



UPGRADE OF A MULTIPURPOSE WASTE VEHICLE FOR THE CITY OF GRAČANICA

Definition of tasks

- Segregation of white glass and coloured glass
- Reconstruction of the vehicle
- Adapt to the mainly used rubbish containers
- Comparison of the economical aspects

MAN 41.390 with Palfinger loading crane PK12001.EH





Bell containers 1,5m³



Rubbish containers 1,1m³

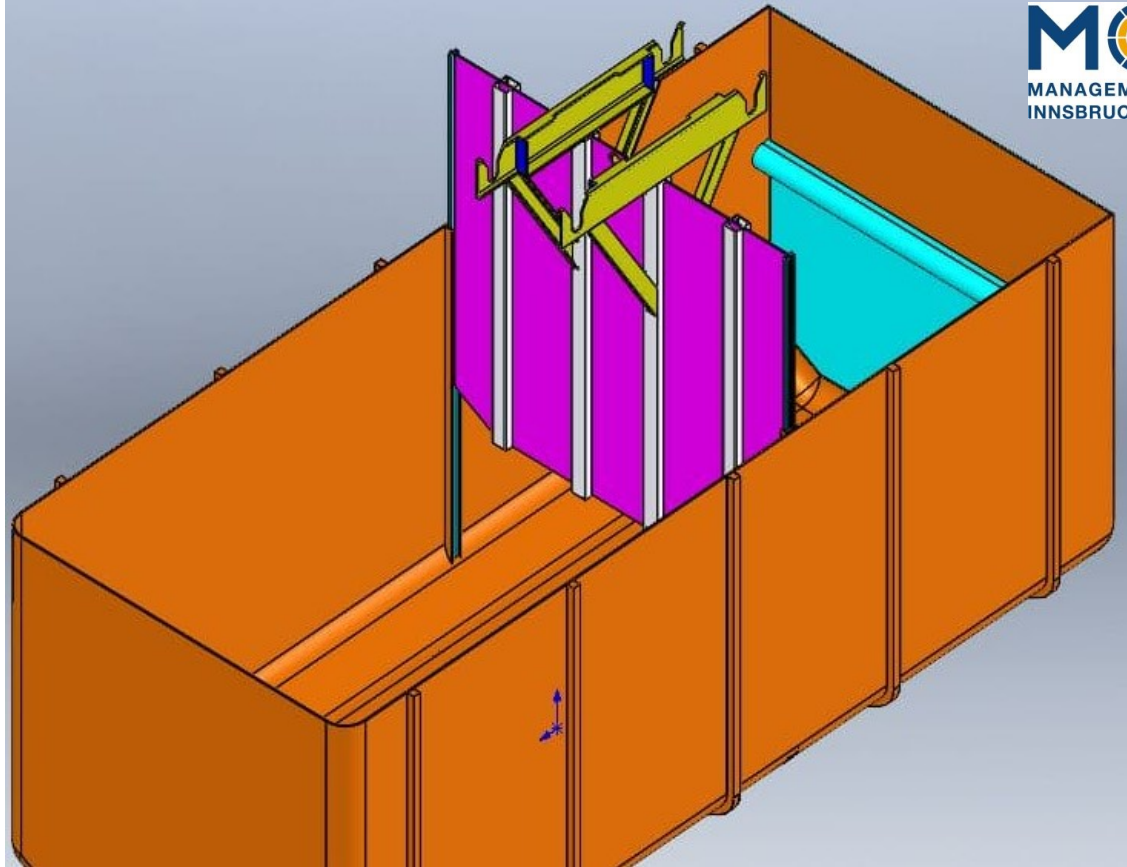
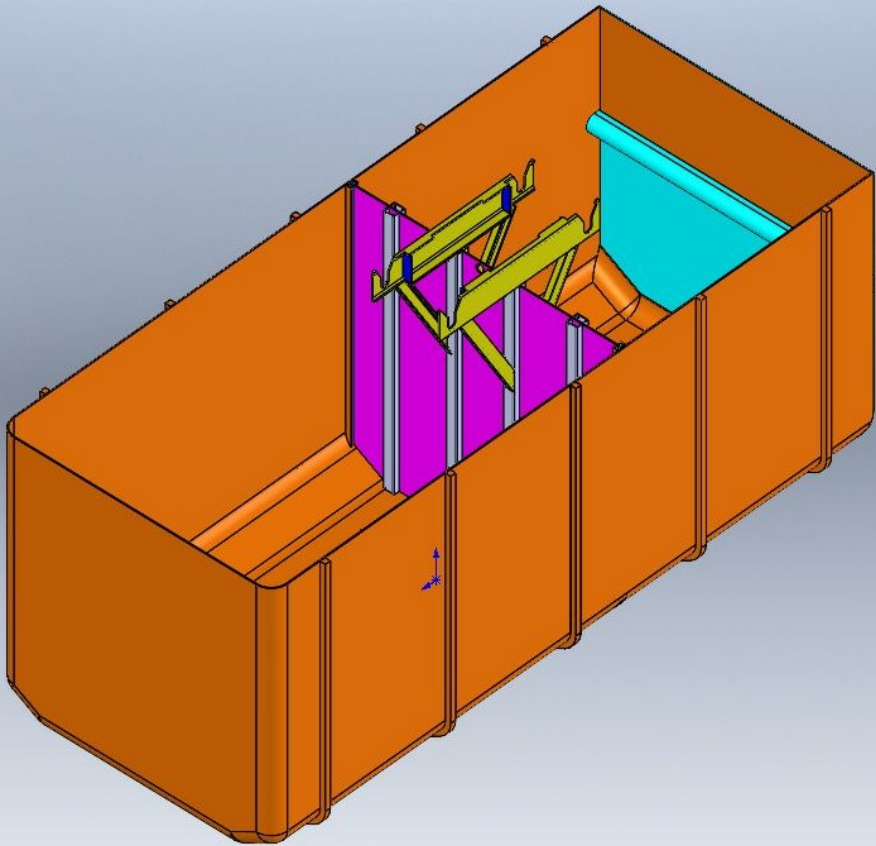


240 Liters rubbish bin also used for glass



Mini recycling centre



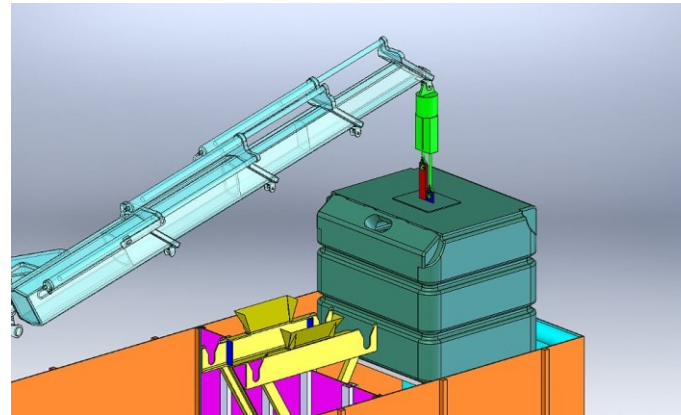
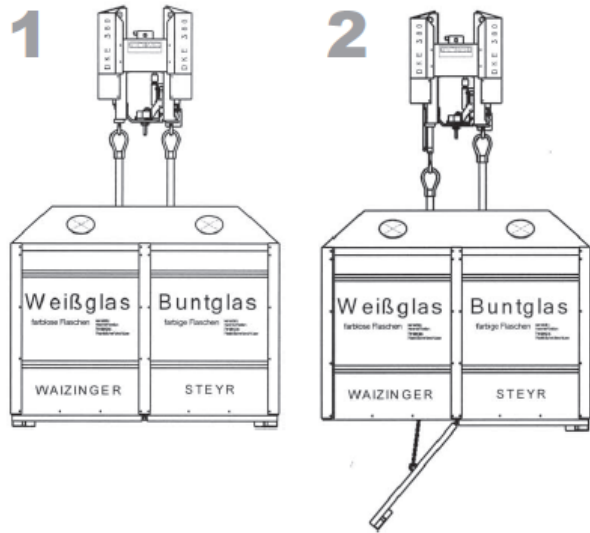


pink.....
 cyan
 yellow

partition wall
 discharge wall
 emptying console

Container partition

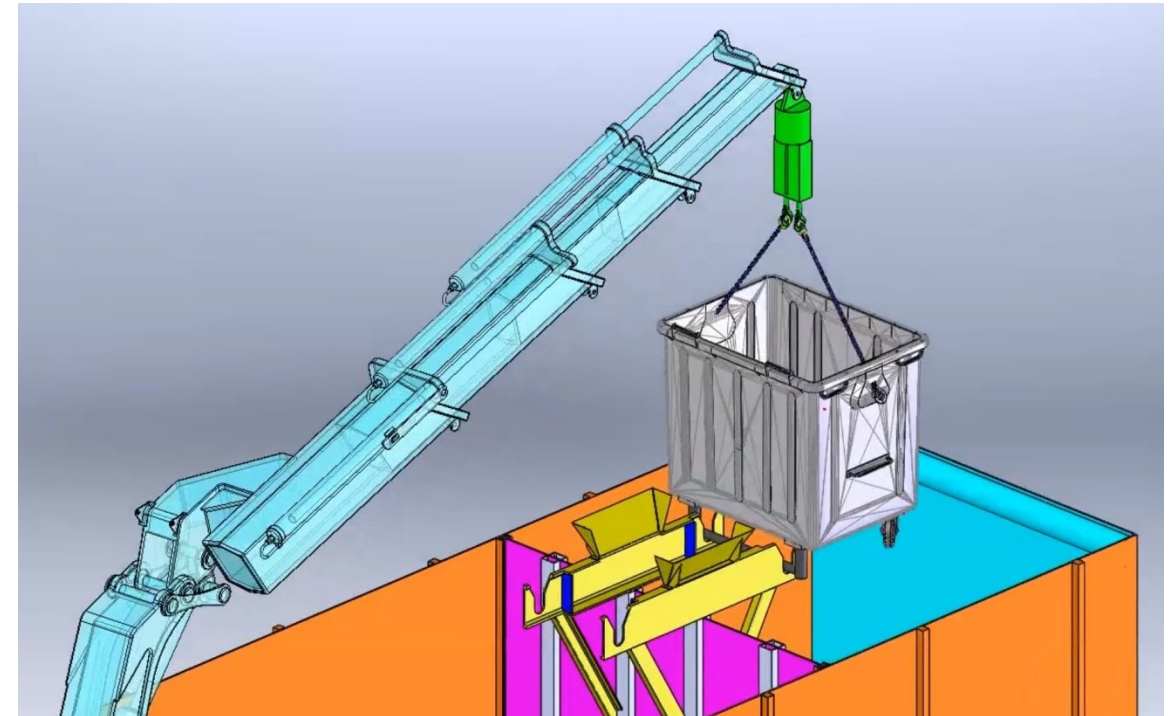
Bell containers 1,5 m³



pink.....
cyan
yellow
green.....

partition wall
discharge wall
emptying console
hydraulic mount

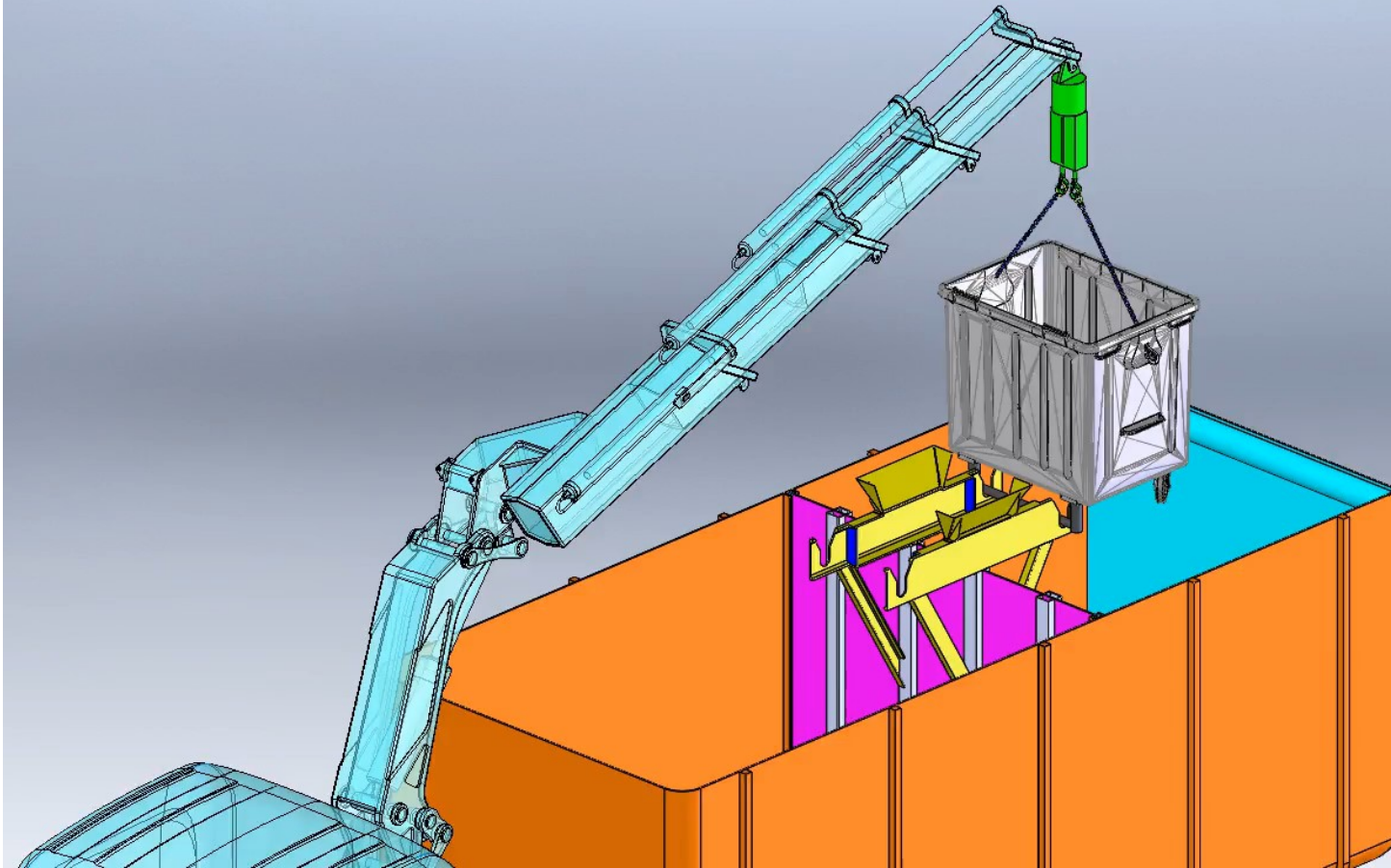


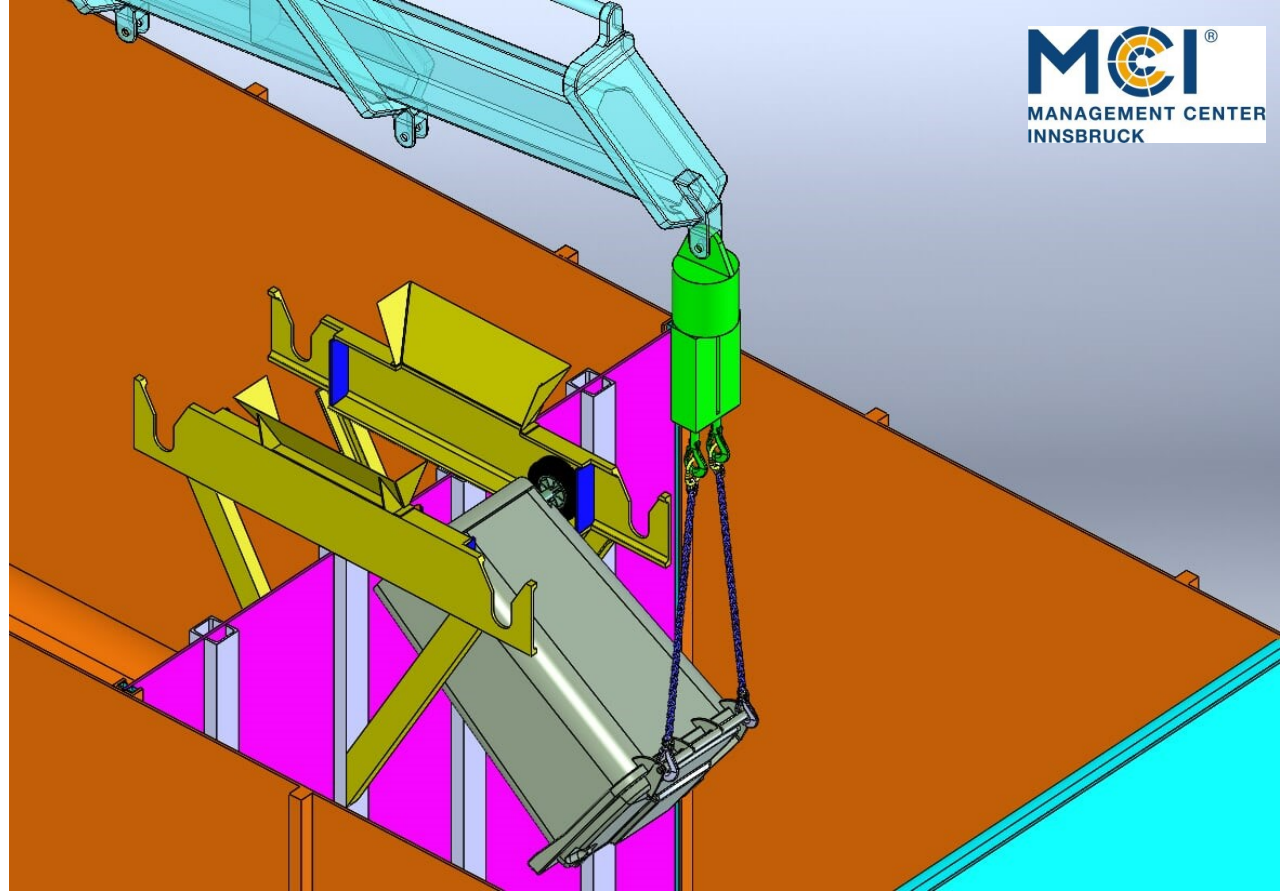
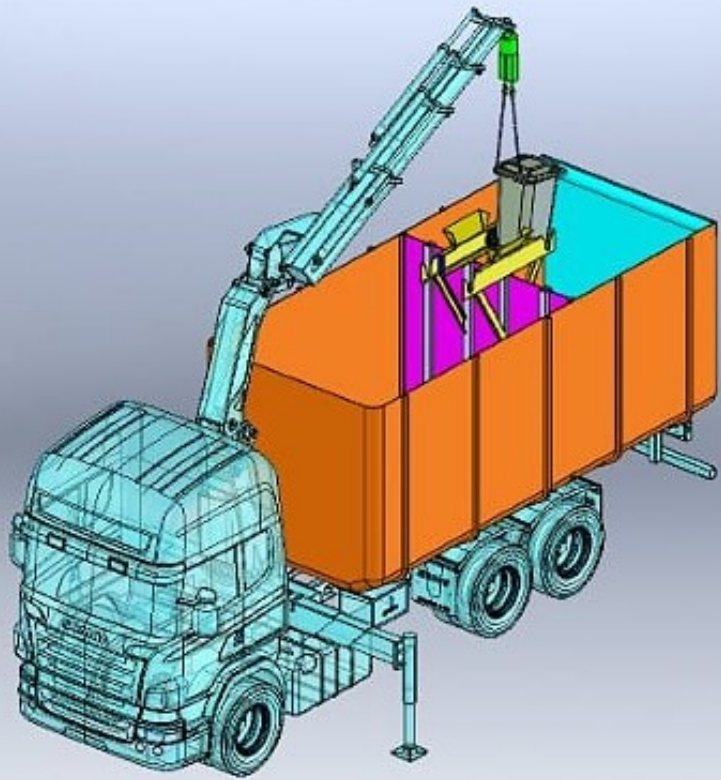


pink.....	partition wall
cyan	discharge wall
yellow	emptying console
green.....	hydraulic mount
grey container.....	Rubbish container

Rubbish container 1,1 m³

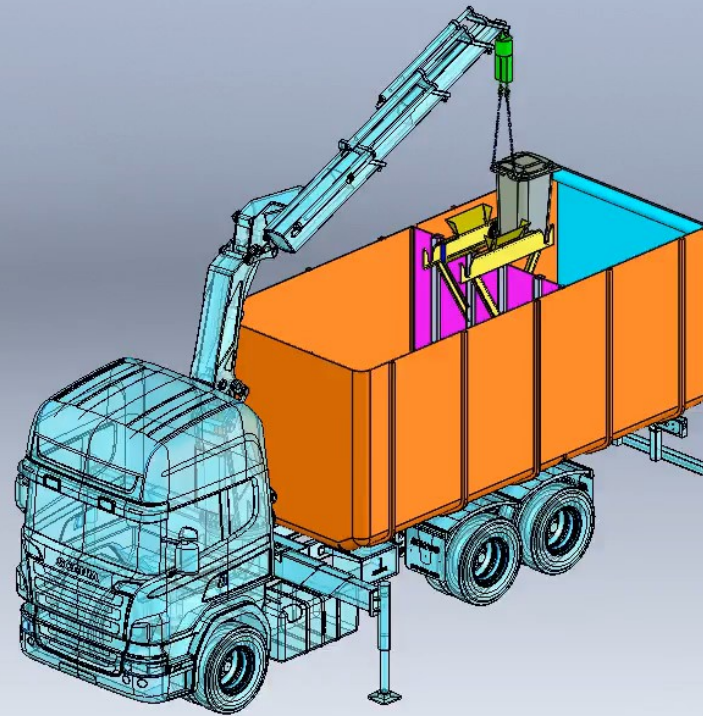
Zusammenbau.SLDASM





240 liters rubbish bin

Zusammenbau.SLDASM

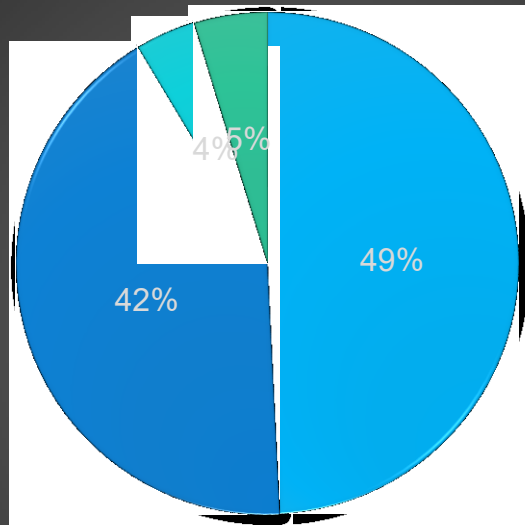


Glass production worldwide: 130 Mta

Recycled amount: 27 Mta
(21%)

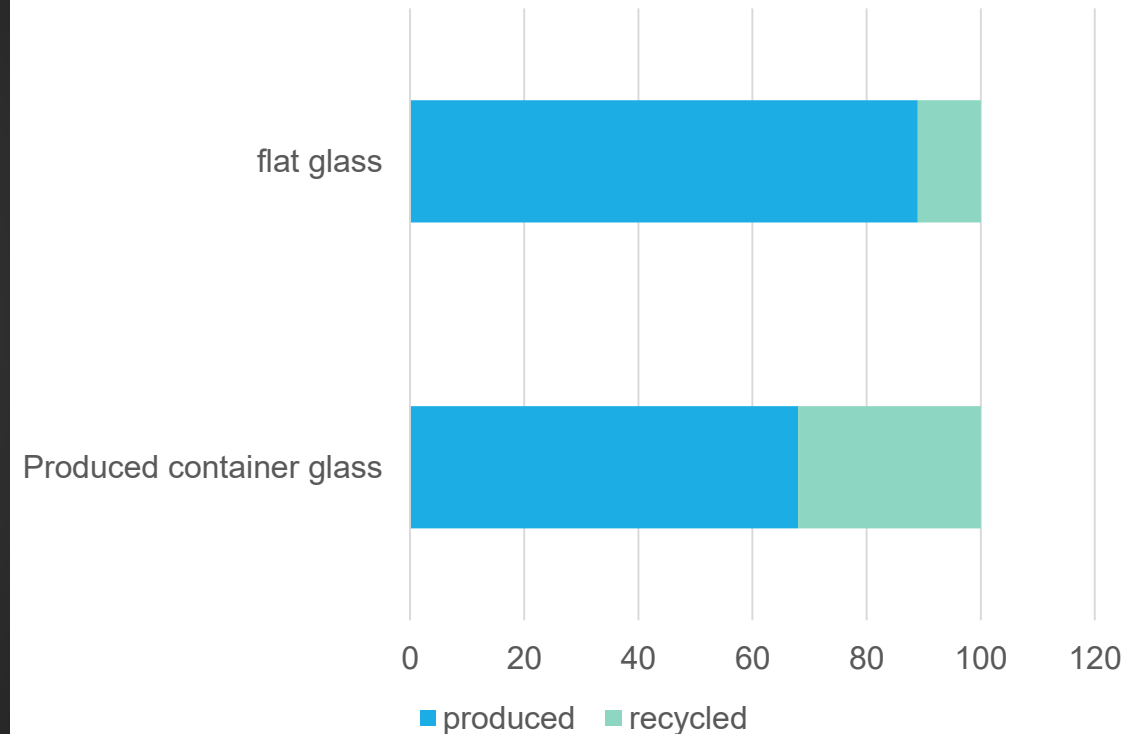
Source: https://www.recovery-worldwide.com/de/artikel/aktuelle-markttrends-im-glasrecycling_3248772.html

Percent of glass production



- Hollow and container glass
- Construction glass
- Glassware
- Other glass production

Recycled Rates



Numbers and facts	Amount of collected glas (2018)	Collected per capita	Public provided collection volume per capita
Gračanica [Source: Martin Steiner WasteSideStory]	100 t (<i>converted to total 50.000 inhabitants</i>)	2kg	0,3l (7x 240l, 11x1.1.100l)
	10,5 t (10% of population, 950 households)		
Austria [Source: austria glasrecycling (ARA)]	249.200t (total population)	28,5kg	169l (68.000 pcs.)

Gračanica

2021: 15 new „green islands“ including 3 glass container (1.100l)

WASTE SIDE STORY: 10 x 1.500l & 30 x 1.100l (+48.000l)

Economic aspects

Container	Max. Capacity (approx.)	Value Coloured glas (approx.)	Value White glas (approx.)
240 liter	60 kg	1,20 €	1,50 €
1100 liter	280 kg	5,60 €	7,00 €
1500 liter (bell cont.)	380 kg	7,60 €	9,5 €

Activity of truck (approx.)	Required diesel (approx.)	Costs diesel Bosnia, Jan., 2021 (approx.)
Driving (90 km/h)	30 l/h	30 €
Delivery and city driving	60 l/h	60 €
Empty 1 container	2 l	2 €

[Source prices: wifo.ac.at]

Why collecting?

- 100% recyclable
- Same quality again and again
- Saves raw materials (quartz sand, soda, lime,....)
- Saves electrical power (up to 40%)
- Saves natural gas
- Saves landfill volume

Annual savings through old glass in new products: electrical power needed by 56.000 households/a in Austria!

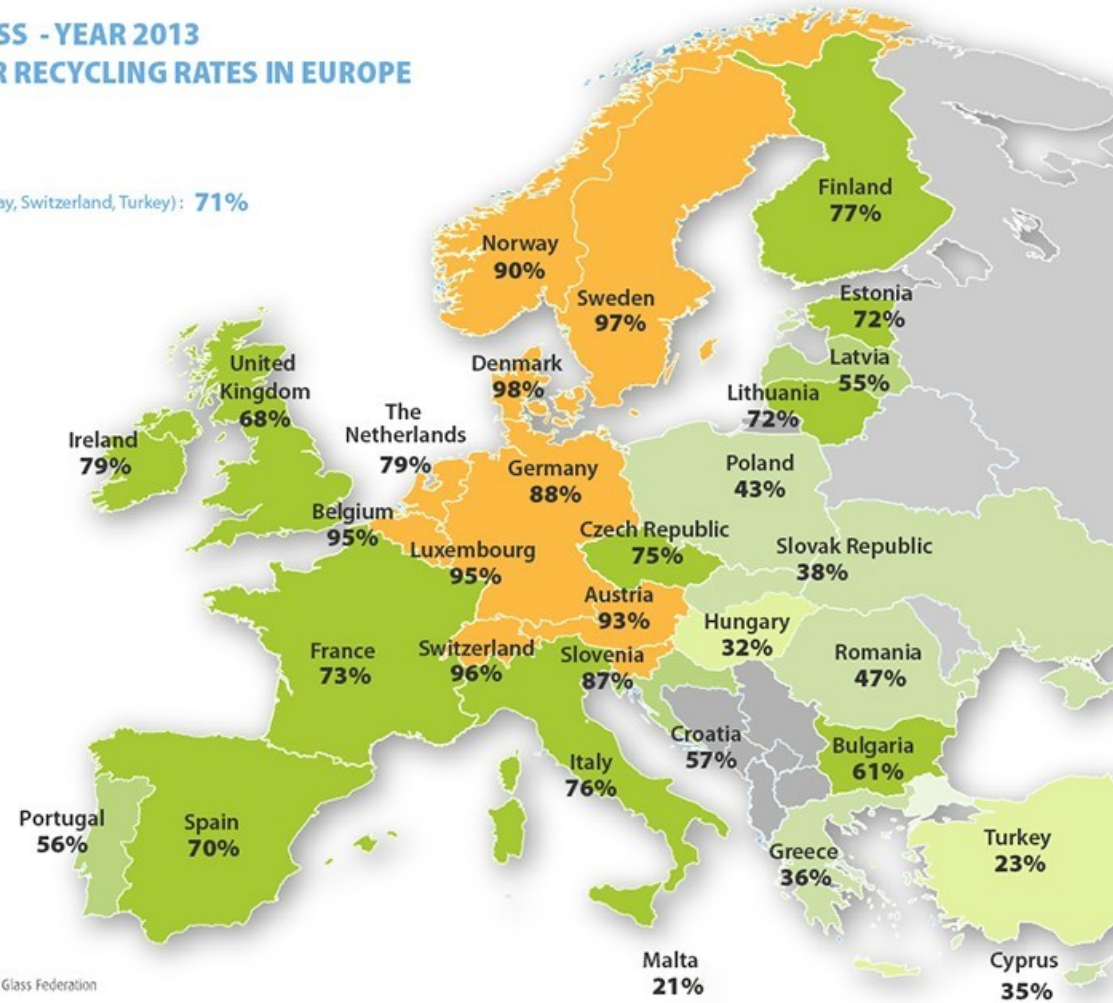
[Source: austria glasrecycling (ARA)]

CONTAINER GLASS - YEAR 2013 COLLECTION FOR RECYCLING RATES IN EUROPE

AVERAGE RATES

EU28: **73%**

EUROPE (including Norway, Switzerland, Turkey): **71%**



FEVE
The European Container Glass Federation

Industry estimates based on the most recent available data provided by national contact points

[Source: feve.org/glass-recycling-hits-73-eu]