

MUNICIPAL WASTE MANAGEMENT in AUSTRIA

1. Introduction
2. General overview
3. Practical example/
RC-System in Upper Austria



sustainable



innovative



municipal

1. INTRODUCTION

AUSTRIA

- + 8,5 mio. inhabitants
- + A = 12.000 km²
- + 9 provinces

UPPER AUSTRIA

- + 1,4 mio. inhabitants
(17% of Austria)
- + 444 municipalities,
15 districts, 3 statutory cities
- + A = 12.000 km²
- + capital: Linz (190.000 inh.)

UPPER AUSTRIA



1. INTRODUCTION

PERSON & COMPANY



50 years
managing
director
since 1994

Christian Ehrenguber



COMPANY „LAVU“, Wels

1. INTRODUCTION

+ organisation

joint stock company

public shareholders

competitive standing

+ shareholders:

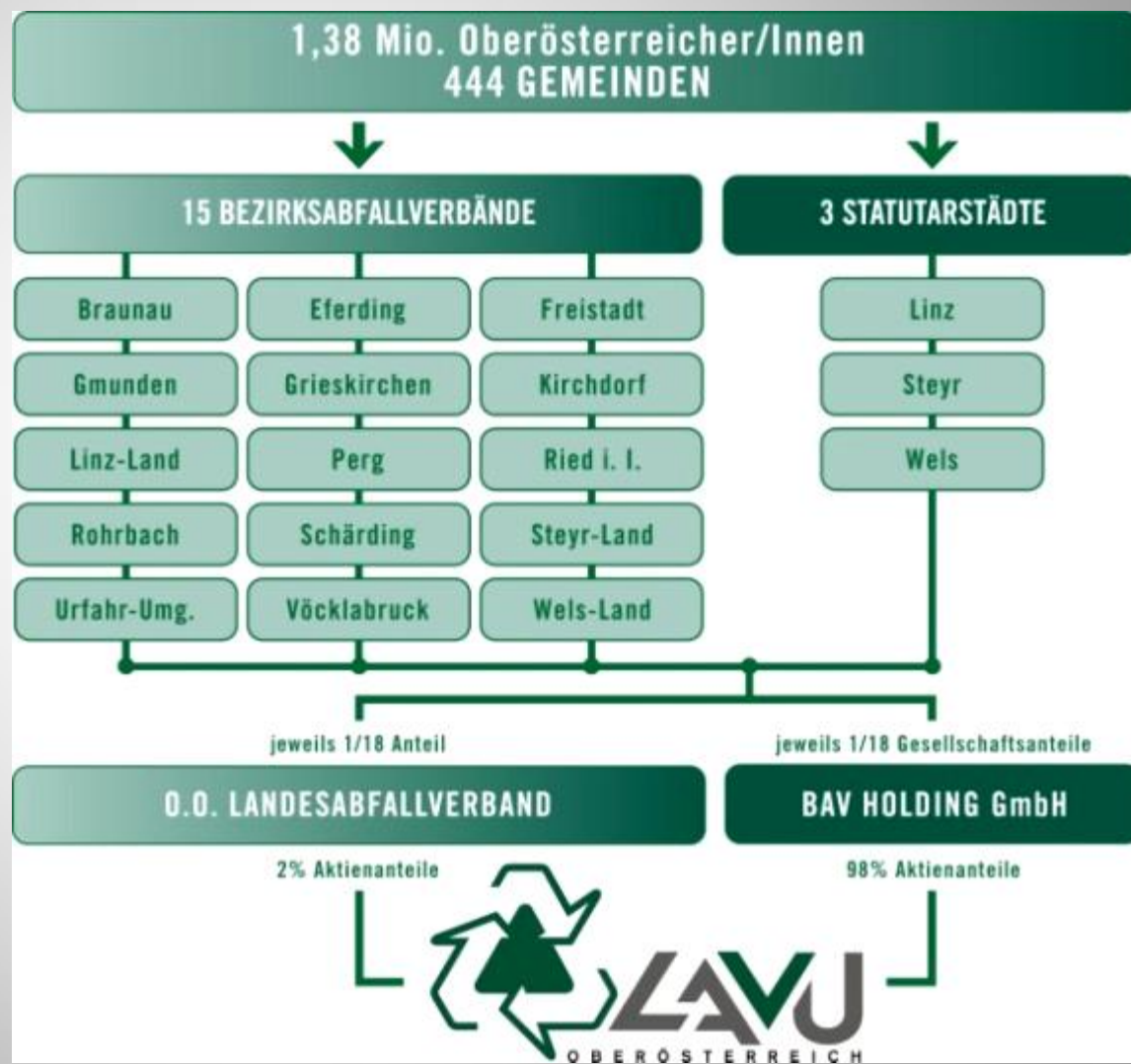
444 municipalities

organized in 18

waste district

associations (WDA)

in Upper Austria



2. GENERAL OVERVIEW

COMPETENCIES

+ LEGAL COMPETENCIES in AUSTRIA

a. NATIONAL (federal) level: waste management = federal matter in legislation & enforcement
sole competence concerning hazardous waste, optional competence concerning non hazardous waste

- 1 Federal Waste Management Law: passed by the parliament

- Federal Ordinances: passed by the Minister of environment

e.g. for: landfill, incineration, hazardous waste, packaging waste, WEEE, batteries, biowaste etc.....
(= specific mandatory separate collections); otherwise just general

b. PROVINCIAL level: - 9 Provincial Waste Management Laws

organisation of waste management in the province, regional plans; no additional separate collection

c. MUNICIPAL level: depending on the competence regulated in the provincial laws

- Municipal ordinance: passed by the municipal council

+ OPERATIONAL COMPETENCIES in UPPER AUSTRIA

- **MUNICIPALITIES:** 444

collection of residual waste, biowaste; waste fee (definition and collection)

- **WASTE DISTRICT ASSOCIATIONS (WDA):** 18

collection of: recycleable waste; treatment of: residual waste, biowaste, recycleable waste

information/consulting services: private households, municipalities, schools

- **WASTE PROVINCE ASSOCIATION:**

- province-wide public relation; coordination of /information service to the WDA

2. GENERAL OVERVIEW

COLLECTION QUANTITY

MUNICIPAL WASTE in AUSTRIA 2010 [kg/cap.]

Δ 07

Provinces	B	K	LA	UA	S	ST	T	V	W	Ö	[%]
TOTAL	321	373	522	449	475	408	522	306	531	466	4,0
residual & bulky waste	130	208	187	151	208	168	178	100	321	201	0,6
<i>disposal rate [%]</i>	<i>40,6</i>	<i>55,7</i>	<i>35,7</i>	<i>33,7</i>	<i>43,7</i>	<i>41,1</i>	<i>34,2</i>	<i>32,7</i>	<i>60,7</i>	<i>43,2</i>	
recycleables	146	136	175	199	179	185	223	170	143	174	3,8
biogenic waste	44	29	160	99	89	56	120	36	68	90	8,4
<i>recycling rate [%]</i>	<i>59,4</i>	<i>44,3</i>	<i>64,3</i>	<i>66,3</i>	<i>56,3</i>	<i>58,9</i>	<i>65,8</i>	<i>67,3</i>	<i>39,6</i>	<i>56,7</i>	

2. GENERAL OVERVIEW

+ PICK-UP SYSTEM (in Upper Austria: 1/3)

collection directly from the household

- residual waste: usually
- biogenic waste: usually
- mixed plastic packaging („yellow bag“)
- mixed paper & card-board: partially

+ BRING SYSTEM (in Upper Austria: 2/3)

a. without controlled acquisition:

- mixed paper & card-board
- packaging waste: glass, metal
mixed plastic packaging („yellow container“)
- textiles & shoes

b. with controlled acquisition :

- * **municipal recycling centers (RC):**
all kind of (separated) waste (in Upper Austria: 40%)
- * **retail shops:** batteries, WEEE, mineral oil...
- * **other collection points:** e.g. for yard waste

COLLECTION SYSTEMS



BIOWASTE

2. GENERAL OVERVIEW

+ LEGAL BASIS: BIOWASTE ORDINANCE (Austria-wide, 1995)

- regulates the separated collection of biowaste
- just 3 sections, no specific penalties



+ BIOWASTE MANAGEMENT IN UPPER AUSTRIA

a. collection (private households, 2012):

+ pick-up system/"bio-bin":

mainly for "kitchen-waste, **47 kg/cap.**

in 87% of the municipalities, for 330.000 households (60%)

+ bring-system (RC, other collection places):

mainly for "yard waste" (grass & shrubbery), **63 kg/cap.**

b. treatment:

* **composting: 162 (rural) composting plants**

83 % of the "bio-bin"-quantity; 95% of the "yard-waste"

* **fermentation/biogas: 28 plants**

17 % of the "bio-bin"-quantity

* **biomass combustion:**

the wooden material (shrubbery) of the "garden waste"



3. RECYCLING CENTERS (RC) in UPPER AUSTRIA

A. POLITICAL/SOCIAL CRITERIAS

CHARACTERISTICS of municipal COOPERATION

- + **Involvement of the citizen in the decision-process**
 - citizen = always the payer & the operational actor
 - subsidiary decisions (bottom up), balance between regional & central
- + **provincial wide uniformity**: what/how is collected, prices/costs (regional compensation)
- + **uniform & transparent information**: what & why is collected, what happens with the waste
- + **attractive & viable infrastructure**
- + **customer-oriented opening-times**
- + **long-term acting & continuity**
- + **transfer of economic benefits to the citizens = shareholder value**

B. ECOLOGIC CRITERIAS

- + **high recycling rate**
- + **resource conservation/energy & CO2-saving/high safety-standards**

C. ECONOMIC CRITERIAS

- + **optimum marketing of the recycleables, taking advantage of larger units**
- + **local value chain (high varietal purity, local conditioning)**
- + **efficient logistic system**

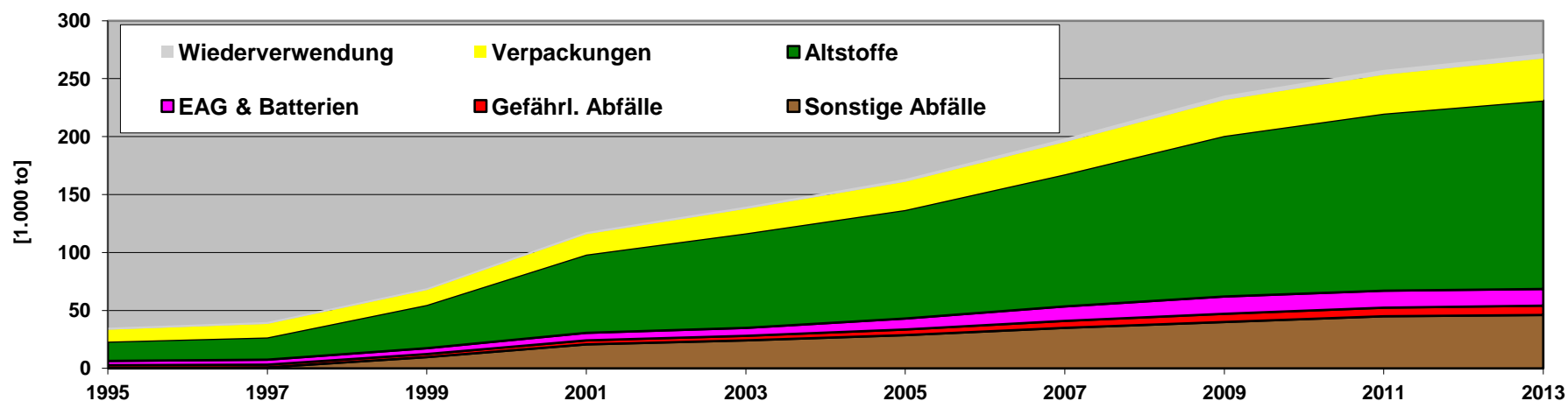
3. RC-SYSTEM in UPPER AUSTRIA

figures & facts

+ how much do we collect

RC collection quantity 1995 - 2013 [1.000 to/a]

	1995	1997	1999	2001	2003	2005	2007	2009	2011	2013	kg/cap	Δ 13/11
Reuse	1,8	1,6	1,5	1,8	1,9	2,5	3,1	3,8	4,2	4,2	3,0	1,7
Packaging mat	10,3	11,7	12,9	17,6	21,1	24,3	27,8	31,0	33,6	36,3	25,6	8,1
Recycleables	16,7	19,2	37,4	67,5	81,6	93,7	114,0	138,6	152,8	162,7	114,8	6,5
WEEE & battery	3,7	4,3	5,1	6,5	6,8	9,5	12,5	14,9	14,7	14,4	10,2	-1,8
Hazardous waste	2,4	2,3	2,6	3,4	3,9	4,9	6,0	7,1	7,4	8,0	5,7	8,6
Other waste	0,3	0,9	9,7	20,7	24,2	28,7	35,0	40,0	45,0	46,1	32,5	2,5
TOTAL	35,1	40,0	69,2	117,6	139,5	163,5	198,4	235,4	257,6	271,7	191,8	5,5



3. RC-SYSTEM in UPPER AUSTRIA

+ Where do we collect: attractive infrastructure

RE-DISTRIBUTION
„hardware“

RC St. Georgen/A (VB)



RC Grieskirchen (GR)



3. RC-SYSTEM in UPPER AUSTRIA

+ Where do we collect: 183 RCC in Upper Austria

RE-DISTRIBUTION
„hardware“

RC Gallneukirchen (UU)



RC Kronstorf (LL)



3. RC-SYSTEM in UPPER AUSTRIA

+ Where do we collect: attractive infrastructure

RE-DISTRIBUTION
„hardware“

RC GREIN (PE)



RC 4 SONNEN (BR)



3. RC-SYSTEM in UPPER AUSTRIA

+ Where do we collect: attractive infrastructure

RE-DISTRIBUTION
„hardware“



3. RC-SYSTEM in UPPER AUSTRIA

+ Where do we collect: attractive infrastructure

RE-DISTRIBUTION
„hardware“

RC BRAUNAU (BR)



7.500 m² 25.000 EW



RC RIED (RI)

7.500 m² 30.000 EW

RC GOSAU (GM)



3.000 m² 1.950 EW

RC GRÜNAU (GM)



1.500 m² 2.100 EW

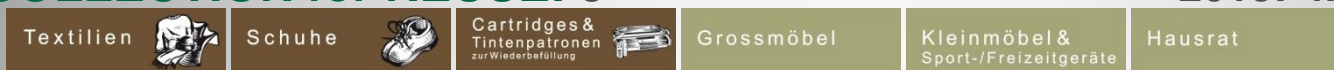
3. RC-SYSTEM in UPPER AUSTRIA

RE-DISTRIBUTION „software“

+ **WHAT** do we collect: **80** different waste materials **2013: 271.800 to (192 kg/cap.)**

- **COLLECTION for REUSE: 9**

2013: 4.160 to (3 kg/cap.) 2 %



- **COLLECTION for RECYCLING: 52**

2013: 215.100 to (152 kg/cap.) 79%

- Packaging materials: 15

2013: 36.300 to (26 kg/cap.) 13%



- Recycleables: 24

2013: 162.700 to (1115 kg/cap.) 60%



- WEEE, batteries, end of life vehicles: 13

2013: 16.100 to (11 kg/cap.) 6%



- **COLLECTION for RECOVERY: 3**

2013: 290 to (0,2 kg/cap.) 0,1%



- **COLLECTION for DISPOSAL: 14**

2013: 52.150 to (37 kg/cap.) 19%



3. RC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials

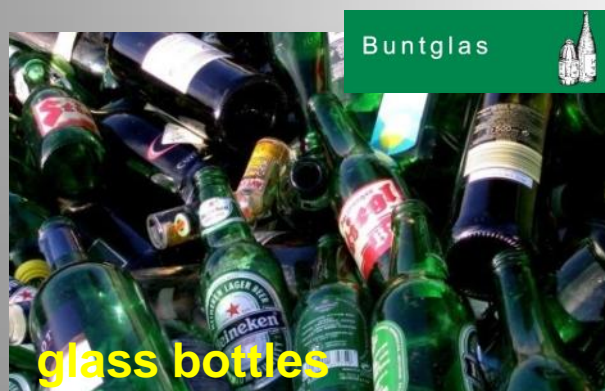
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**RE-DISTRIBUTION
„software“**



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**RE-DISTRIBUTION
„software“**



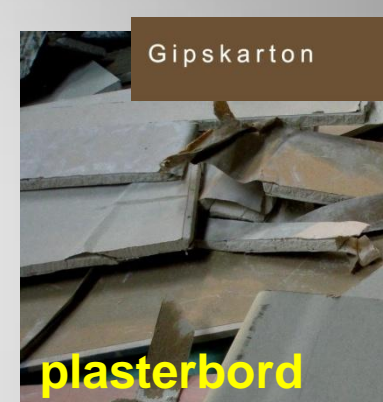
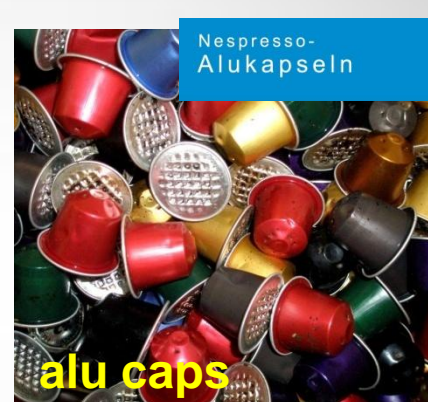
3. RC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials

COLLECTION for RECYCLING: 52

Recycleables/specialities

**RE-DISTRIBUTION
„software“**



3. RC-SYSTEM in UPPER AUSTRIA

RE-DISTRIBUTION „software“

+ **WHAT** do we collect: **80** different waste materials

COLLECTION for REUSE/REVITAL CONCEPT:

- since 2009 in 78 RC: **Collection for Reuse**

- 6 Revital-fractions (houshold-goods, small/large-furniture, small/large EEE-appliances, monitors)

- cooperation with **3 socio-economic enterprises**

- **Retailing in 15 Revital-shops** : Altmünster, Braunau, Eferding, Freistadt, Grieskirchen, Kirchdorf, Leonding, Linz, Mattighofen, Ried, Rohrbach, Schärding, Schwertberg, Steyr, Vöcklabruck



- more info: www.revitalistgenial.at

3. RC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials

COLLECTION for RECYCLING: Cooking oil

Collection with multi-path buckets

- **3 ltr. bucket:** for private households used by 350.000 households (70 %)
- **24 ltr. bucket:** for restaurants used by 4.000 restaurants (50 %)

RE-DISTRIBUTION RE-PRODUCTION

Altstoffe

Speisefett & Speiseöl

JA NEIN

- gebrauchte Fritter- und Bratfettöle
- Öle von eingetragten Speisen (Thunfisch, Sardinen, usw.)
- Butterschmalz und Schweineschmalz
- verdorbenes und abgelaufenes Speiseöl & -fett
- Mineral-, Motor- und Schmieröle
- andere Flüssigkeiten und Chemikalien
- Mayonaisen, Saucen und Dressings
- Speisereste

• Öl und Fett nicht über 80°C einfüllen.
• Die Öl-Alt im Metallweggefäß.
• **3 Liter Haushalte-Öl:** Kostenfrei
• **24 Liter Gastrie-Öl:** Entlastung kostenfrei - anschließend Austausch kostenfrei!
• Nur vollgefüllte Öle im ASZ abgeben. Deckel immer fest verschließen (aufdrücken bis er einrastet).



ASZ Handbuch, Folie 1, 07.01.2011



3. RCC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials
WEEE, BATTERIES

**RE-DISTRIBUTION
„software“**

Elektroaltgeräte

Bildschirm-
geräte



JA

- Bildröhrengeräte
- Fernsehgeräte
- EDV-Monitore
- Flachbildschirme
- Notebook

NEIN

- Automatische Ausgabegeräte
- medizinische Geräte
- Spielautomat (Spielhalle)
zu Elektro-Gesamtschutt

DISPLAY SCREEN EQUIPMENT

+ collection quantity 1993-2013: 27.850 to (1.380.000 pcs.)

+ 2013: 2.900 to [2,0 kg/cap.] **22 % of all WEEE** 2/3 TV-sets, 1/3 monitors

+ logistic: collective transport/180RCC – WLC

+ recovery: AVE/Timelkam, Basar/Steyr; dismantling (CRT-separation, haz. parts)



3. RC-SYSTEM in UPPER AUSTRIA

RE-DISTRIBUTION
„software“

+ **WHAT** do we collect: 80 different waste materials
WEEE, batteries

SMALL ELECTRICAL APPLIANCES 34 % of all WEEE

+ collection quantity 1993-2013: 32.000 to; 2013: 4.430 to [3,1 kg/cap.]

40 % IT-equipment, 30% household appliances, 20 % consumer equipment, 5 % electric tools

+ **logistic: collective transport/180 RCC – WLC**

+ **recovery: LAVU/WLC Wels, dismantling** (hazardous parts, recycleable parts)



3. RC-SYSTEM in UPPER AUSTRIA

+ **WHAT** do we collect: 80 different waste materials
WEEE, batteries

VEHICLE BATTERIES

+ collection quantity 1989-2013: 22.900 to (1.990.000 pcs.);

2013: 930 to [0,7 kg/cap.]

+ logistic: collective transport/180 WCC – WLC


+ recovery: BMG, Arnoldstein 100 % Recycling

RE-DISTRIBUTION
„software“



Batterien

Fahrzeugbatterien




JA	NEIN
<ul style="list-style-type: none"> Bleiakkumulatoren, -batterien mit Säureinhalt Starterbatterien von Autos, Mopeds, Traktoren, LKW etc. 	<ul style="list-style-type: none"> Konsumbatterien Akkus Knopfzellen <small>↳ zu GEMÄSSERTEN</small> Ni-Cd (Nickel-Cadmium) Akkumulatoren <small>↳ EISENE ABFALLST <small>↳ zu SEH PROBLEMTOPFBAUE</small></small> Kondensatoren <small>↳ EISENE ABFALLST</small> Trafos (klein) <small>↳ zu ELEKTRO-KLEINMÜLL</small>

Erkennungsmerkmal:
"Nassbatterie"
Besonderheit: Bleikontakte lassen sich leicht öffnen

Sammelhinweis:
Batterien dürfen keinesfalls die obere Karte der Wärme Übertragen! Der Transporteur darf die Wärme (gem. ADR) sonst nicht aufladen!

Bezeichnung: ADR
UN 2794
Batterien (Akumulatoren), Nass,
gefäß mit Säure
Klasse 9



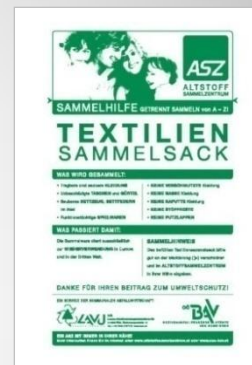
ADR - Handbuch, Revision 3, 01.01.2010

ADR Nr. 4100

3. RC-SYSTEM in UPPER AUSTRIA

RE-DISTRIBUTION „software“

+ with what do we collect: practical collection-aid



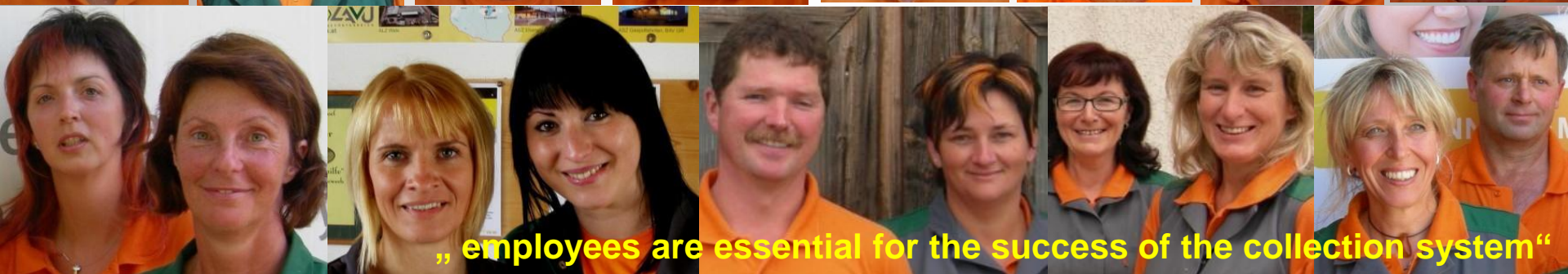
professional info-service



3. RC-SYSTEM in UPPER AUSTRIA

RE-DISTRIBUTION „software“

+ With who do we collect: motivated & professional staff



3. RC-SYSTEM in UPPER AUSTRIA

RCC – WLC = Waste Logistic Centre

+ where does the waste go: specific logistic & data management



GRACIAS POR SU ATENCION

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