



EUROPEAN RECYCLING INDUSTRIES'
CONFEDERATION AISBL

Review of the Waste Treatment BREF

Mechanical Treatment of Waste

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Industrial Emissions Directive 2010/75/EU
Annex I - activities - 5.3.(a)(v) and 5.3.(b)(iv)

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treatment in shredders of metal waste

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Sevilla, 9 June 2015

Agenda

- Introduction of EuRIC
- History of Metal Waste Shredding activities
- EuRIC/EFR data analysis process
- Typical types of technologies for Metal Waste Shredders (abatement techniques)
- Data regarding Metal Waste Shredders and conclusions
- Data regarding « Fridge Shredders » and conclusions
- BREF structure : wording and proposal
- Feedback of EIPPCB / debate

European Recycling Industries' Confederation

- ❑ **Date of birth:** Autumn 2014
- ❑ **Premises:** Brussels, Belgium
- ❑ **Objective:** Promote and represent, in Brussels, the interests of the European recyclers
- ❑ **Origins:** EuRIC was founded by three well-established European Federations, namely:
 - The **European Ferrous Recovery and Recycling Federation** (EFR AISBL)
 - The **European Recovered Paper Association** (ERPA AISBL)
 - The **European Metal Trade and Recycling Federation** (EUROMETREC AISBL)

EuRIC in numbers

- ❑ National associations & companies represented via EuRIC are present in **18 EU and EFTA countries:**
Austria, Belgium, Bulgaria, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Norway, Poland, Slovakia, Spain, Sweden, Switzerland, United Kingdom.
- ❑ **5 500 companies**, a number of whom are SMEs, involved in the recycling and trade of various material streams since decades and which thus are key players of a circular economy
- ❑ **300 000 local jobs** which cannot be outsourced
 - Recycling is labour intensive = mostly based on manual & mechanical processes
- ❑ **An average of 150 million tonnes of a variety of waste streams recycled per year** (paper, metals and beyond)
- ❑ An aggregated annual turnover of about **95 billion Euros**

History

- Metal waste shredders first came on the market around 1958 to deal with the increasing number of End-of-Life Vehicles
- Due to the WEEE Directive, dedicated WEEE shredding plants were installed in the last 15 years:
 - Majority of « Fridge » shredders (phase 1 and phase 2), with some treating both Small appliances and Fridges/Cooling appliances
- Today about 350 shredders are operating in Europe, some quite old (about 35 years old), some much more recent, and some brand new equipped with the latest technologies
- Regarding Metal waste shredders there are typically 3 types of plants : Dry; Semi-wet; and Wet (abatement techniques)

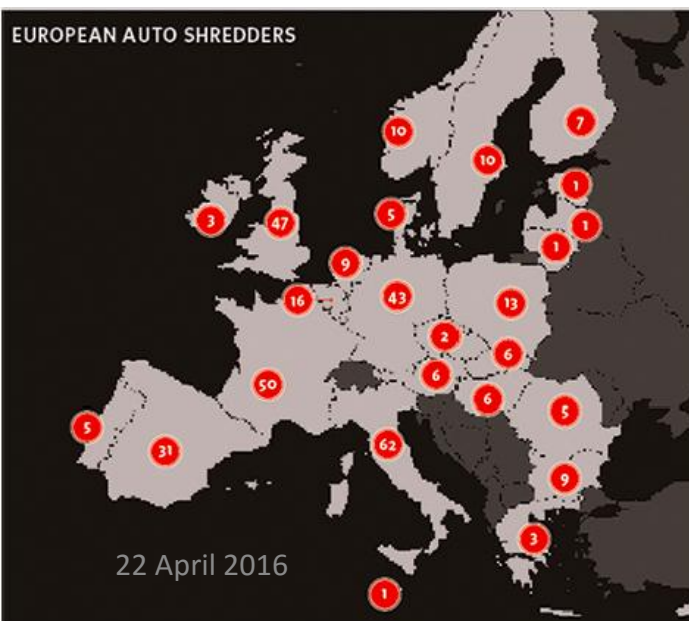


Close connection to the
Circular Economy

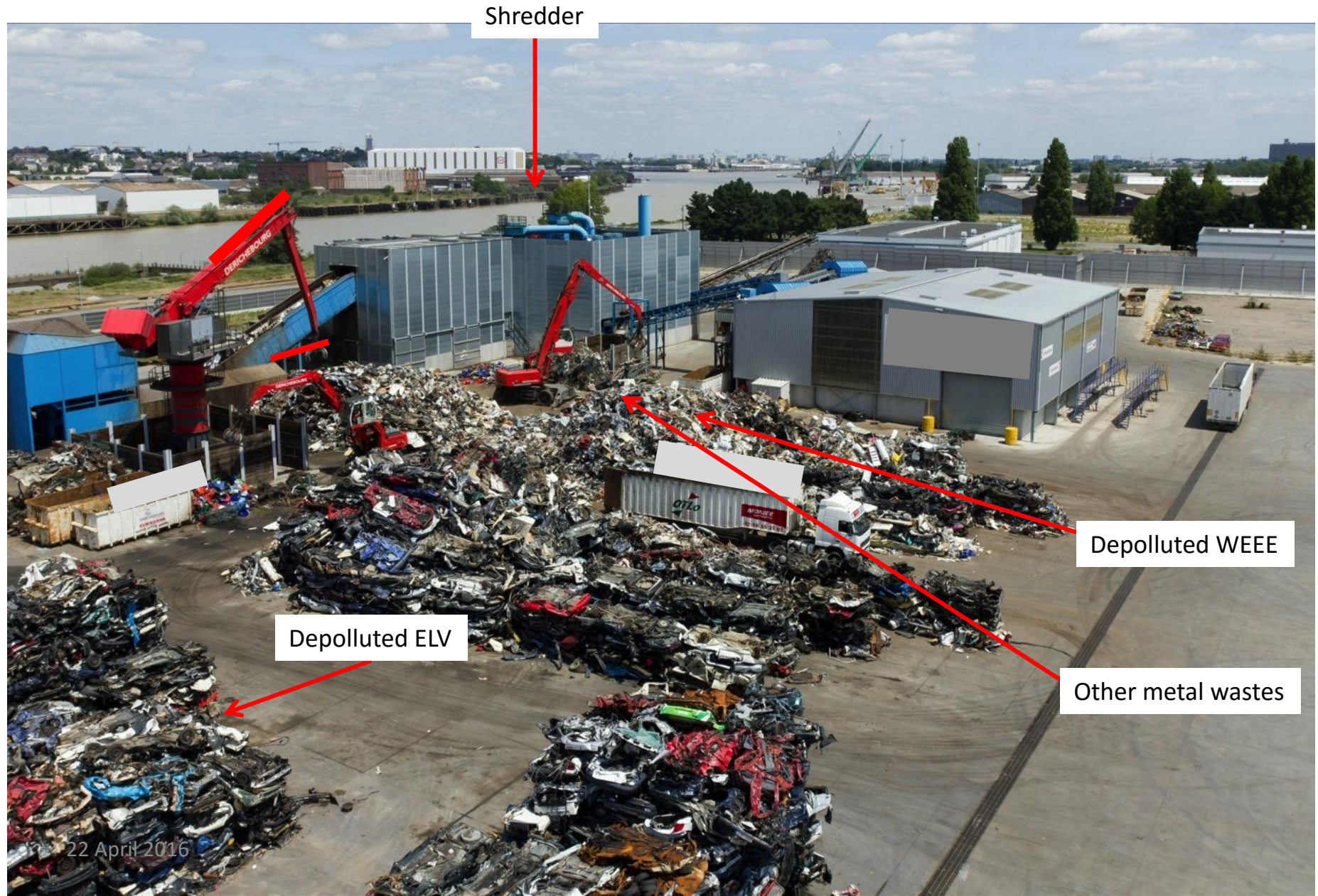
There are more than

350

Metal waste
shredders operating
in Europe



Example shredder plant treating non-hazardous metal waste, including depolluted large WEEE and ELVs



BREF structure : wording and proposal

1. Treatment in shredders of non-hazardous metal waste, including depolluted large waste electrical and electronic equipment (excluding fridges, freezers and cooling appliances) and depolluted end-of-life vehicles and their components
2. Treatment in shredders of fridges, freezers and cooling appliances* and depolluted small waste electrical and electronic equipment

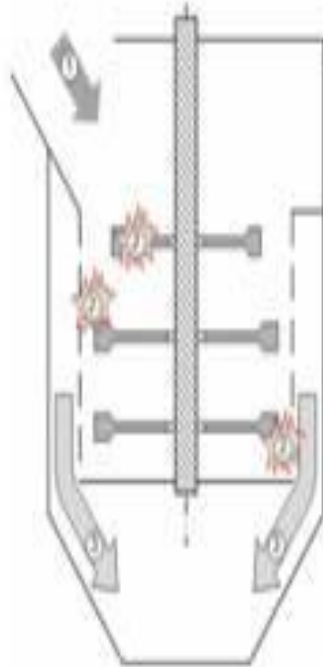
*Temperature exchange equipment containing gases that are ozone depleting or have a global warming potential (GWP) above 15, such as those contained in foams and refrigeration circuits, Annexes III, IV, VII of WEEE Directive 2012/19/EU

Example of shredder plant treating fridges, freezers and cooling appliances and depolluted small WEEE

machine: RS



function

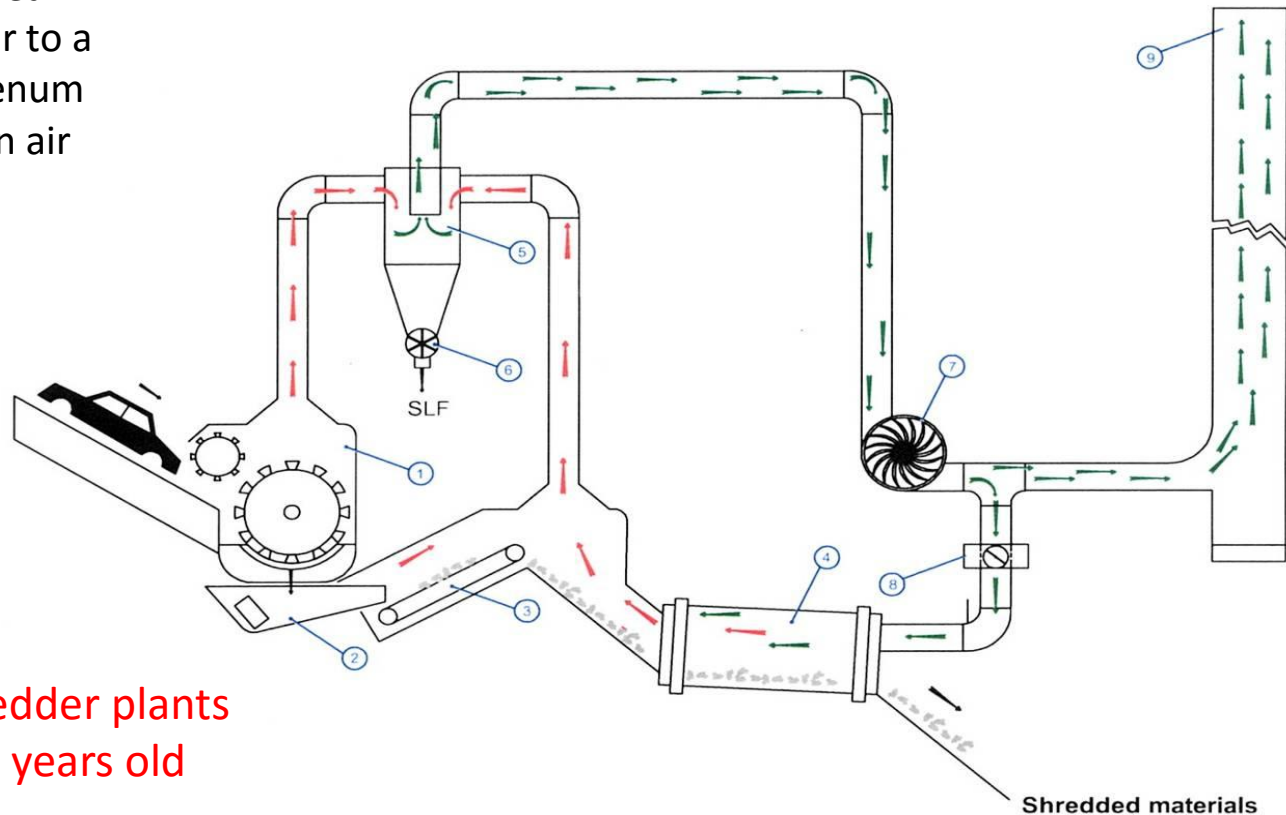


inner view



Collection of the off-take from the mill and the flow from the downstream material windsifter to a single cyclone/plenum and a single clean air exhaust

Type 1: Dry Treatment



About 25 % of Shredder plants
Average age : 27 years old

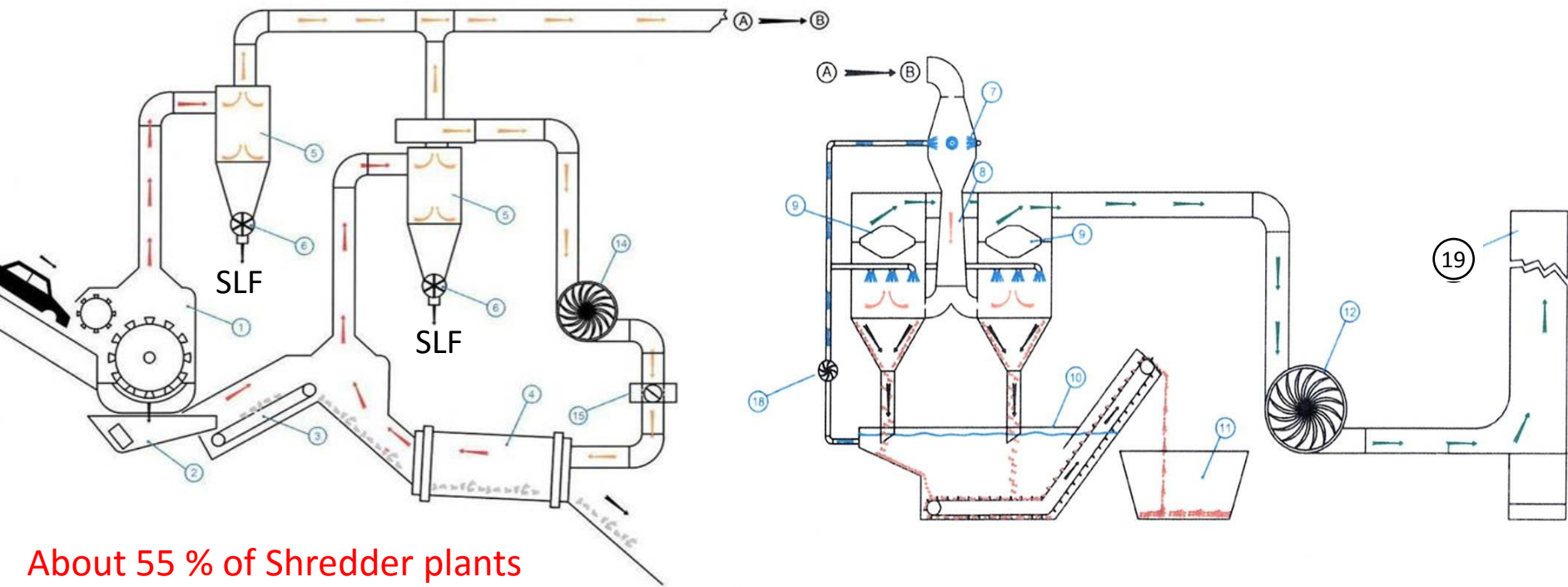
The dust-laden unfiltered air is sucked from the mill and the windsifter; it is cleaned in a single cyclone (5) for separating the larger particles and impurities.

- (1) Shredder chamber
- (2) Vibrating conveyor
- (3) Conveyor
- (4) Windsifter drum

- (5) Cyclone
- (7) Ventilator
- (8) Flap
- (9) Treated air exhaust

- (6) Rotary valve

Type 2.1 : **Semi-Wet** with Two Cyclones, Venturi Scrubber and Single Exhaust



About 55 % of Shredder plants
Average age : 15 years old

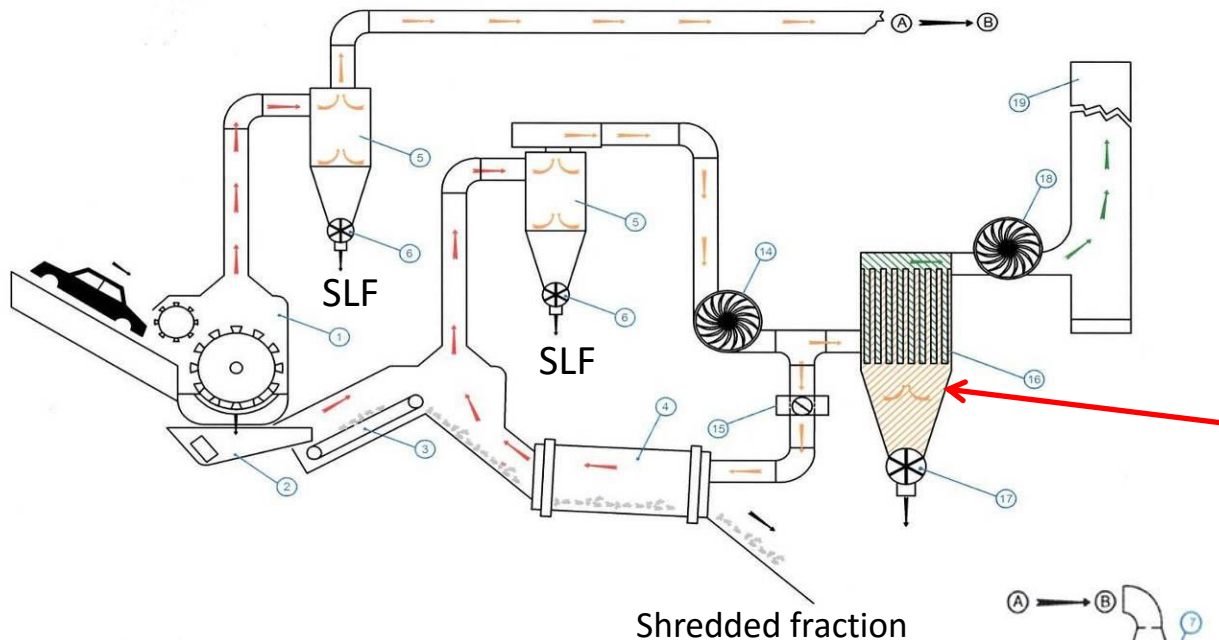
Shredded fraction

- (1) Shredder chamber
- (2) Vibrating conveyor
- (3) Conveyor
- (4) Windsifter drum

- (5) Cyclone
- (6) (17) Dust rotary valve
- (14) Ventilator
- (15) flap

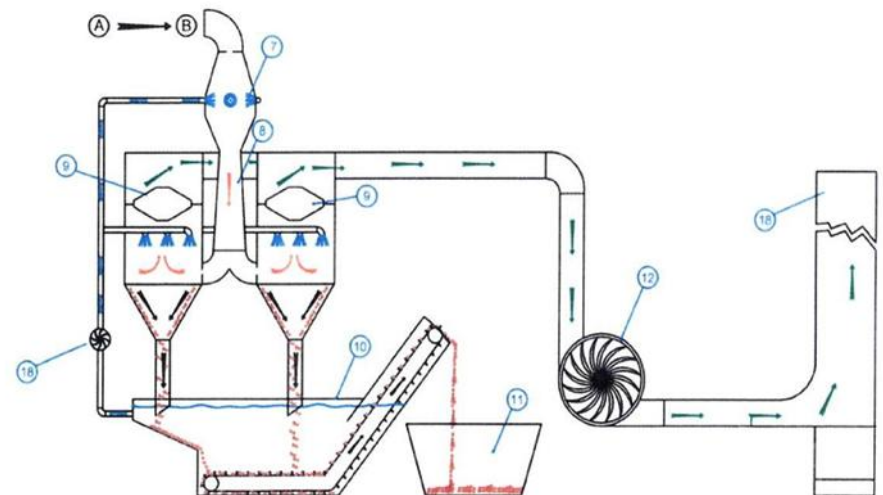
- (16) Bag filter
- (18) Exhaust Ventilator
- (19) Clean air exhaust

Type 2.2 : **Semi-Wet** with Two Cyclones, Venturi Scrubber and Two Exhausts



Inclusion of bag filter is only possible on second stage (two different flows of air)

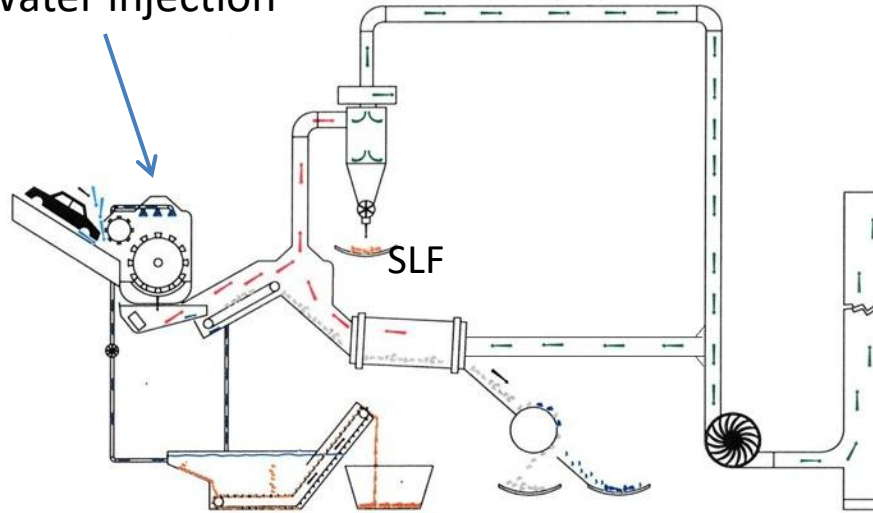
About 18 % of Shredder plants
Average age : 11 years old



Type 3: Wet Treatment

About 2 % of Shredder plants
Average age : ?

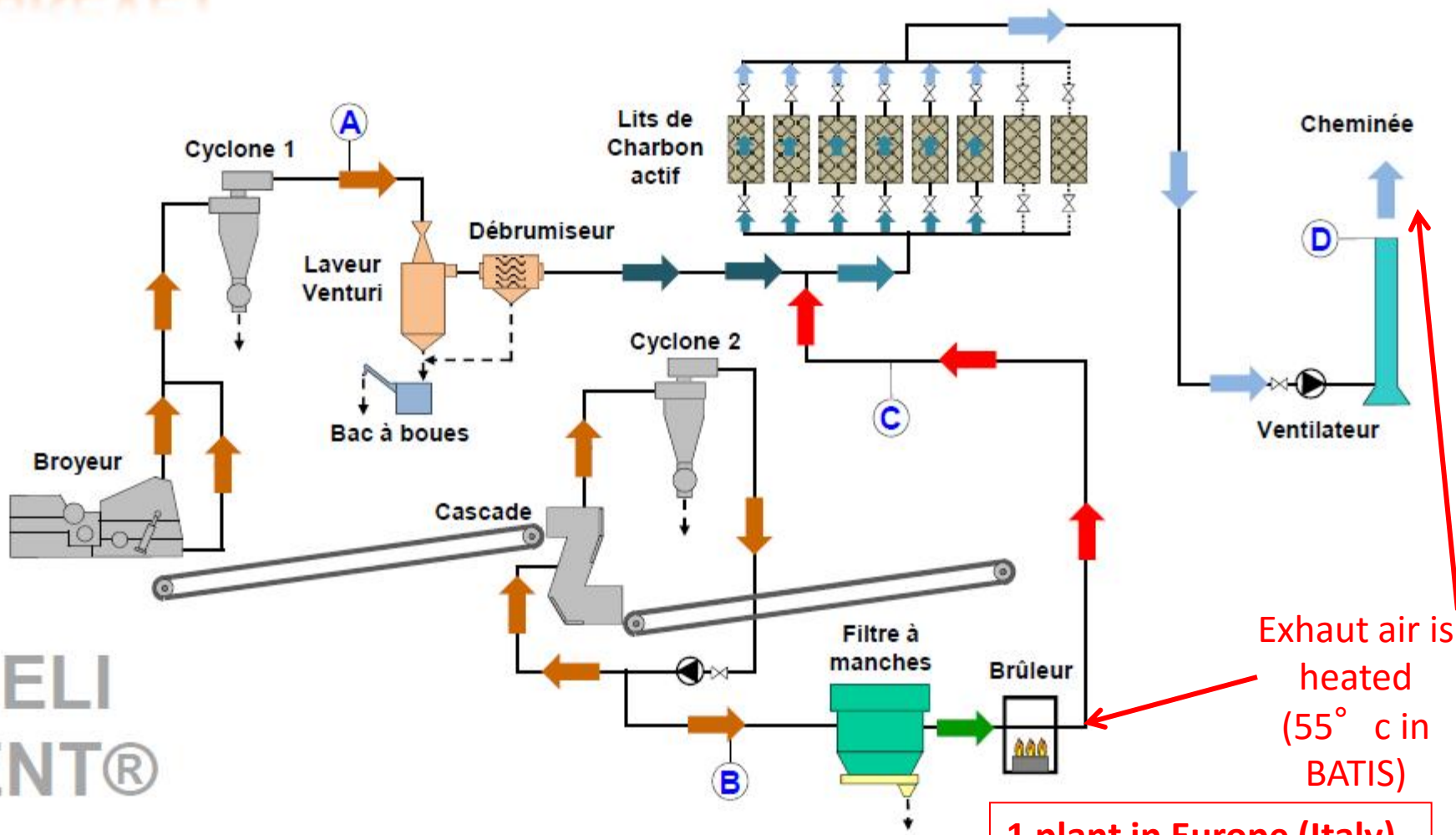
Water injection



1. Venturi scrubber may be also part of the dust abatement system
2. The water injected is mainly captured by the SLF

Emerging technique 1/4

BREVET® DANIELI DE TRAITEMENT DES FUMÉES



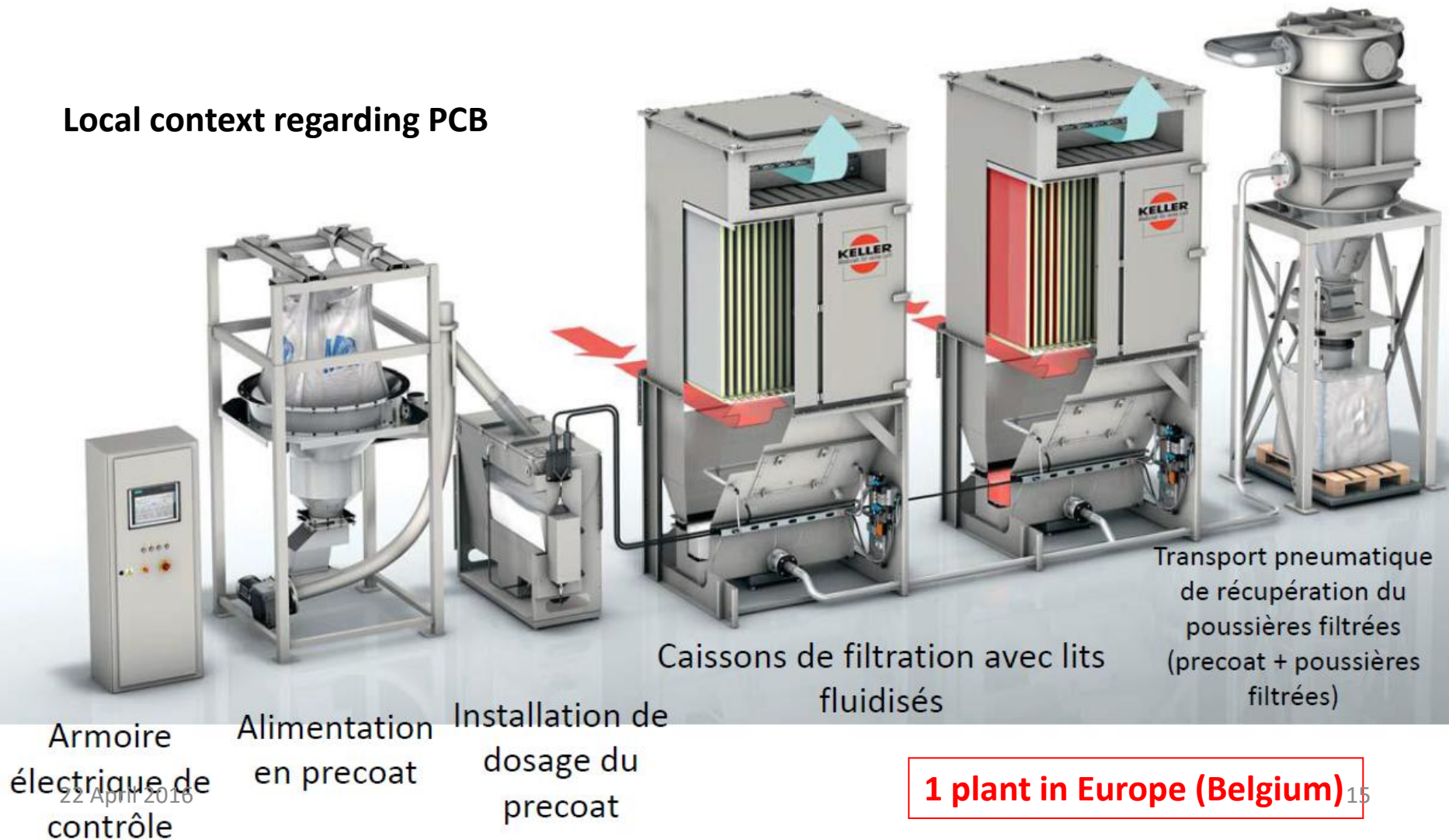
Very specific location : request for +/- zero emission

22 April 2016

Emerging techniques 2/4

« Ultrafiltration »

Local context regarding PCB



1 plant in Europe (Belgium)

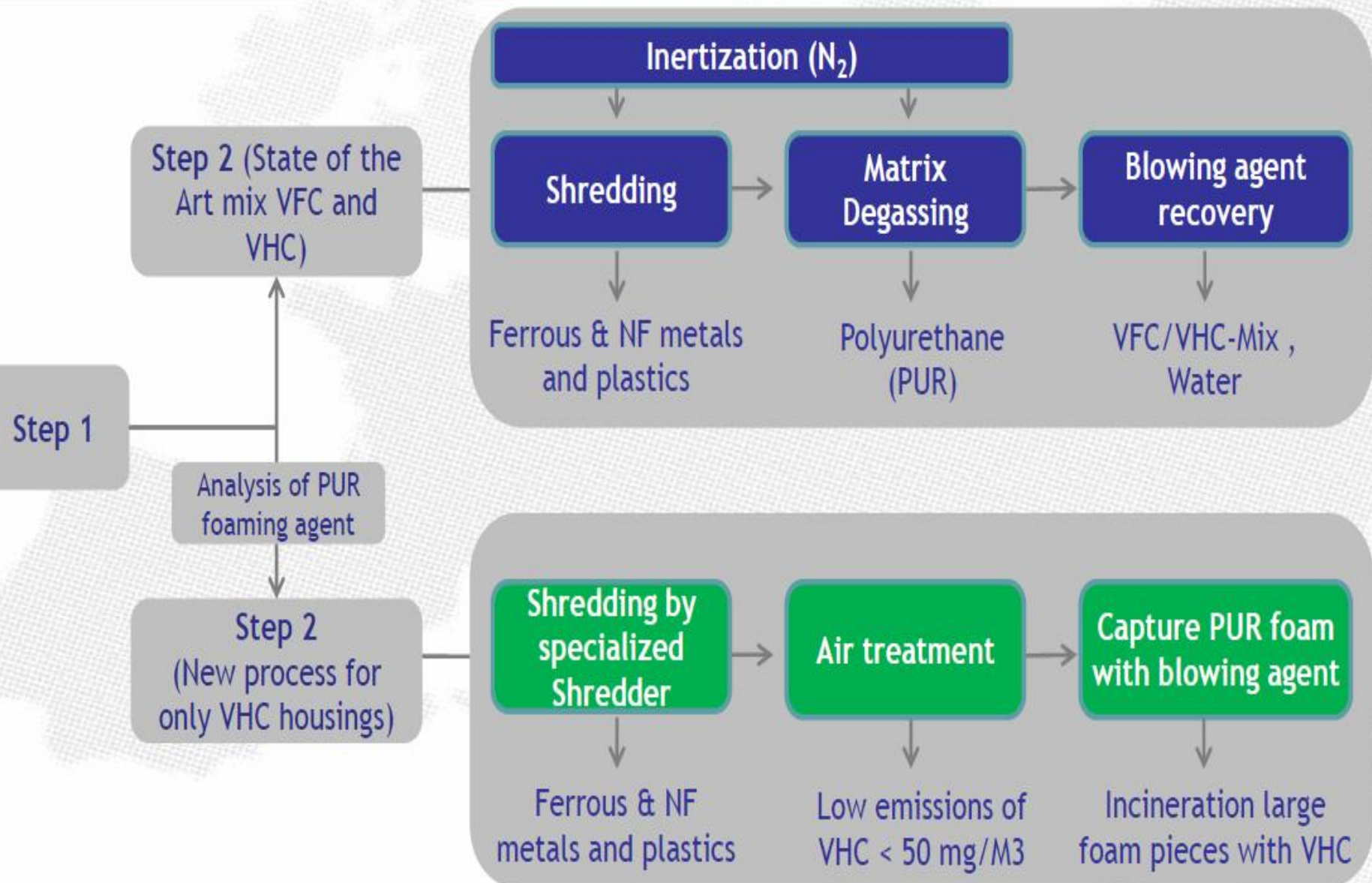
Venturi à **deux niveaux d'injection d'eau** sous haute pression pour
“laver” et nettoyer l'air rejeté
environ 96 % des matières solides jusqu'aux dimensions
nanométriques et aussi quelques composants gazeux éliminés

Emerging techniques 3/4



> 3 plants in Europe (Germany)

The MGG VHC Foam Capturing concept



Emerging techniques 4/4

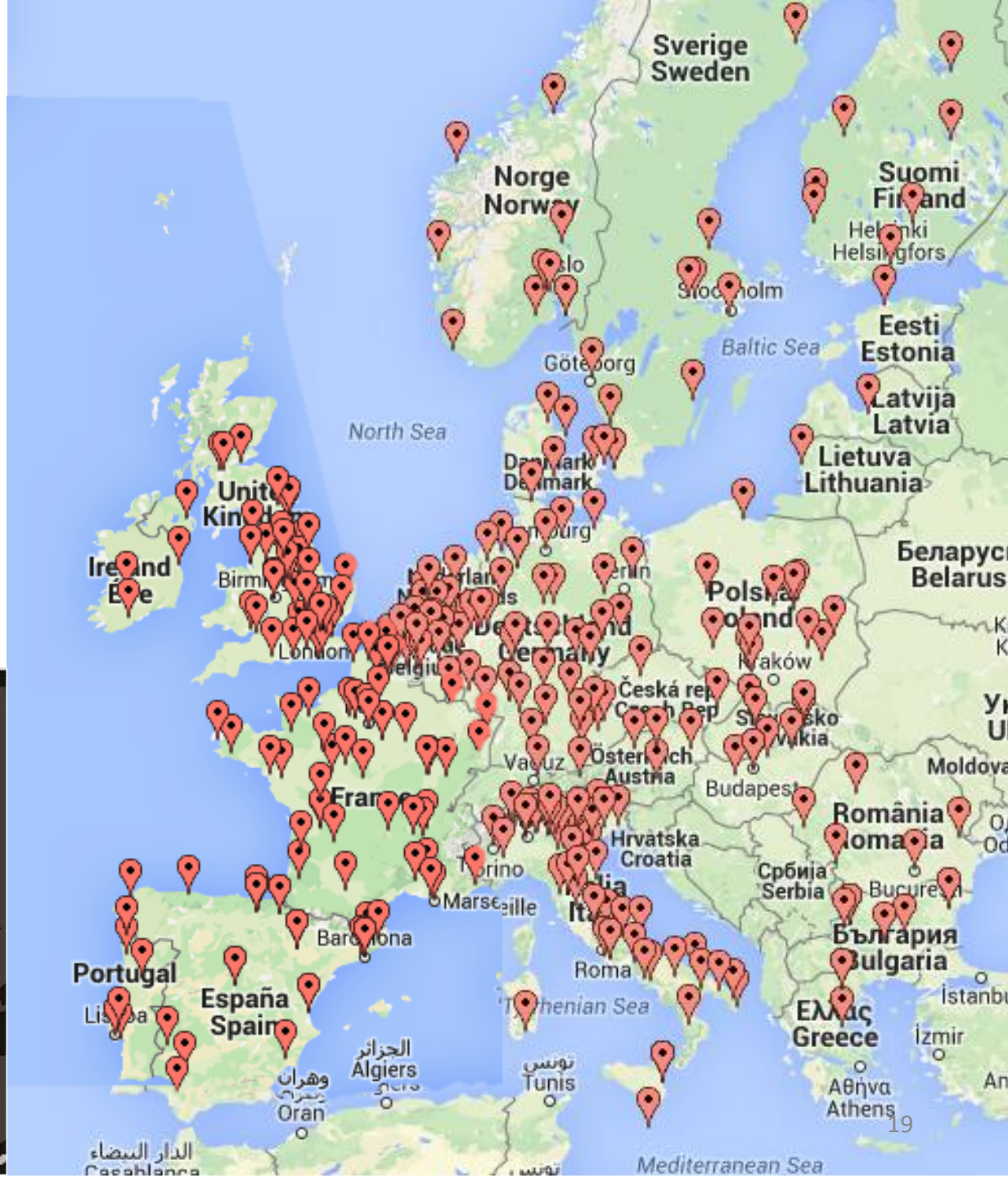
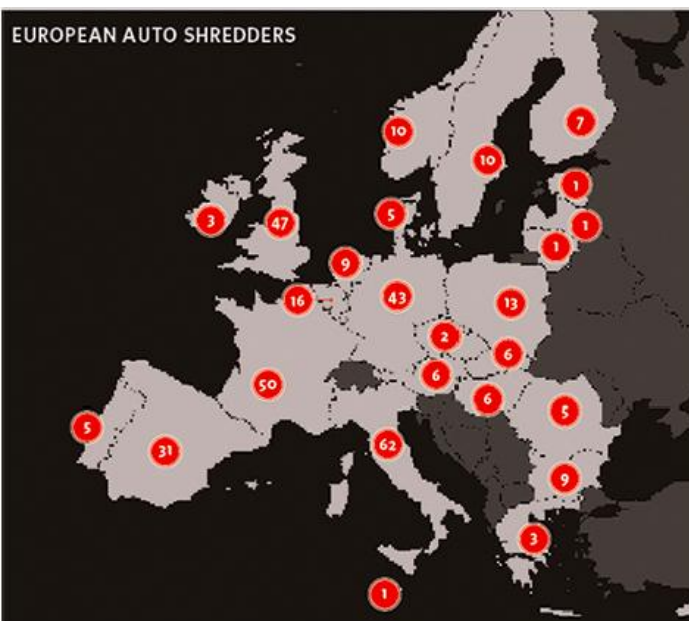
EuRIC Data collection and analysis method

- 2013 – 2015 : Several internal meetings at European Level (EFR's European Shredder Group)
- January 2015 : Analysis of BATIS data in a clear and comprehensive way (Support of Dr. Alvaro Rodriguez de Sanabria, ARKA Consulting)
- February 2015 : EFR's European Shredder Group carried out a further extended data collection to assess and explain emission levels



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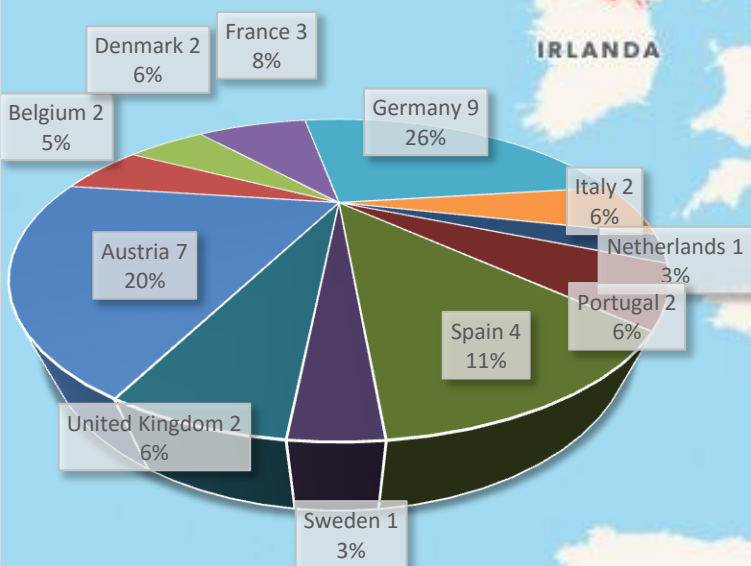
Metal waste shredders operating in Europe



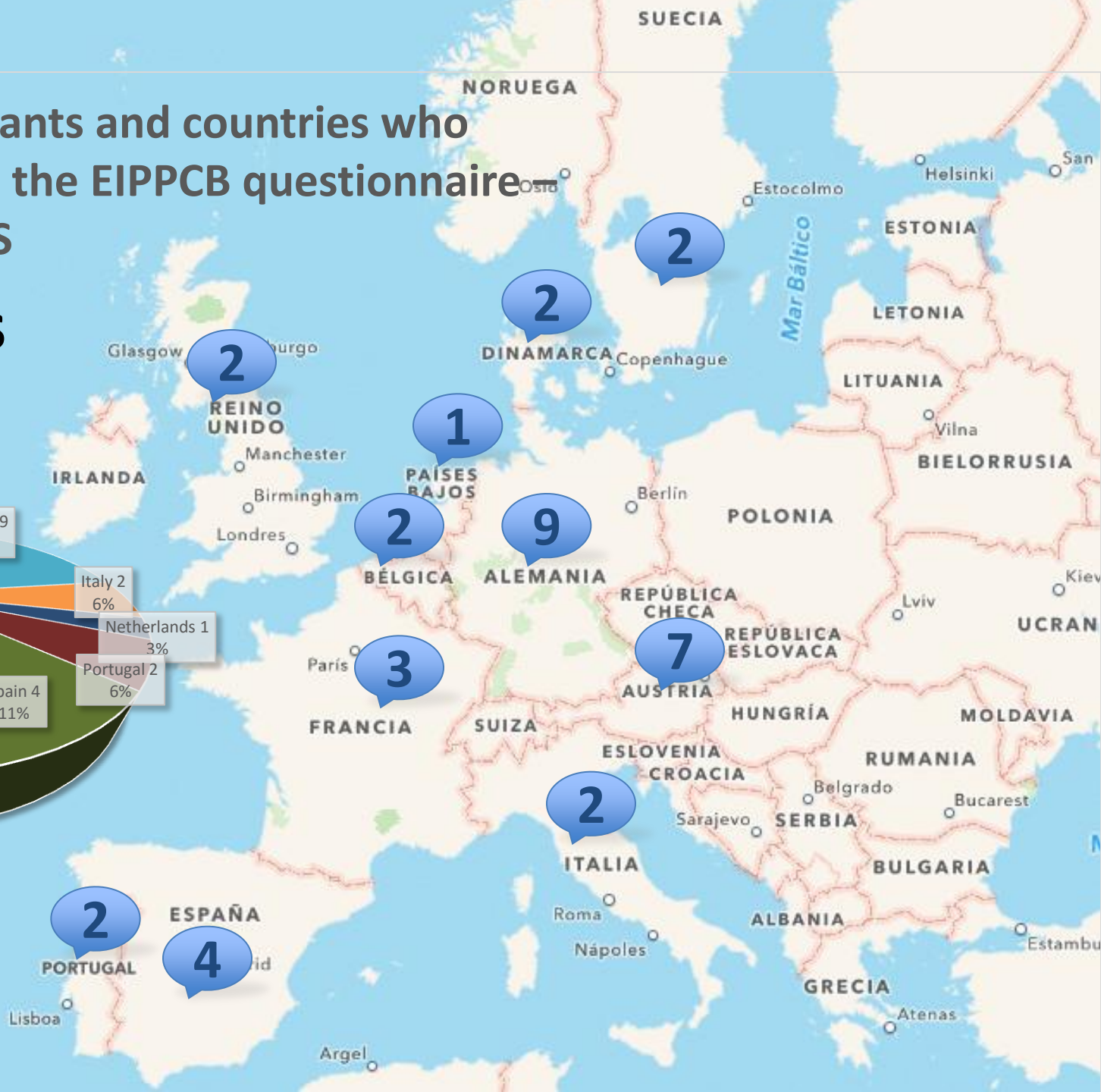
Number of plants and countries who responded to the EIPPCB questionnaire

Data on BATIS

35 plants



EuRIC



98 plants

