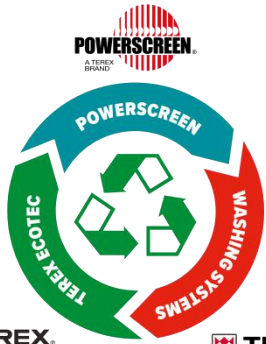


C&D Recycling and Reuse 建筑垃圾处理及再生骨料

Martin Conway & Philip Zhang

马丁·康威 张海宁



ADDING VALUE TO MATERIALS

Site Profile – Urban C&D

物料现场状况——城市施工及拆迁



On-Site Waste Material 现场固废成分

- Demolition Concrete 拆解混凝土块
- Soil 渣土
- Sand 砂
- Aggregate 骨料
- Steel 钢筋
- Decoration waste/MSW 装修或生活垃圾
- Green Waste 园林废弃物
- Natural Timber 木材



Site Profile – Urban C&D

物料现场状况——城市施工及拆迁



Materials Processing

On-Site Waste Material –

现场废弃物

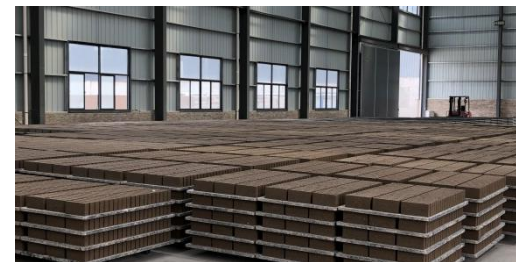
- **Demolition Concrete**
拆迁混凝土
- **Soil**
土壤
- **Sand**
砂
- **Aggregate**
骨料
- **Steel**
钢筋
- **Decoration waste/MSW**
装修或生活垃圾
- **Green Waste**
园林废弃物
- **Natural Timber**
天然木材

Potential Reuse/Disposal

Options after processing

处置后回收利用或废弃

- Concrete sand/Roadbase
再生砂或路基料
- Agriculture/Parks/Forest/
农场公园或绿地
- Concrete/Pipe bedding
混凝土或埋管垫层料
- Concrete/Roads/Railways
混凝土或公路铁路
- Scrap metal reuse
回收废钢铁
- RDF – Waste to power
废弃物衍生燃料——焚烧发电
- Compost/Top Soil
堆肥或地表土
- Mulch/Biomass
护根或生物质



Objectives – Urban C&D

城市建筑垃圾处置缘由



- Land clearance 平整土地
- Reuse key materials 回收处理成再生建材
- Manufacture of high moisture retention concrete – Sponge Cities “海绵城市” 用透水材料产品
- High use of C&D in multiple applications 建筑垃圾再生材料的多种应用
- Production of final materials free of contaminants 生产最大限度去除轻质物杂质的终端再生产品
- Removal of Decoration Waste and MSW 将装修或生活垃圾从建筑垃圾中分离



Strategy – Urban C&D

城市建筑垃圾处置策略



Current Process 现有处置办法

- Static off-site processing 位于拆迁现场异地的固定处理线
- Recycle and reuse concrete/rubble/aggregates 将混凝土砖瓦块回收处置成再生骨料
- Landfill wood/light contaminants/plastics 将木材杂质轻质物和塑料填埋
- Recycle scrap metals 将废金属回收
- Use soil as fill 填充土壤



Issues – Urban C&D

城市建筑垃圾的问题



Materials Processing

Key Issues facing Current Processing Strategy 现有处置方式的缺点

- | | |
|--------------------------------|--|
| • Environmental Impact
环保方面 | Dust and Noise enforce need for off-site process
现场噪音尘土管理导致异地处置 |
| • Environmental Impact
环保方面 | High use of landfill, loss of valuable resources
占用填埋场，损失可回收资源 |
| • Local Impact
交通方面 | Increased Traffic Congestion
运输产生拥堵 |
| • Material Impact
产品方面 | Contamination of final product
最终产品含轻质物杂质 |
| • Costs
成本方面 | High cost due to multi-handling
流程结构性高成本 |
| • Timeframe
效率方面 | Inefficiencies due to process path
流程固有的低效 |



Example Comparison – Urban C&D

城市建筑垃圾案例比较



Materials Processing

Example Site Key Data - 400,000 m³/600,000 metric tonnes of unprocessed material

案例现场主要参数——40万方或60万吨待处理建筑垃圾

Off-Site Material Processing 异地处置

- Unprocessed transport @ 12T per truck to off-site process – 50,000 trips required to transport material for processing 建筑垃圾未经处理运输到异地，每车12吨，共需5万车次
- Processed Material @ 20T per truck to end-user – 30,000 trips 再生骨料产品运输到用户，每车20吨，共需3万车次
- Environmental impact – heavy pollution 产生环境污染副作用
- Infrastructure impact – damage to roads 产生道路磨损副作用
- Local impact – heavy traffic 影响当地交通
- **Cost – 80,000 2 way trips 成本——共需8万车次**

On-Site Material Processing 现场处置

- On-site processing – final products created on-site 现场处置现场生产再生骨料产品
- Processed Material @ 20T per truck to end-user – 30,000 trips 再生骨料产品直接运输到用户，每车20吨，共需3万车次
- Environmental impact – reduced pollution 环境污染副作用降低
- Infrastructure impact – reduced infrastructure damage 道路桥梁损坏副作用降低
- Local impact – removal of 50,000 trucks from local traffic 减少5万运输车次
- **Cost Savings – 50,000 less trips needed 节省5万车次运输成本**



Global Best Practice – Urban C&D

发达国家城市建筑垃圾处理经验



UK 英国

- On-site processing 现场处置
- Targeting Zero Waste to Landfill 力求无填埋
- Recycle and Reuse all material 回收处理所有材料
- Reduce Carbon emissions 降低碳排放

California 美国加州

- On-site processing 现场处置
- Reduce Carbon emissions 降低碳排放
- Reduce dependence on natural aggregate 降低对天然骨料的依赖

Germany 德国

- On-site processing 现场处置
- Targeting Zero Waste to Landfill 力求无填埋
- Recycle and Reuse all material 回收处理所有材料
- Reduce Carbon emissions 降低碳排放



Sweden 瑞典

- On-site processing 现场处置
- 120% recycling capacity 120%回收资源化处置能力
- Achieving Zero waste to landfill 已做到无填埋
- Recycling and reusing all material 回收处理所有材料
- Targeting Carbon Neutral emissions 力求无碳排放



Process Flow – C&D

建筑垃圾处理工艺流程



Materials Processing

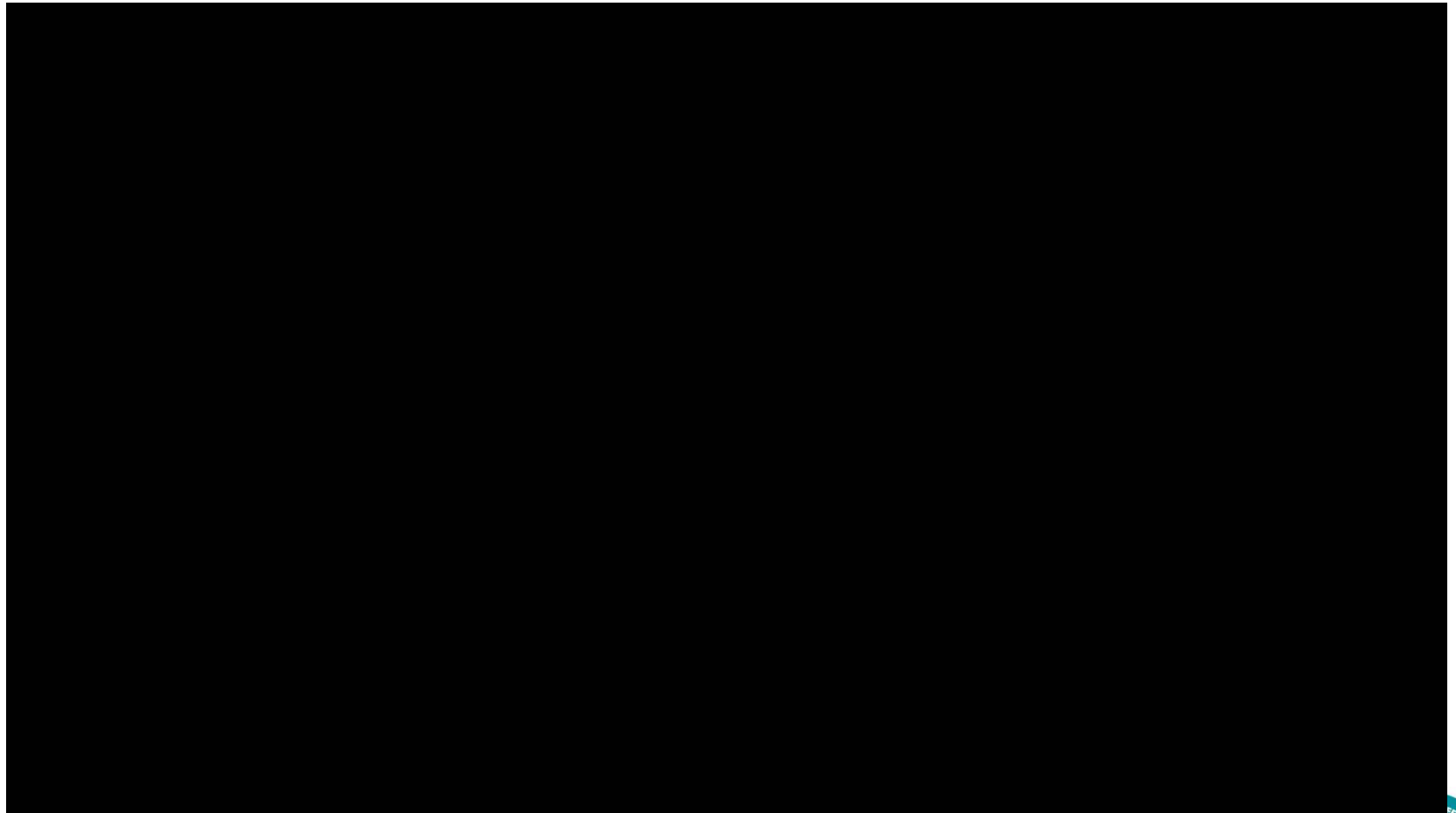


Best Practice – C&D

建筑垃圾处置经验分享



Materials Processing



Best Practice – MSW

生活垃圾处置经验分享



- On-site processing for volume reduction
现场减量化
- Transport to landfill; **OR**
运送至填埋场；或
- **Palletize for RDF – Reuse in WTP (Waste to Power)**
制成固废衍生燃料颗粒——高热值焚烧发电



Best Practice – MSW/Decoration Waste

生活垃圾和装修垃圾处置经验分享



Best Practice – Biomass

生物质处置经验分享



Process Flow – C&D Washing

建筑垃圾处置水洗工艺流程



Materials Processing



Best Practice – On-Site Washing

现场水洗案例经验分享



Conclusion

结论



On-site processing creates multiple solutions for C&D processing 现场处置为建筑垃圾处理行业创造多种应用和解决方案

- Cost reduction 降低成本
- Waste reduction 减少废弃
- Reduced environmental impact 降低环境污染
- Increased production efficiency 提高生产效率
- Infrastructure protection 减少路桥磨损
- Business opportunities 再生骨料盈利机遇



Conclusion

结论



Terex have specialist representatives on-site today for any detailed questions you may have:
特雷克斯今天有下列专家及高管解答各位的疑问:

Terex MP	业务总裁 Kieran Hegarty	President Materials Processing
Powerscreen	移动破 Sean Keenan	Applications & Technical Sales
Specialist		
Ecotec	轻质物处理 Conor Hegarty	Global Sales Director
Terex Washing	水洗系统 David Hunter	Global Sales Director
Terex MP Finance	融资 Declan North	Global Director, Financial Services

