

LANDPAC[®]

**VALUE ENGINEERED
GROUND IMPROVEMENT**



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FEATURES

COMPACTION LOADS

- Typical compaction loads of 1200-2500kN.

MATERIAL MOISTURE CONDITION

- Ability to compact the material to a higher maximum dry density.
- Ability to compact over a wider range of moisture content, particularly dry of OMC.

DEPTH OF INFLUENCE

- Higher surface contact pressure coupled to a relatively large contact area leadsto a vastly increased depth of influence.
- Ground improvement is typically measured to effective depths of 1.5m to 3m.

SOIL COMPRESSIBILITY

- The energy is transferred in the form of a "rolling impact" resulting in a relatively longer load duration, leading to a softer soil response to the load and hence an enhanced soil compressibility is achieved.

COMPACTION PRODUCTIVITY

- Higher operating speeds and increased depth of influence result in higher productivity.

KEYWORDS

- Impact loads on a continuous basis.
- 100% coverage.
- Increased energy and contact stresses.
- Increased maximum dry unit weight of compaction.
- Increased depth of influence.
- Thicker lift compaction.
- Increased load duration and therefore reduced shear stiffness response.
- Increased area of contact.
- Enhanced compressibility.
- Continuous strength balanced profile.
- Higher operating speeds; increased productivity.
- 7,000-10,000m³ / shift / machine.
- ±120,000 m² passes / shift / machine.
- Numerous applications.
- CIR certification.



HIGH ENERGY IMPACT COMPACTION

High energy impact compaction involves the transfer of compaction energy into the soil by means of the lifting and falling motion of non-circular rotating masses. The rotation of such masses to their highest point results in an effective potential energy build-up. Further rotation of these masses results in the conversion of this potential energy into a falling kinetic energy, which is transferred to the soil upon the impact of the lowest point of the masses with the surface of the soil. The amount of energy transferred, in the form of compactive effort, is closely related to the amount of potential energy generated in the lifting process.

TYPICAL APPLICATIONS

Deep In-Situ Compaction

Impact Compactors can generate compaction and ground improvement up to 5 meters below the surface, depending on the nature of the soil being compacted. In-situ soils can thus be improved by eliminating the need for expensive excavation and reconstruction.



Thick Fill Compaction

Impact Compactors can compact fill material in layers as thick as 600mm to 1500mm. Thick lift compaction results in a better strength balance throughout the fill, allows for high production rates and improved utilisation of earthmoving equipment.



Pavement Rehabilitation

Impact Compaction can generate improvement in the strength of the underlying sub-grade to great depths through an existing pavement. The stresses applied to the sub-grade significantly improve the strength of the subgrade whilst impact compaction "converts" the existing sub-base and base layers into competent granular sub-base layers. Such treatment decreases the potential for future settlement of the road and greatly reduces the susceptibility of the road to damage from overloaded vehicles. Impact Compactors can also be successfully be used on the cracking and seating of concrete pavements. This innovative pavement rehabilitation alternative offers massive savings compared to conventional rehabilitation methods (up to 40%) without compromising quality and future serviceability of the rehabilitated pavement.



Compaction of Rockfill

The high intensity and depth capability of Impact Compactors makes them well suited for effectively compacting rock fill. This is achieved by subjecting the rock fill to a substantial dynamic compaction force which is able to rearrange the rock fragments into a dense, interlocking stable mass well able to resist greater service loads without deformation.

Proof Rolling

The ability of the Impact Compactors to pre-stress the soil from the surface to a stress level which materials are unlikely to experience during service, makes them ideally suited as a "proof" roller. They are especially suited for detecting any weak areas associated with low density and/or excessive moisture conditions which can be improved by soil replacement and/or remedial reworking. Such proof rolling provides a high degree of quality assurance in the compaction process in that the soil is pre-stressed and uniform compaction is achieved, thereby effectively eliminating future differential settlement.

INDUSTRY APPLICATIONS

- **General Infrastructure Development**
- **Ports - including container terminals and construction of berths.**
- **Airports.**
- **Roads - new and rehabilitation; black top or unsurfaced.**
- **Rail.**



- **General Civil Works.**
- **Platforms and Foundation preparation.**
- **Layerworks.**
- **Tailings Dams and Embankments.**
- **Concrete breaking.**
- **Rehabilitation of Quarries.**



- **Building Industry.**
- **Forestry Industry.**
- **Low volume, highly loaded unsurfaced roads.**
- **Mining Industry.**
- **Mine Haul Roads.**
- **Dragline path preparation.**
- **Platforms and Foundation preparation.**
- **Coal Discard Compaction.**
- **Other**
- **Compaction of Landfill sites.**

TYPICAL APPLICATIONS

Rehabilitation of Quarries and Mines

Impact Compaction technology has proven to be highly effective in providing an optimum compaction process for the rehabilitation of large quarries and mining pits. The deep compaction capability allows for thick layers to be placed with relatively large particle sizes, saving massively on breakdown, screening and placement costs.



Treatment of Unsurfaced Roads

Impact Compactors can be used on unsurfaced roads to improve bearing capacity, reduce water erosion, improve dust control, and significantly reduce road maintenance costs.

Coal Compaction

The process of Impact Compaction allows coal discard material to be compacted in 500mm lifts, achieving higher dry densities (well over the recommended 1,700t/m³) and particle crushing of the material to a smoother and finer surface grading.

Other Typical and Common Applications

Other typical applications include:

- **Treatment of Dry Sandy Materials (Kalahari Sands).**
- **Treatment of Collapsible Materials.**
- **Treatment of (Dredged) Marine Sands.**
- **Treatment of Dolomitic Material.**
- **Permeability Reduction.**
- **Accelerated Consolidation.**
- **Compaction of Landfills.**



PROJECT EXPERIENCE

Through its alliances, LANDPAC has more than 25 years' experience in the technology of impact compaction and other civil works, extending our service offerings to:

- *Consulting Engineers and Specifiers.*
- *Geotechnical Engineers.*
- *Civil and Building Contractors.*
- *Road Building Contractors.*
- *Port and Airport Contractors.*
- *Developers and Project Managers.*

We have been fortunate to have operated in most continents, with our experience extending to:

- *Southern and Northern Africa: South Africa, Mozambique, Angola, Namibia, Botswana, Zimbabwe, DRC, Congo, Burkina Faso, Morocco, and Zambia.*
- *Middle East: Saudi Arabia, Dubai and Abu Dhabi.*
- *Australia.*
- *Europe: United Kingdom, Spain, Sweden, Germany and Romania.*
- *China, Hong Kong and Malaysia.*



CONTACT DETAIL

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