

14.2 Typology of the Case Studies Presented

Andreas Windsperger and Richard Tuschl

In this chapter, we try to classify the presented cases in order to facilitate comparing the different cases concerning their characteristics, their performance and their acceptance by users.

For the classification a typology is used, which has been worked out in a project of the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) and is published in the book „Chemical Leasing“.

As the previous chapters show, all the cases focus on providing the service instead of selling chemicals. But this principle can show different faces in practice, sometimes intermediary solutions resulting from increased customer care or manufacturer responsibility are used, while only the very serious ones are based on an actually service-oriented approach. The “unit for payment” turned out to be a fundamental issue for the scope of a service. Many contracting models, although called “service-models”, only represent models of improved customer care. If the amount of the supplied product is the basis for the payment and if the ownership of the product changes, it is not Chemical Leasing, but a somehow expanded responsibility approach. But if the user is charged for the service, for the function of the used chemicals instead of paying for used material amounts, then this is a clear indication of a service model.

Such approaches sometimes represent a distinct risk for the contractor in such models, since misuse of a user can hardly be excluded without giving the user the impression that the service has been curtailed. A clear separation of responsibilities, ownership, operation, maintenance, etc., in the individual processes helps to avoid dissatisfaction. Service models should target at an almost complete takeover of responsibility not only for the chemical, but also for the application plant and the waste management or recycling equipment.

To look in detail on the presented cases the typology uses criteria which form a neutral picture of the character of the developed service system. They allow easy comparison between the cases and other existing business models, pointing out differences and looking for further potential improvements in order to develop target-models.

The classification of the models is based on the following criteria:

- who owns the substance
- who owns the plant

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- who operates the plant
- who maintains the plant
- where is the plant situated.

The processes supply, use and waste management or recycling as well as the respective stakeholders are considered. The basis of payment (unit of charge) is used as an indication of the service character.

The characteristics above are described for each of the individual cases and presented as a table and a chart. Finally the characteristics of all the cases are summarised in a table and some conclusions are drawn.

To facilitate an overview of the characteristics of the individual models, a presentation as an X-Y chart has been chosen, which allows to show all the properties at a glance. On the Y-axis the processes are drawn, their location is visible on the X-axis. The processes are also indicated by symbols. The supplier (or supply, "S"), the user (or use "U") and the waste manager (or waste disposal "W") are indicated on both axes pointing out where which activity takes place. Colours indicate the ownership of the substance and the plant in the various phases. The colour of the symbol area denotes the owner of the substance, the colour of the symbol frame indicates the owner of the plant. Finally, a coloured dot in the symbol shows who operates the plant. The arrows between the symbols indicate the movement from one location to another while an eventual outer frame around the symbols shows the possibility of bundling plants at one single location (Fig. 1).

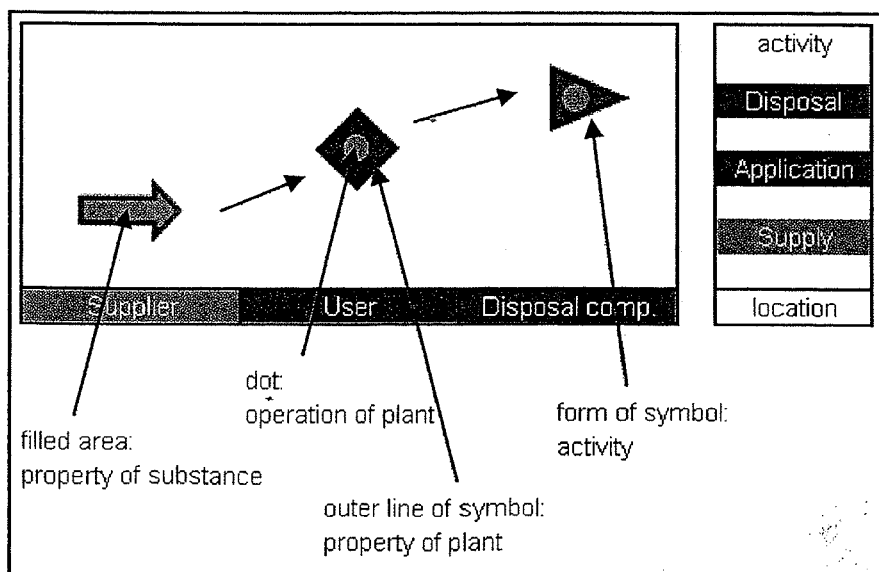


Fig. 1. The model

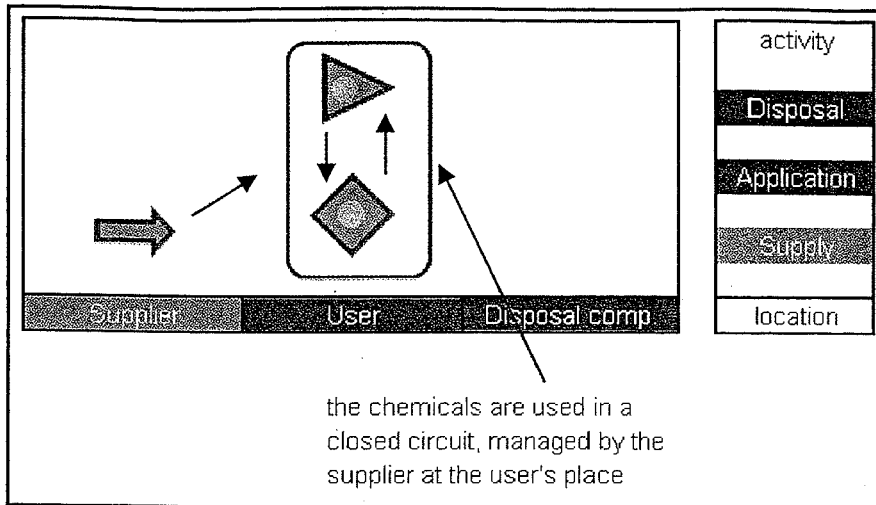


Fig. 2. Example for a "Total Care Model"

As an example for a high level service model the so called "Total Care Model" may serve, where the supplier owns the application and the recycling equipment and is responsible for its operation and maintenance, although the plant is situated at the user's premises (Fig. 2).

Description of the presented cases

Chemical Leasing in the field of de-lacquering
 Tiefenbacher GmbH
 Mepla – Alfit
 Austria

Mepla – Alfit needs special hooks for the painting process of the different parts. An organic solvent mixture is used for internal de-lacquering and is delivered and also collected after use by Tiefenbacher. Since de-lacquering at an external plant is impossible due to organisational and economic reasons the know-how of the de-lacquering company was integrated into the process at Mepla – Alfit. The chemical management was outsourced to the de-lacquering company and deliverer of the solvent. So the application plant is in full responsibility of the user, while the delivery, know-how transfer, supervision and recycling are done by the service provider. At the beginning the basis of payment was the consumed quantity of chemicals. The goal is to find another basis with a high correlation to the function of the chemicals (Fig. 3).

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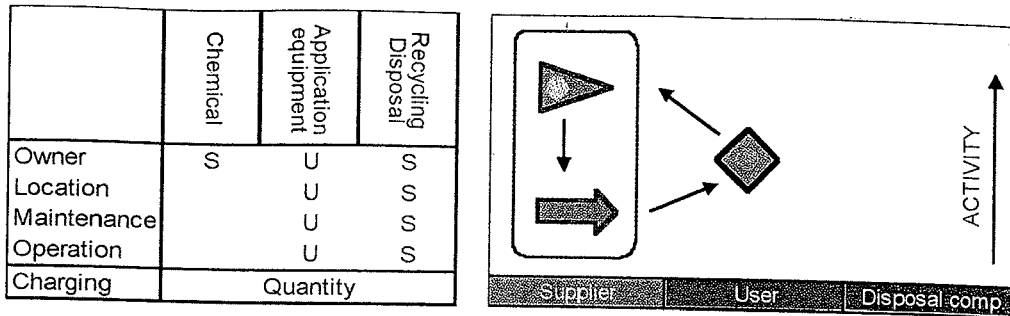


Fig. 3. Business case 1

Chemical Leasing in electrostatic powder coating
 Akzo Nobel Powder Coatings S.A.E
 ABB ARAB
 Egypt

ABB ARAB is a subsidiary company of the international ABB group. The company is the leader in the market of manufacturing electric equipment, especially high and low voltage equipment. For components of the power equipment ABB is operating an electrostatic powder coating process, for which Akzo Nobel is supplying the electrostatic coating powder. Under the Chemical Leasing (ChL) business model, Akzo Nobel provides the coating powder, manages and supervises the powder coating process at ABB ARAB. The service provider is also responsible for the recycling process. The basis of payment is the coated area per month against a fixed price (Fig. 4).

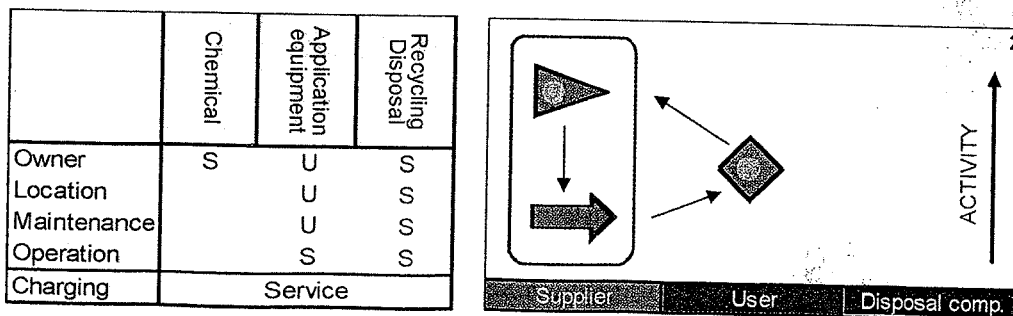


Fig. 4. Business case 2

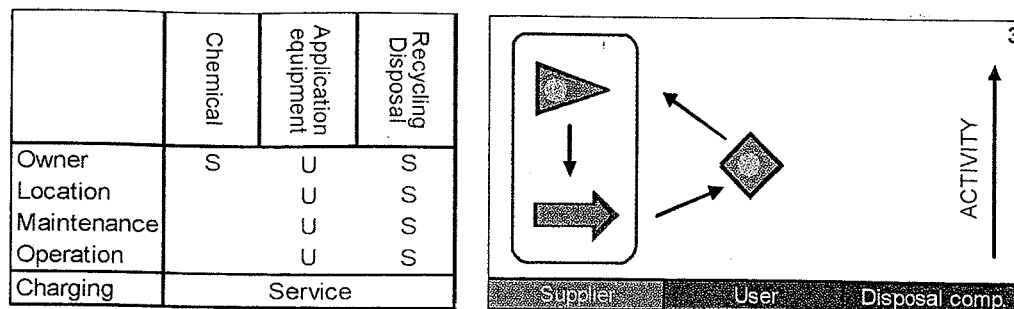


Fig. 5. Business case 3

Cleaning equipment with hydrocarbon solvent
 Dr Badawi Chemical Work
 GM Egypt
 Egypt

GM Egypt is a subsidiary company of the international General Motors group. GM Egypt operates several painting processes which generate VOC emissions and solvent waste. The solvent is used in three main operations: cleaning of guns and connecting piping, sealing and cleaning of tanks. Dr Badawi is supplying the hydrocarbon solvent to GM Egypt, supervises the application of the hydrocarbon containing solvent and regains the solvent waste for recycling. The basis of payment is the amount of produced products per month, which represents a function based charging unit (Fig. 5).

Chemical Leasing in hot dip galvanisation – fluxing process
 Zinc Misr
 El Sewedy
 Egypt

El Sewedy is the Egyptian market leader in hot dip galvanisation industry (Zinc galvanisation), specialised in galvanising towers for power transmission, lighting, communication, etc. Under the Chemical Leasing model, Zinc Misr provides the service for the fluxing process to El Sewedy. Zinc Misr delivers the flux (zinc chloride and ammonium chloride), supervises the process and collects the waste for recycling. The recycling process is not a closed circle because some of the recycled zinc is sold as a different product to someone else. The payment is based on the amount of galvanised products, so it is related to the function of the chemicals (Fig. 6).

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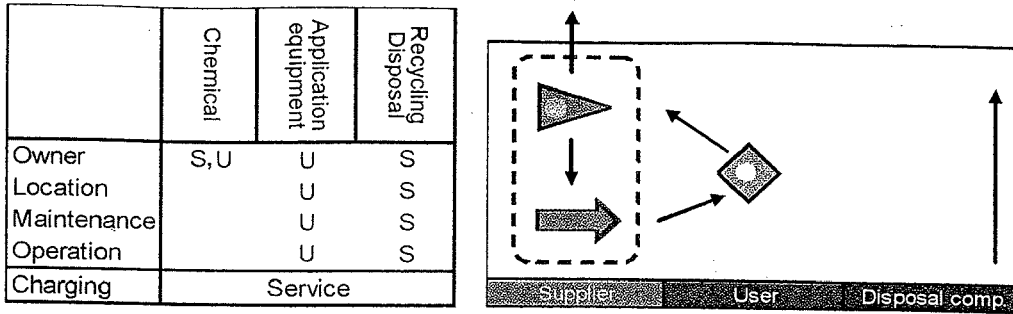


Fig. 6. Business case 4

Sugar mills

Chemical Mac Oil, S.A. de C.V. (Schutz Oil)

Suministro de Materiales Industriales, S.A. de C.V. (SUMAT)

Fideicomiso Ingenio San Cristóbal 80333

Mexico

In this business case there are two suppliers who provide the lubricants to the Mexican sugar mills. The lubricant is delivered to the sugar mill and collected and recycled by the service providers. The machines in the sugar mill are operated by the user. The basis of payment is the amount of sugar cane milled; therefore the unit of charge is based on the function of the used lubricants (Fig. 7).

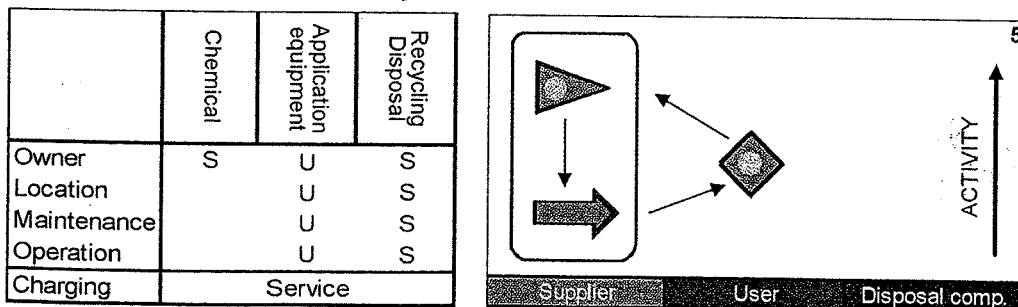


Fig. 7. Business case 5

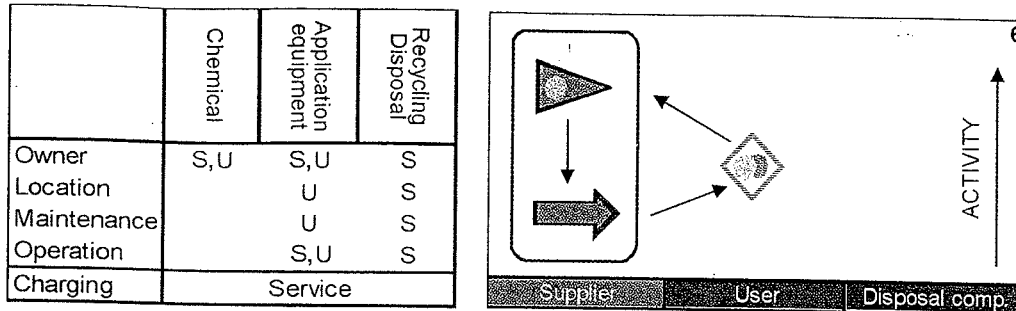


Fig. 8. Business case 6

Electroplating

MARDI Inc., S.A. de C.V.

Cromadora Delgado, S.A. de C.V. (CRODEL)

Mexico

Mardi provides the chemical agent for Crodel's electroplating process. The application equipment in this case is owned and operated by both companies (current supply, dosage for the brighteners), located at Crodel. The recycling is done by Mardi. The unit of payment is the amount of ampere-hours, which corresponds to the surface of the galvanised pieces (Fig. 8).

Glue production wastewater purification

ERG

Henkel-ERA

Russia

ERG has built the water purification plant for Henkel-ERA, which became necessary from the expansion of their glue production. Under the Chemical Leasing regime ERG delivers the chemicals needed by Henkel-ERA. The water is cleaned in a facility owned by Henkel-ERA and operated by ERG, the waste from this process is transported to ERG and treated there. The basis of payment is the amount of purified water, it is thus based on the provided service of water cleaning (Fig. 9).

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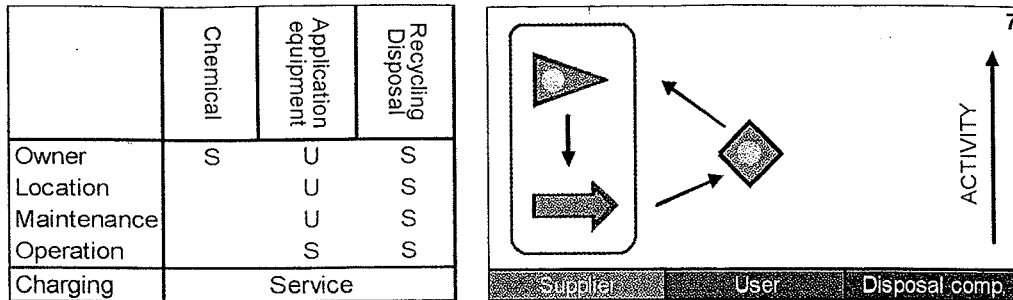


Fig. 9. Business case 7

Metal cleaning

SAFECHEM Europe GmbH

PERO Innovative Services GmbH

MAGNA STEYR Fuel Systems Ges.m.b.H.

Austria

Pero Innovative Services has built a service plant for metal cleaning. The chemicals are provided by Safechem Europe GmbH. Both companies together offer the service to Magna Steyr Fuel Systems Ges.m.b.H.. The total process is managed by the service provider at its location. The basis of payment is the amount of cleaned workpieces (Fig. 10).

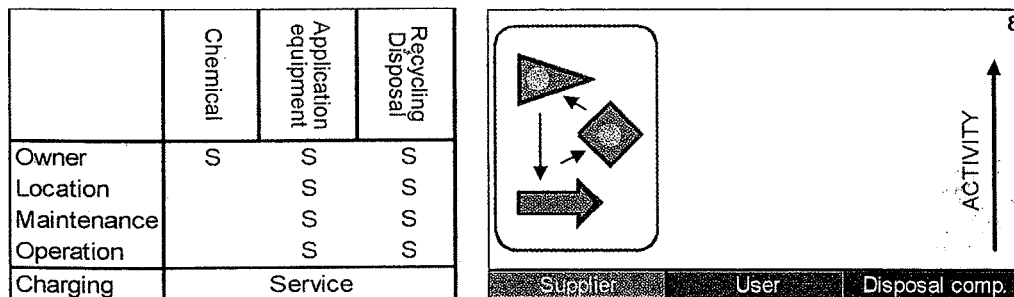


Fig. 10. Business case 8

Summary of the described business cases

In the following table all described cases are summarised. It is clearly shown that in most cases the user is responsible for the application plant and only in the case of Safechem/Pero the supplier cooperation owns, manages and accommodates the plant. The substance is often owned by the supplier, only in 2 cases the ownership changes from supplier to user. The recycling or disposal equipment is managed and owned by the supplier in each of the analysed business cases. Finally, there is clear evidence of economic and environmental benefits gained in all cases where users and suppliers are satisfied with the proposed Chemical Leasing model (Fig. 11).

Business case		Sub-stance	Application plant				Disposal plant			Unit of charge
Supplier	User	Owner	Owner	Location	Maintenance	Operation	Owner	Location	Operation	Service or amount
Tiefenbacher	Mepla – Alfit	S	U	U	U	U	S	S	S	Quantity
Akzo Nobel	ABB Arab	S	U	U	U	S	S	S	S	Service
Dr Badawi	GM Egypt	S	U	U	U	U	S	S	S	Service
Zinc Misr	El Sewedy	S,U	U	U	U	U	S	S	S	Service
Schutz Oil et al.	F.I.S.C.	S	U	U	U	U	S	S	S	Service
MARDI	CRODEL	S,U	S,U	U	U	S,U	S	S	S	Service
ERG	Henkel-ERA	S	U	U	U	S	S	S	S	Service
SAFECEM / PERO	MAGNA STEYR	S	S	S	S	S	S	S	S	Service

Fig. 11. Comparison of all business cases