

Big challenges towards a circular economy



Established in April 1931、 Tsuruoka Corporation (100km north of Tokyo, Oyama City, Tochigi Prefecture)
ELV Dismantling Business Division Overview



Nikko Toshogu Shrine

Tochigi
Prefecture



Tsuruoka's latest and most optimal ELV dismantling and processing technology will ensure a comfortable and enjoyable car life.

Airbag disposal machine

A device that processes multiple undeployed airbags, such as those in the driver's seat and passenger seat of used automobiles, all at once.



Refrigerant gas recovery machine

A device for recovering refrigerant gases filled in ELVs



Business Description

Dismantling of end-of-life vehicles.

Material recycling of various resources.

Monthly processing capacity (number of vehicles)

: Approximately 1,000 vehicles.

Last year's results: HV: 183 units, BEV: 4 units

Manual disassembly of small appliances

The process of recovering urban mines, such as electronic circuit boards



Since September 1998

Permit information

ELV collection, fluorocarbon recovery, dismantling, and Shredding

Highly profitable, unique, precise dismantling line

A device that converts the ELV dismantling process into a conveying line and enables efficient resource recovery.



Fuel recovery line

Equipment for recovering fuel, oil, and other liquids remaining in dismantled vehicles discharged from the pre-processing line



ELV dismantling nibbler

Heavy machinery that separates and collects suspension parts, exhaust catalysts, electrical wiring, and plastic parts



Lavantee for metal cutting

Heavy machinery for cutting and dismantling large freight vehicle frames and separating and collecting tires and wheels



Traceability

It has the function of automatically linking and managing image data of parts and materials taken using a digital device via a two-dimensional code on a timeline.

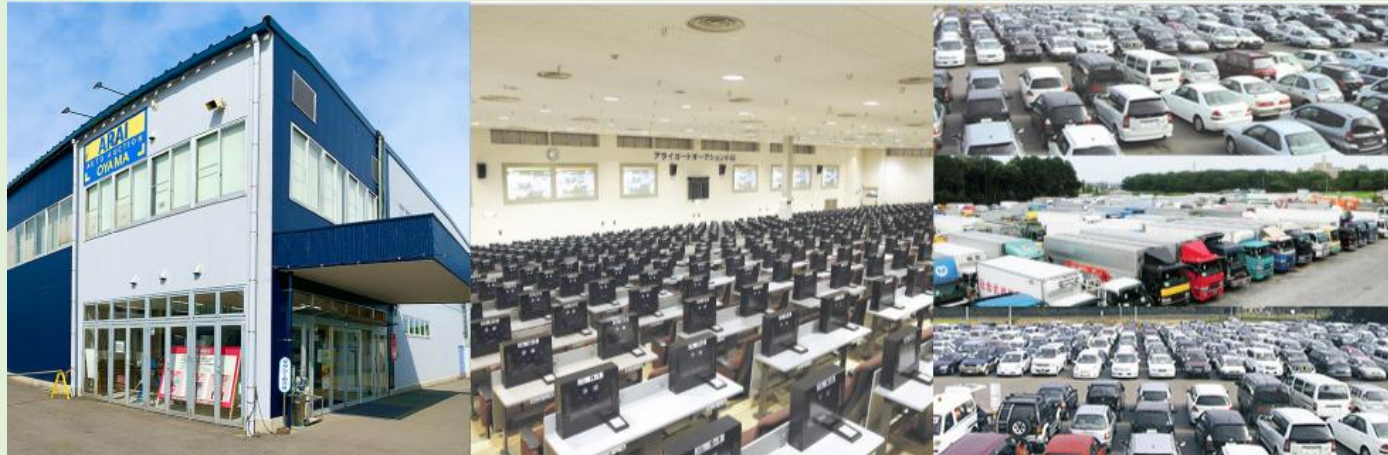


Procurement of vehicles that are not expected to have value in the used car market as ELVs

Purchase used cars collected by new or used car dealers



The rise of auto auctions (even ELV equivalent vehicles are listed)
Purchased as used cars and disposed of as end-of-life vehicles



Assessing the residual value (reuse, recycling) of end-of-life vehicles



Case report on the Philippine ELV proper dismantling project, which is being carried out in collaboration with the private sector and based on JICA support



PURPOSE : cooperating to develop and promote a car dismantling business in the Philippines based on Japan-standard ELV recycling method



Study on Strategic Multi-stakeholder Process to Demonstrate Business Feasibility with RECYINT Pilot Model in the Philippines
TSURUOKA(Ibaraki Pref., Japan)



Development issues in the country/sector


- While the number of automobile registrations is expected to grow rapidly, there are no laws and regulations regarding the disposal of ELVs (End of Life Vehicle).
- There are many cases of ELVs being improperly dismantled (environmentally, socially, and economically) at junk stores, etc., and it is not easy to secure recovery routes.
- The technology in the mechanical and industrial fields is not yet mature, and the existence of suitable foundries that can produce cast iron counterweights has not been identified.

Products/Technologies of the Company

- Automotive recycling business with an integrated process from collecting ELVs to reusing their parts and manufacturing products.
- In particular, the technology to recycle scrap metal and manufacture counterweights for construction machinery.

Survey Outline

- Survey period: July, 2023 – October, 2024
- Country/Area: Metropolitan Manila and surrounding areas, Philippines
- Survey Overview: Conduct an open innovation pilot study of RECYINT, which foresees the need for proper disposal and resource efficiency for ELVs and foster a recycling market by encouraging the awareness of ELVs as an environmental business opportunity, including employment



RECYINT (Integrated Recycling Systems)

Business Model

- Establish a pilot plant with partner companies to realize a sophisticated ELV dismantling process, and create an environment where industry, government, academia, and financial institutions can gather cross-sectorally and engage in constructive and organic discussions.
- Create a new market by differentiating from the informal sector through "Creating Shared Value (CSV)" by proactively including the PUVMP and the TOYOTA Global 100 Dismantlers Project.
- In the mid- to long-term, establish a global recycling system that includes Japan and neighboring countries.

Expected Social Impact in the Country

- Proper treatment method for ELVs will be transferred.
- ELV recycling will improve the recycling rate and contribute to the reduction of greenhouse gas emissions.
- Capacities of local companies, human resources, and BDS institutions (testing institutions, technical support, etc.) will be developed through automobile recycling business.
- The recycling business, which is valuable in the circular economy, will provide new employment opportunities.
- ELV-related laws and regulations will be developed.

As of June, 2023

The necessity of a pilot plant and how it should be done, derived from the Basic Study

"Filipinos value things very much, so there are no ELVs yet (someone must be using them somewhere)."

"ELVs? If you ask me, I've certainly never paid any attention to where they are going (indifferent)."



There are a lot of repair needs due to the long lifespan of cars, and there are definitely areas in Banawe and Apalit where there are a lot of used parts dealers

Concerns about the existence of the informal sector, including illegality, in the ELV business.

A pilot plant shall be launched to offer opportunities where DOTr, DENR, and other ministries can gather to have intersectoral and constructive discussions about necessity of ELV-related policies, including future legislation.



DOTr×DENR×JICA(Observer)×TOYOTA×TOYOTAMETAL×MITSUI×TSURUOKA

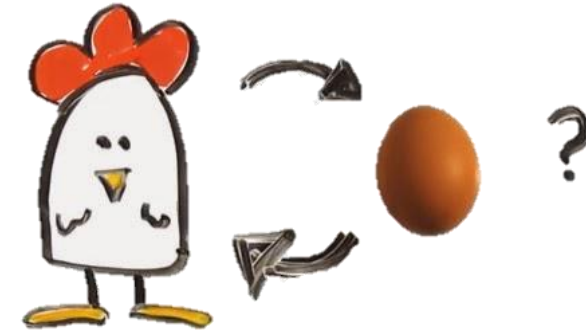
Solving social problems through business


With the **rapidly increasing number of automobiles** in the future,

Should we consider a recycling system after ELVs become a serious social problem due to mass production, mass consumption, and mass disposal?

As a preventive measure based on the experiences of developed countries, should we consider an optimum recycling system now?

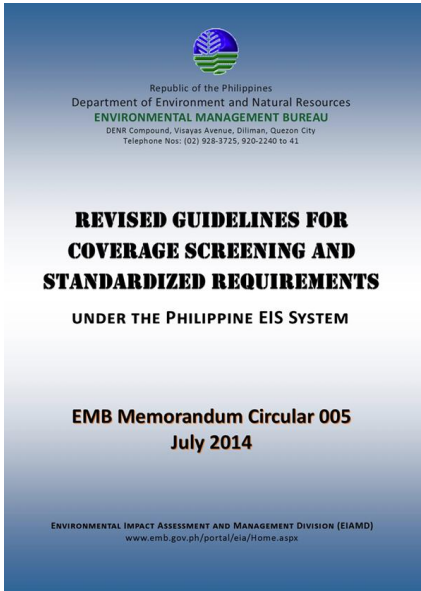
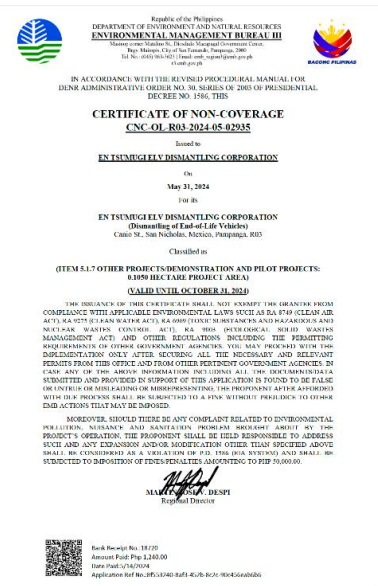
Launch a pilot plant that will provide an opportunity to address this **chicken or egg issue**, proactively disclose trial and error results in its operation to the related ministries and agencies and the private sector.




 Rather than "picking the best of both worlds," we will create a system that can commit to the proper disposal of waste, hazardous materials, and dangerous substances.

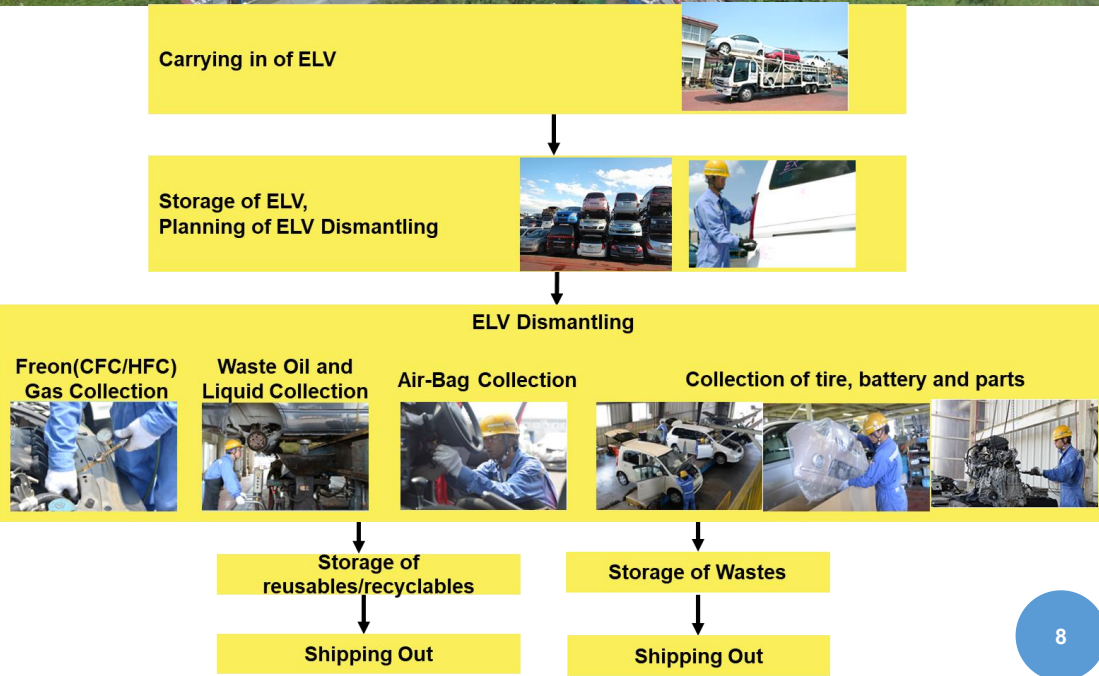


As a result of JICA project, provisional standards for ELV dismantling have been established

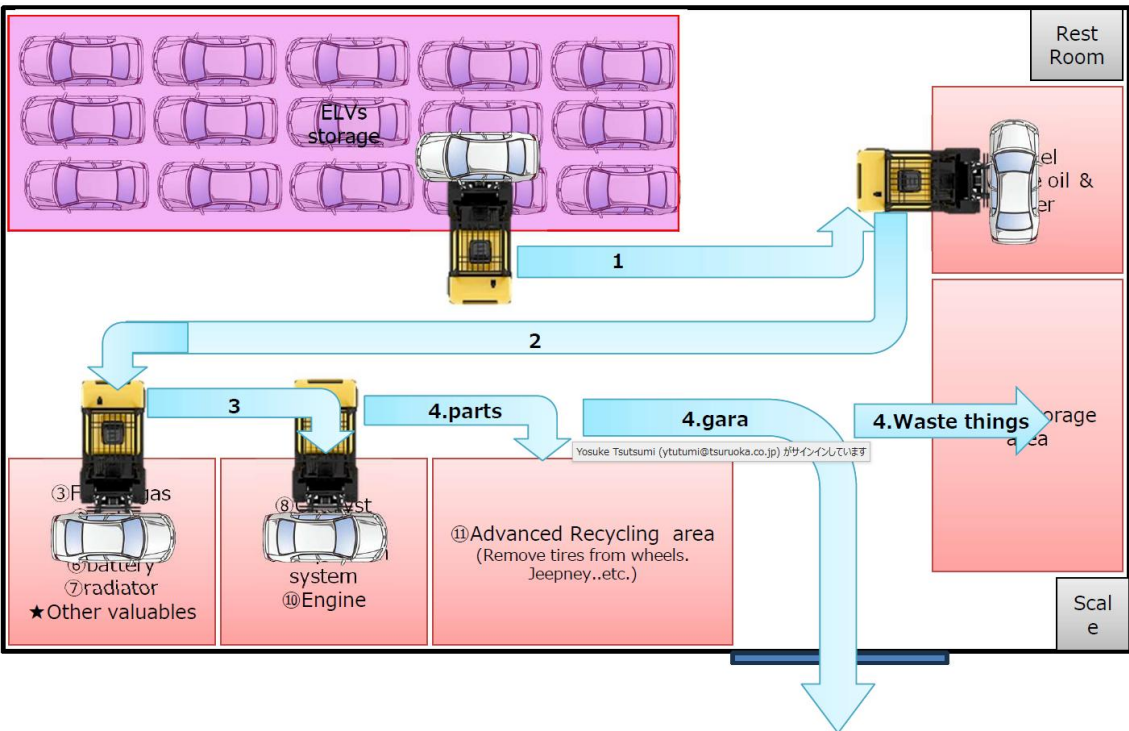
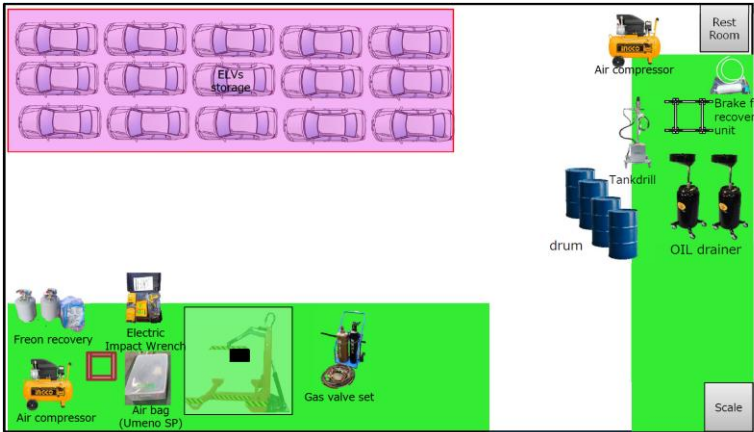


Projects/Description	Covered (Required to secure ECC)			Not covered (may secure CNC)	Project size parameters / Remarks
	Category A:ECP EIS	Category B: Non-ECP EIS	Category C: Non-ECP IEE Checklist	Category D PD (Part I only)	
3.8 Waste Management Projects					
3.8.1 Sanitary Landfill for industrial and other wastes	None	Multi-users	Single-user	None	(Commercial TSD facilities are considered as "multi-user")
3.8.2 Sanitary landfill for domestic wastes only	None	Categories 2 to 4 Disposal Facilities OR Category 1 with capacity ≥ 15 tons	Category 1 Disposal Facility <15 tons	None	wastes handling per day (Categories based on DAO 2006-10)
3.8.3 Compost/fertilizer making	None	None	> 3,750 MT	≤3,750 MT	Annual rated/production rate
3.8.4 Materials Receiving and Recovery Facilities (for paper, plastics and other materials)	None	None	With composting facilities > 3,750 MT annual rated/production rate	≤3,750 MT (compost annual production rate) or no composting facility (material separation/burial only)	
3.8.5 Domestic wastewater treatment facility (including seepage treatment facility)	None	≥ 5,000 m³	> 30 m³ but < 5,000 m³	≤ 30 m³	Based on system capacity
3.8.6 Material recovery using pyrolysis or similar technology (e.g., tire pyrolysis)	None	≥ 10.0 MT	< 10.0 MT	None	Annual treatment/processing capacity
3.8.7 Hazardous waste treatment, recycling, and/or disposal facilities (for recycling of lead, see details in Heavy Industries)	None	OR projects with radioactive materials (regardless of amount/quantity)	< 10.0 MT (without radioactive materials)	None	Annual treatment/processing capacity (for conversion of volume to mass: use 1 kg/L, as the factor)
3.8.8 Industrial and hospital waste (non-hazardous) materials treatment facilities	None	≥ 50 m³	< 50 m³	None	Daily treatment/processing capacity (for conversion of volume to mass: use 1 kg/L, as the factor)
3.8.9 Recycling facilities for paper, plastic, and other non-hazardous materials	None	≥ 50,000 MT and involving the use of chemicals	> 15,000 MT but < 50,000 MT (with or without chemicals) OR ≥ 50,000 MT and does not involve the use of chemicals	≤ 15,000 MT AND does not involve the use of chemicals	Annual treatment/processing capacity
4. GOLF COURSE AND OTHER TOURISM PROJECTS					
4.1 Golf course projects/complex	Regardless of number of holes	None	None	Driving Range only Regardless of area	Number of holes
4.2 Resort and other tourism/leisure projects	None	≥ 5 ha	> 0.1 ha but < 5 ha	≤ 0.1 ha	Project / gross floor area shall be the sum/total of total/gross floor area (of structures) plus open areas and other facilities (e.g., landscape, parking, pool) For hotels in urban areas, refer to categories for Building
5. OTHER PROJECTS					
Cut-flower Industry/Projects	None	None	None	regardless of capacity or area	

- Management of Oil/Water Separator
- Equipment Maintenance
- Fire Prevention



Layout that takes disaster prevention measures and environmental impact into consideration
Complies with Toyota Global 100 Dismantler Project standards.



Pampanga ELVs Dismantling Pilot Plant



Infrastructure

Facilities building the ELV foundation

Challenge 5

"Challenge of Establishing a Recycling-based Society and Systems"



- 1 Prevent pollution from end-of-life vehicles
- 2 Eliminate resource risks (depletion, sudden rise and supply)
- 3 Prevent global warming

We promote two projects by rolling out domestic technologies and systems to the world.

TOYOTA
ENVIRONMENTAL
CHALLENGE 2050



TOYOTA Global 100 Dismantlers* Project



TOYOTA Global Car-to-Car Recycle Project



Procurement of a fleet of 259 taxis (Blue Taxis and Mabuhay Taxis) from Davao City



Responsible for the proper dismantling of jeepneys under the Public Transportation Modernization Program.

Inquiries from individual customers are increasing /
Actively accepting damaged vehicles for material use due to accidents and disasters



Count of Model Row Labels	Column Labels		
	MAJOR REPAIR	TOTAL LOSS	Grand Total
MARVEL R EV	2		2
MG G50	26	17	43
MG3 (Hybrid & ICE)	39	72	111
MG4 EV	11	152	163
ZS EV	12	26	38
Grand Total	90	267	357



My interest and expectations for Malaysia

"Becoming a leading country in the ASEAN version of Car-to-Car Recycling"

- Status as a logistics hub in ASEAN
- Certification system based on MS 2697:2018
- Strengthening our strengths by entering the remanufacturing industry



[Looking ahead to strategies that go beyond illegal dumping and reducing environmental impact]

If we are to design a system for automobile recycling in the future, we should aim to create a new value network while solving environmental problems as part of the circular economy.



[A connection point with Japan's Automobile Recycling Law: "MS-certified reused parts from Japan"]

While Japan has a licensing system for ELV dismantling and crushing businesses, it does not guarantee quality assurance after parts are exported. Malaysia's MS 2697:2018 complements this system and plays a key role in ensuring international credibility.

[Cross-border collaboration offers a way forward!

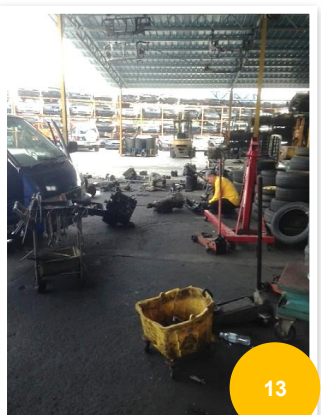
From a used parts hub to a CE base, it is thriving again]

Running a business in Japan, I have come to realize that Malaysia used to be a thriving hub for the trading of used parts, including second-hand parts and beyond, but that this has shifted to Dubai a few years ago, and then to countries closer to Africa, and in recent years to countries within Africa.

I hope that Malaysia will continue to be, and will continue to be, an "enabler that connects the automotive industry with the needs of a variety of consumers with different circumstances," and I believe that an important challenge for the future will be to utilize Malaysia's knowledge, technology, and experience in used parts to further expand our network of contacts, in other words, to form a global value network.



Our company has been doing business with MUVATA member companies for 30 years.



[Threats and Opportunities: Africa's Robust Demand for Automobiles]

Microfinance, which began at the grassroots level, is producing results.

Japanese used car exports to Africa are clearly on the rise, and the financial power behind them is making its presence felt.

What is the status of Malaysian-made used car exports to Africa?



[AATF ← Non-AATF]

Regardless of whether permission is currently granted or not, the large number of players is an absolute advantage, and if we can demonstrate new value, we should be able to build a strong system.

[That happened in Japan 20 years ago.]

Japan's Vehicle Recycling Law also places restrictions on existing companies (over 6,000 in total). This has resulted in the realization of "systematization (the formation of an industry)."



[Step by step, accumulating know-how on proper ICE dismantling is the right path to proper EV dismantling]

It is true that EVs are becoming more popular, but it will be 10 years before they become ELVs. What we need now is to develop proper dismantling techniques for ICE (internal combustion vehicles), which will function as a foundational technology in the future, and to create a value network for ideal resource circulation.





[Threats and opportunities: ELV measures beyond the rise of BEVs]

Developments are underway to recycle degraded BEV drive batteries and use them as stationary storage batteries, but in reality, there is a very high risk of explosion and fire when handling them. We are currently experimenting with safe management methods.



Most of the reuse business discussion meetings...

Safe Removal
Safe Storage
Safe Transportation



Not aware of the risks involved



Chain reaction caused by combustion radicals

燃焼ラジカルによる連鎖反応

Releases an aerosol containing potassium radicals

カリウムラジカルを含むエアロゾル

Combustion radicals and potassium radicals combine to stabilize

燃焼ラジカルとカリウムラジカルが結合して安定化



The goal is not to "create recycled materials."

How to balance supply and demand (optimal quantity management)?



Resources are commons.
There are limits to a hoarding strategy,
so we should adopt a circular strategy.

Digital transformation will be key to this.



Now is the time to join forces and tackle these challenges!

Thank you for the opportunity to share this case study.

