

# MUFFLERS & EXHAUST SYSTEMS



...the quiet achievers

**Hushpak manufacture and install custom designed exhaust and muffler systems to reduce noise output on heavy vehicles and mobile machines. We have an unrivalled track record for successful noise control with minimal equipment installation, lower cost and less exhaust back pressure than our competitors.**

As part of the engine exhaust system, mufflers are used to attenuate engine noise emitted from the exhaust system. Many "off the shelf" muffler designs that are reasonably effective at reducing lower frequency noise also increase back pressure. Hushpak's mufflers and exhaust systems are custom designed and acoustically engineered to achieve the following:

- ✓ Sound-damping of both high and low frequency tones
- ✓ Minimal air flow restriction and back pressure
- ✓ Minimal equipment weight and bulk added to vehicle
- ✓ Ease of installation without extensive modifications or substantial time delays
- ✓ Improved machine serviceability
- ✓ Lower cost overall compared to 'off-the-shelf' mufflers
- ✓ Improved engine efficiency and reduced fuel consumption

Hushpak mufflers are designed using advanced 3D finite element techniques that can predict the performance of a design over the frequency spectrum without having to resort to a design-build-test empirical process. This allows us to achieve the greatest noise reduction whilst meeting specification limits for exhaust back pressure. Hushpak mufflers are custom made using superior acoustic materials designed to ensure noise suppression and long life under the harshest conditions.

Hushpak has fitted noise control solutions to fleets of mobile machines for mine operations throughout the Hunter Valley. Our solutions achieve exceptional results with minimal equipment installation time and cost. We've treated the following machines and achieved reductions of up to 11 dB - that's less than half the perceived noise and less than 10% of the sound energy.

- ✓ Large dozers
- ✓ Large excavators
- ✓ Haul trucks and water carts
- ✓ Drilling rigs



**HUSHPAK**  
ACHIEVING UP TO  
**11dB**  
REDUCTION

## EFFECTS OF POOR MUFFLER DESIGN:

- Reduced engine efficiency – boost pressure below normal
- Poor or no response to throttle – unable to reach top RPM
- Low power or power cut out – misfires, rough or unstable running
- Turbo charger problems – increasing emissions including black smoke
- Increased diesel exhaust emissions – increased human exposure risk
- Higher fuel consumption – decreased fuel efficiency and increased cost
- Increased exhaust gas temperature – increasing thermal load on engine components

**Hushpak is a leader in noise source attenuation for heavy vehicles and mobile machines**



An example of excessive back pressure



Hushpak Muffler= minimal back pressure

**Hushpak muffler passes noise test and improves maintainability**

## COMPLETE NOISE CONTROL SOLUTION

**Hushpak's mufflers are part of our wide range of noise control products that also includes low noise fans and acoustic louvres. We identify the dominant noise source to deliver a complete solution – custom designed to comply with site noise limits. To ensure control over the quality and effectiveness of our muffler and exhaust solutions, we have partnered with pre eminent acoustic and engineering researchers and we manufacture our products in Hushpak's fully equipped workshop in Newcastle, Australia.**

### PROVEN RESULTS

#### CAT 777F

Pre attenuated noise level 127 dB  
In service specification 125 dB  
Hushpak achieved 123 dB - a 4 dB reduction

#### LIEBHERR 996

Pre attenuated noise level 132 dB  
In service specification 125 dB  
Hushpak achieved 125 dB - a 7 dB reduction with minimal attenuation equipment fitted

#### REICHDRILL C-700-D

Pre attenuated noise level 132 dB  
Hushpak achieved 121 dB - a 11 dB reduction