Recycling Aluminium Castings with 'Cast-In' cast iron inserts
PSA (Peugeot – Citroen)

- PSA high-pressure foundry Mulhouse
  - 290 people
  - 84 tonnes of castings per day
  - 4 cylinder diesel & petrol engines
  - 90 tonnes of molten metal daily
  - 8 x 2500 tonne & 5 x 2000 tonne presses
Equipment Brief

- Ergonomics
  - Minimal material handling

- Versatility
  - Ability to process wide range of feedstock
    - Parts with and without cast-in inserts
    - Ingot
    - Chips and swarf
    - Dross
    - General production scrap
Equipment alternatives

- Classic dry-health or tower melters
  - Eliminated due to intensive manpower requirements

- Crushing and separation
  - Eliminated due to high equipment costs, quality & safety issues

- The tilting rotary (TRF) or converter furnace
What is a ‘converter furnace’?
Melting Trials
Average Production Figures

- Production rate 1493 kg/h (3290 lbs/h)
- Spot melt rate ~ 3000 kg/h (6615 lb)
- Melt cycle time: 64 minutes Incl: charging, melting, pouring & insert removal
- Pour temperature: 655°C (1180°F)
- Iron pick-up: 0.09%
- Metal recovery: >97%
• 1 operator per shift
• Particulate emissions: 0.41mg/m³

• Cast-in sleeves recovered and sold locally
The Converter furnace tool

- Melts wide range of feedstock
- Melts aluminium, zinc, lead, tin etc...
- Eliminates metal pollution from trace elements
- Facilitates charge mixing
- Promotes melt homogeneity, heat transfer and lining ‘self-cleaning’
- Melts 2 to 3 times faster than conventional furnaces
2000 kW (6.8 million Btu) conventional air/gas burner set at 1200kW (4.1 million Btu)

Energy returns: < 400 kW/t (619 Btu/lb)
Highly Versatile
- Melting wide range of feedstock from dross to ingot

Ergonomically efficient
- Minimal manpower

Providing quality metal economically