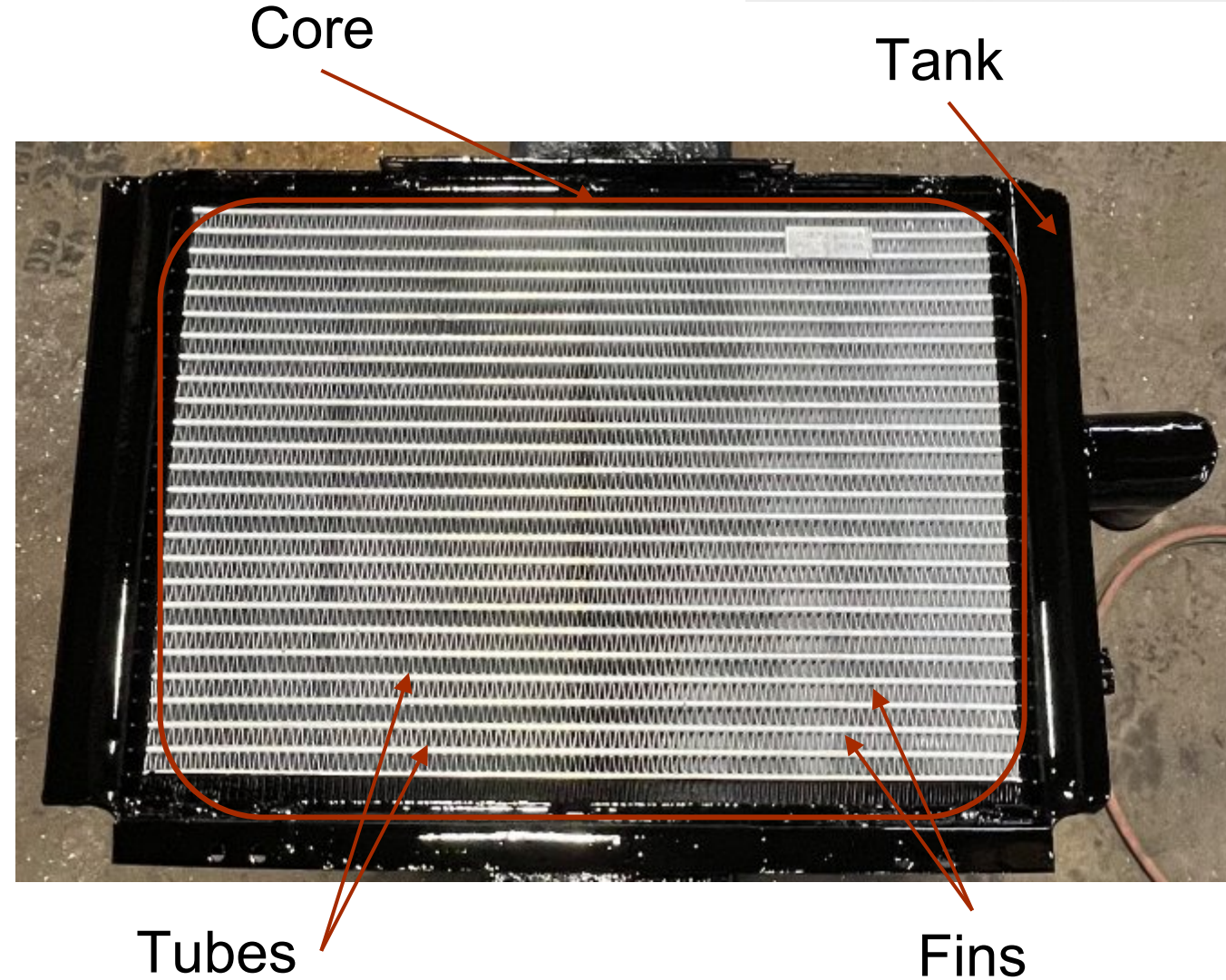
Major Cooling Systems

- Radiators
- Charge Air Coolers
- Oil Coolers

Basic Heat Transfer Path

Air/Coolant/Oil → Tube Wall → Cooling Fins → Air Flow

If airflow or surface area is compromised, heat stays in the systems



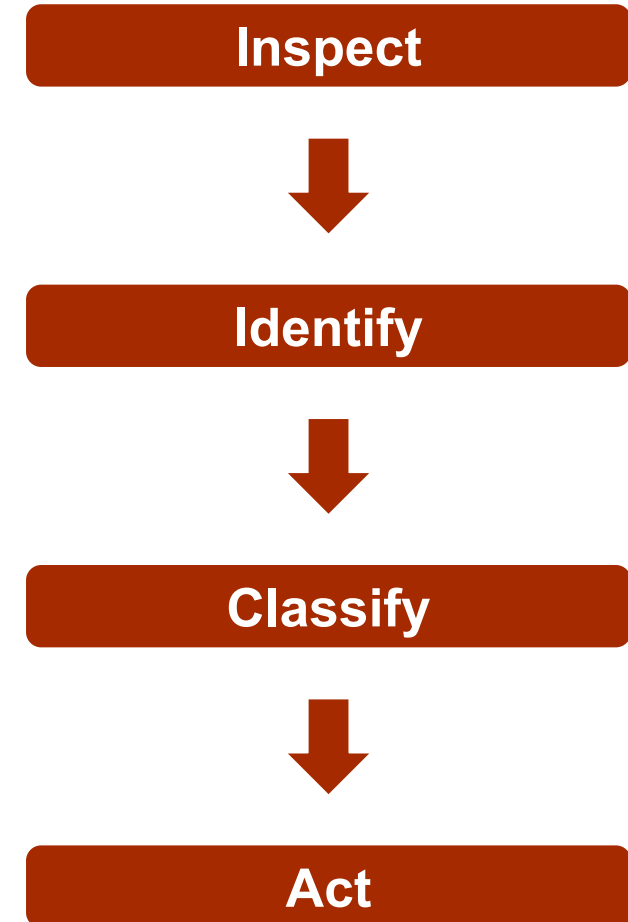
From Unplanned to Planned



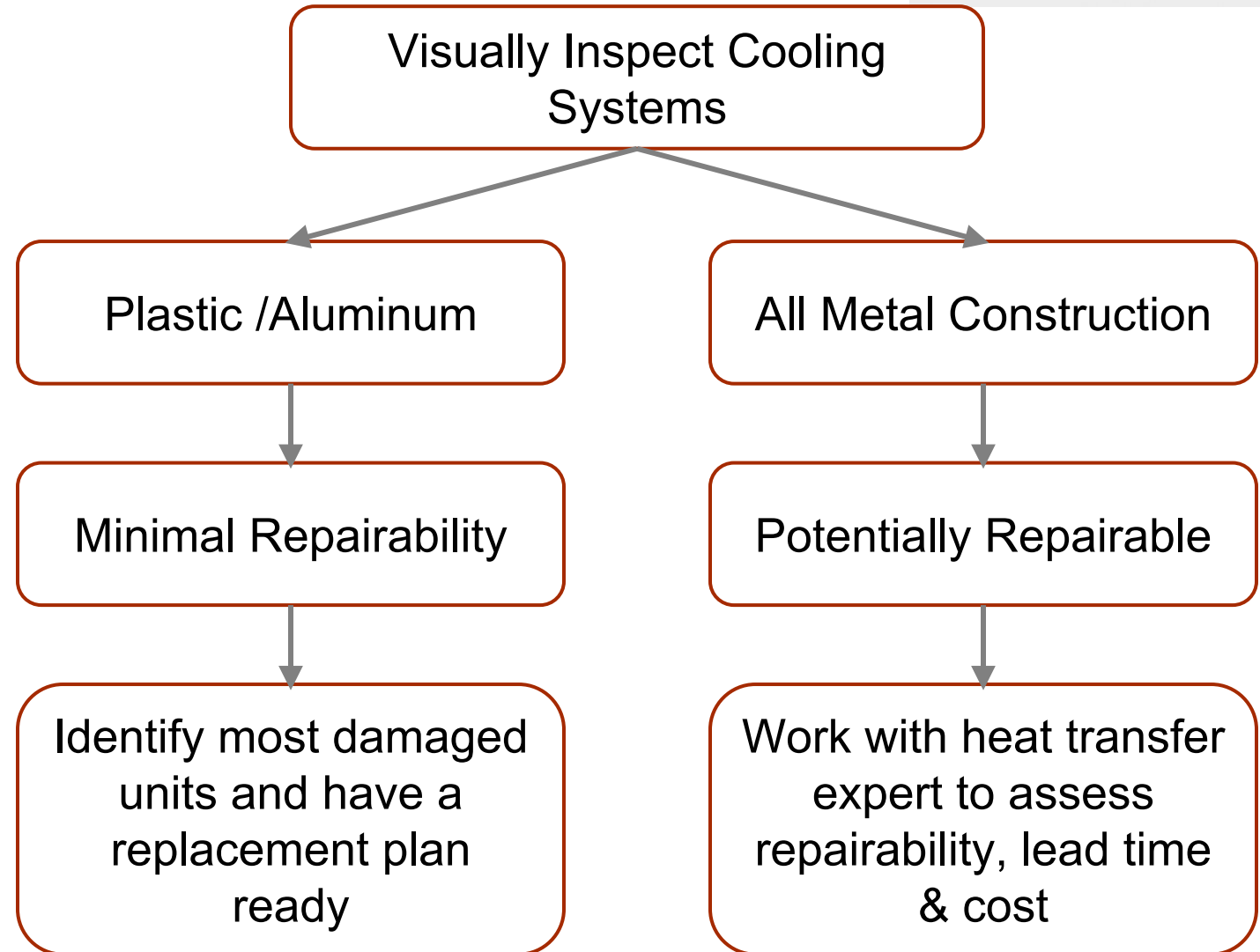
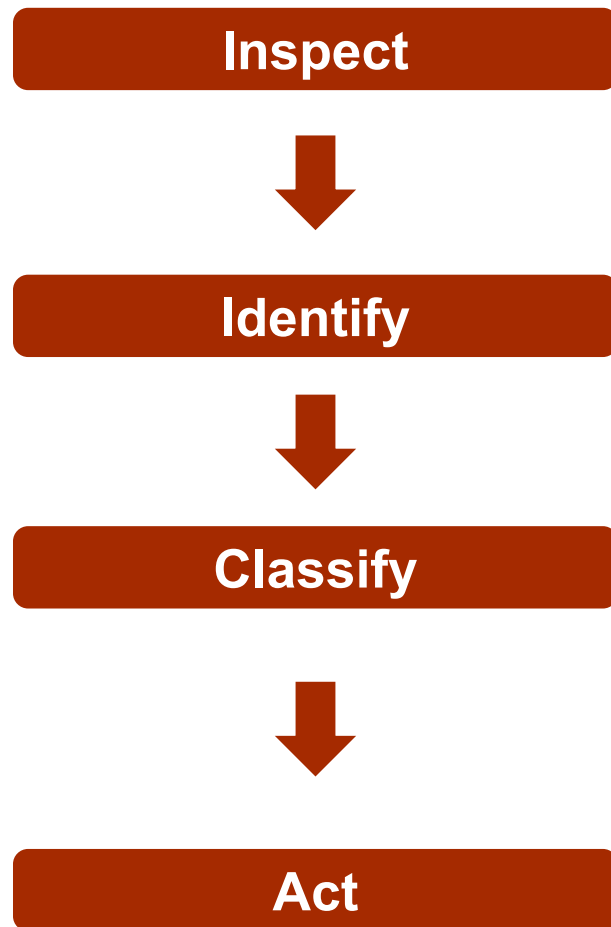
Optimizing your procurement processes begins when you have better planning capabilities

Introducing a ***realistic*** and ***proactive*** maintenance program to your fleet of heavy trucks and heavy equipment's cooling systems

Help identify areas of concern before downtime occurs



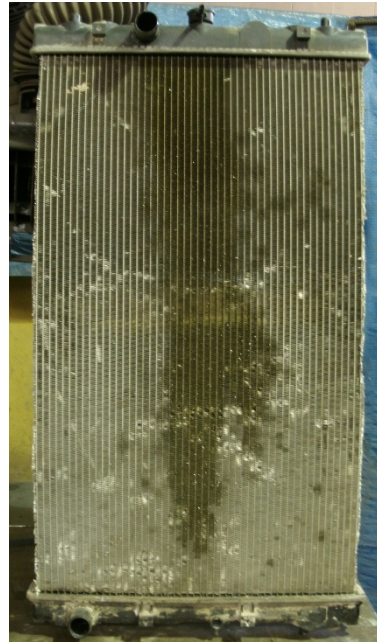
Proactive Maintenance



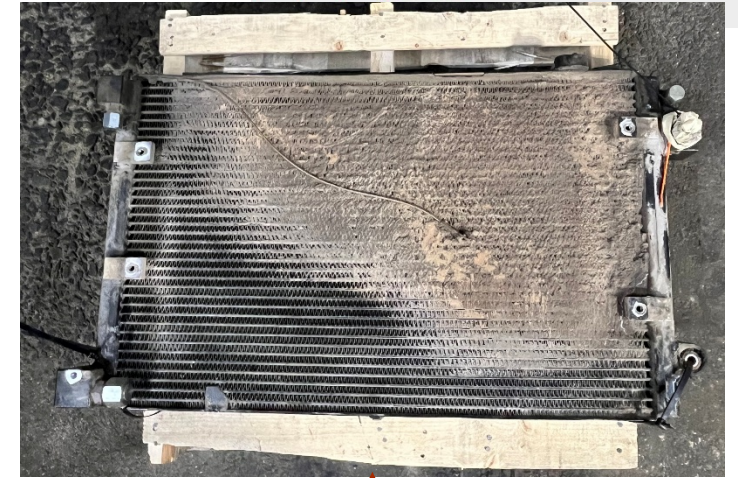
Visual Signs of Damage



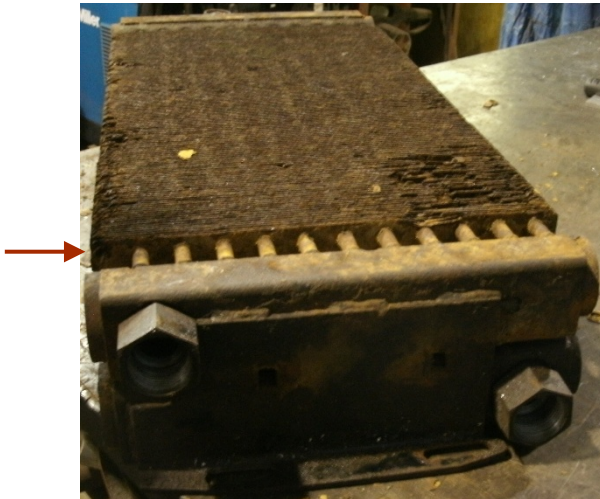
Damage to core



Signs of leakage



Blockages / build up on core



Warping



Understanding Supplier Universe



Heavy Truck & Heavy Equipment Cooling Systems Supplier Universe		Supplier Types	
		OEM	Aftermarket
Product Type	Off-The-Shelf	✓	✓
	Custom Fabrication	✗	✓

Important to know your supplier universe and identifying the right suppliers ***prior to failure***

Leverage the knowledge and explore the product offerings that these specialist provider's have to offer.

Use for frequent parts, if possible, to better integrate into operations.

Don't want to meet your supplier for the first time when you're down

Cooling System Options



Aftermarket Cooling System Options		Equipment Type	
		Heavy Truck	Heavy Equipment
Product Type	Off-The-Shelf	✓	✗
	Custom	✓	✓

Heavy Trucks

Locally available, off-the-shelf aftermarket parts for trucks from last 25 years

Legacy trucks can have parts custom fabricated

Heavy Equipment

Off-the-shelf aftermarket parts remains a niche market

Custom options include:

- **Recore**, and
- **Remanufacturing**

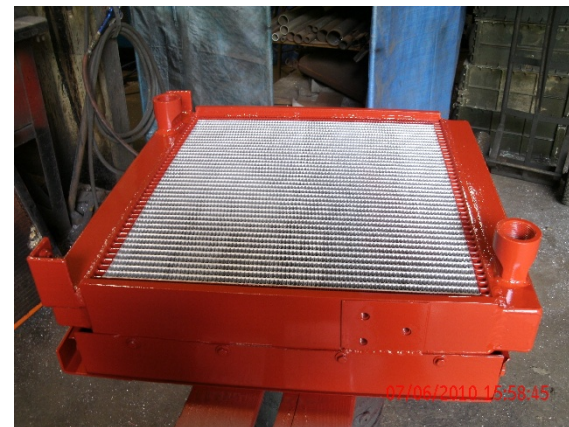
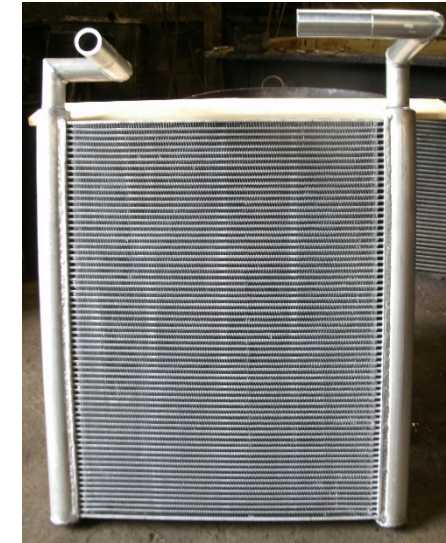
Recore & Remanufacturing

Recore:

- New Custom Core
- Legacy Tanks Used

Remanufacturing:

- New Custom Core
- New Tanks Fabricated



Maintaining Margins



Every \$1 in cost reduction is as significant as the following increases in revenue

Assuming a 10% margin:

- \$10,000 overspend = \$100,000 in earned revenue to fix
- \$10,000 cost savings = \$100,000 in earned revenue equivalence

Revenue Need for Equivalent \$1 Cost Reduction	
Profit Margin	Revenue Required
5%	\$20.00
8%	\$12.50
10%	\$10.00
12%	\$8.33
15%	\$6.67
20%	\$5.00
25%	\$4.00

Replacement Cost Framework



Lowest Total Replacement Cost Formula

Replacement Cost = Equipment Cost + (Daily Downtime Cost x # of Days)

Where:

- Equipment Cost = actual cost of new piece of equipment
- Daily Downtime Cost = direct and indirect costs of downtime
- # of Days = lead time to get new piece of equipment & install

Quality, and other qualitative, lenses needs to be applied in conjunction with the formula above

A cheaper radiator can be the most expensive decision you make

Real World Case Study - Quality



Scenario

- Forestry company in low season needs new radiator for heavy equipment
- Lead time was not an issue
- 3 Options:

	Lead Time	Cost
Original Manufacturer	1 Day	\$20,000
Custom Aftermarket	7 Days	\$10,000
Off-The-Shelf Aftermarket	14 Days	\$3,500

Result

- <2 months in operation and during peak season, unit failed
 - Optionality was removed
 - Tens of thousands additionally spent directly and indirectly

Comparison Example

Overview of Options

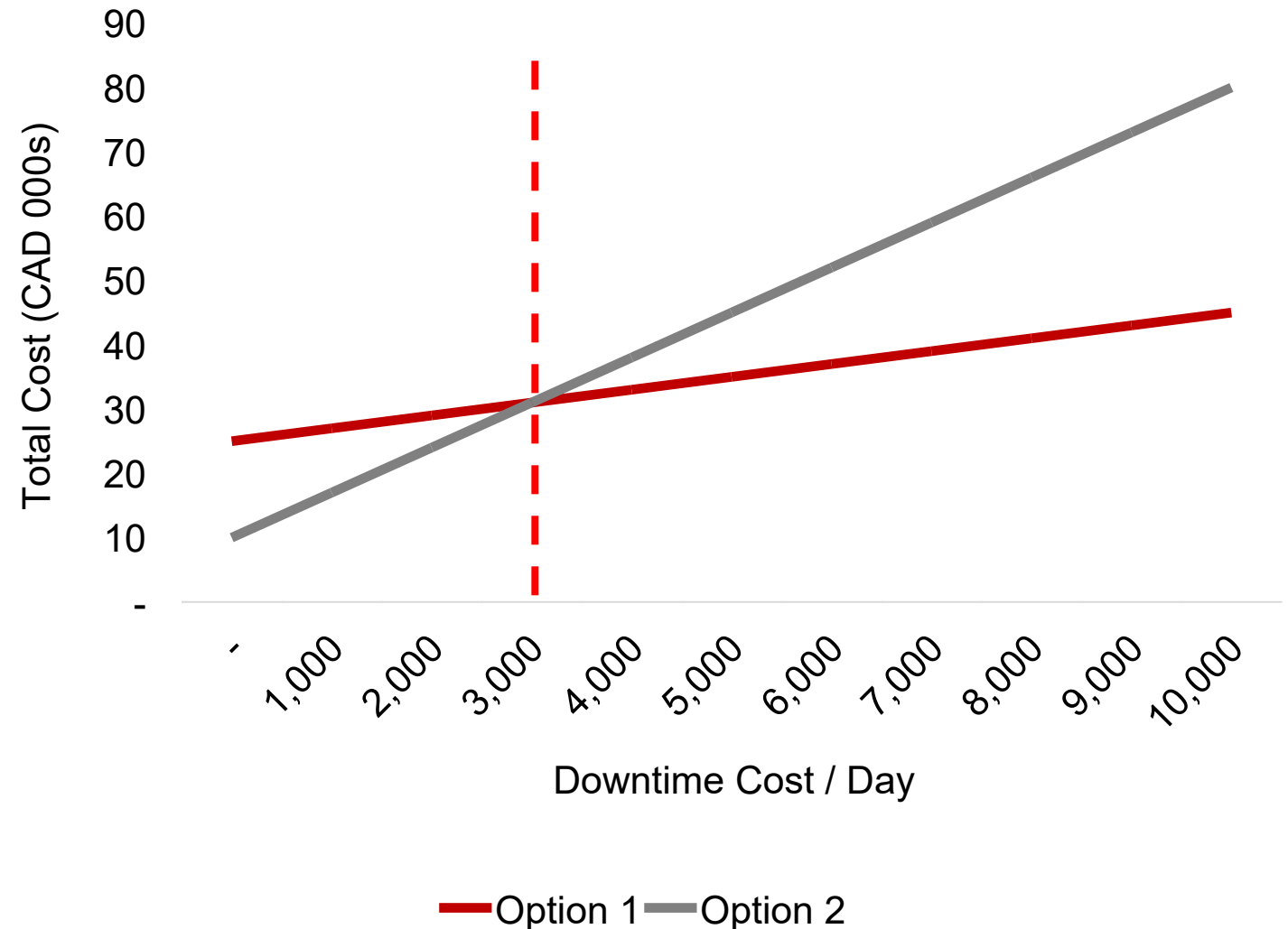
- Option 1 - \$25,000, 2 days
- Option 2 - \$10,000, 7 days

Daily downtime costs:

- >\$3k/Day = Option 1
- <\$3k/Day = Option 2

Understanding the impact of seasonality, lead time and equipment costs is critical

Comparison of Options



Summary of Key Information



Fix how you handle the 32% of your repair and maintenance spend for unplanned and infrequent purchases, and you will permanently increase your margins

3 Things To Do Next Week

- 1) Identify 3-5 high-risk, infrequent parts
 - Cooling systems worked through
- 2) Identify best approach to better plan for these item's failure
- 3) Perform due diligence and establish trusted suppliers before failure