PRODUCTION OF RECYCLED SAND FROM CONSTRUCTION AND DEMOLITION WASTE

THE PROBLEM

- C&D waste 500-1,000 kg/year/hab.
- Sao Paulo (city) 10,000,000 tons/year
- Aggregates costs (100% in 4 years)
- Rising of disposal costs
- Illegal dumping
- Expensive management
  USD 11,000,000/year (Sao Paulo)
- Low recycling rates (< 10% world)

SAND MARKET

- Environmental problems on sand extraction
- High transportation distances (>100 km)
  CO₂ emission, traffic and road abrasion
- High costs: 2/3 is due to transportation

High demand for sand
C&D fine fraction is about 40 to 60% w/w and the recycling rate is insignificant

CHALLENGE AND INNOVATION

APPLY MINERAL PROCESSING TO PRODUCE HIGH QUALITY SAND FROM C&D WASTE

- Optimization on comminution
- Removal of high porosity phases (high content of cement paste)

FINAL PRODUCT

High Quality Recycled Sand
low porosity roundness shape

DEVELOPMENT OF ACCURATE CHARACTERIZATION PROCEDURE

- Particle size
- Shape
- Surface area
- Water absorption
- Envelop density
- Content of porous phases

IMPLEMENTATION OF QUALITY CONTROL PROCEDURES

DISCUSSION

COMMINUTION

- Production by demand
- Adequate particle size
- Improve particle shape
- Reduce porous phases → 70% S.G. > 2,5

MINERAL SEPARATION

- Remove porous phases
  low density, high cement paste content
- Remove fines

CDW RECYCLING IS CRUCIAL FOR SUSTAINABLE CONSTRUCTION

- Reduction of environmental impacts extraction and dumping
- Increase the life cycle of construction materials
  Recycling plants close to the market
- Reduce transportation distances, costs and CO₂ emission
- Reduce housing costs
- Minimize disposal areas
  Business opportunity
- New and valuable market