

# DIG GING DEEP

## SERIES



## HEAVY-DUTY EXHAUST ESSENTIALS DUAL-WALLS – SUPERIOR THERMAL REDUCTION

BUILT TO PROTECT

A dual-walled exhaust system significantly reduces the risk of engine fires. Dual-wall pipes are insulated with a central silica layer to reduce external surface temperatures. Lowering the temperature of the outer wall below the fuel flashpoint improves safety and eliminates the need to cover engine pipes with blankets.

### WHAT IS A DUAL-WALL EXHAUST?

- Dual-wall exhausts feature an inner and outer pipe layer
- A central silica layer adds insulation and aids MDG 15' compliance (150°C ext. surface temp.)
- Dual-walls are resistant to fuels and oil infiltration
- These systems connect directly to OEM turbo outlets
- Custom brackets and upgraded hardware are necessary for installation

### DUAL-WALL EXHAUST DESIGN FEATURES

- Reinforced components such as solid machined flanges
- Flanges, clamps and mounts designed for minimal heat transfer
- Strategically located vent ports help prevent inner wall failure
- Flexible elements absorb stresses caused by heat differentials between inner and outer walls
- Compared to dual-walls with airgaps, silica insulation reduces temperatures more effectively
- Central layer options include thermal (insulated), acoustic (perforated) and non-insulated



### FIRE MITIGATION – A ROBUST SETUP

A dual-wall exhaust system separates fuel and heat sources and reduces outer wall surface temperatures for less ignition risk. Adding an insulated silica layer between the two pipe walls can significantly lower external surface temperatures. Using dual-wall insulated engine pipes eliminates the need for thermal blankets on engine pipes while achieving MDG 15' compliance.

- **Superior fire strategy** – a purpose-engineered solution for ongoing fire mitigation
- **Endurance** – less risk of premature component failure and downtime by improving on OEM designs
- **Integrated insulation** – a longer lifespan with insulated pipes (no engine pipe blankets required)
- **Simplified maintenance** – no need to inspect and reinstall lagging after servicing (no blankets on pipes)

Install thermal blankets on turbos, manifolds, and junctions for a comprehensive fire mitigation approach.

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# DUAL-WALL

### DUAL-WALL EXHAUST STRATEGY – CONSIDERATIONS

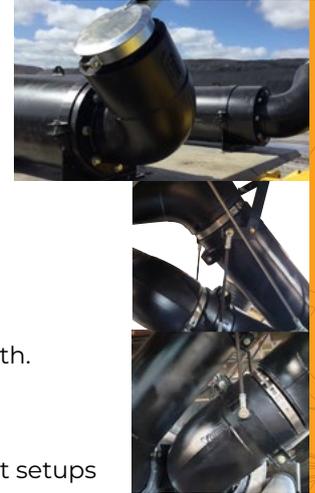
Engineers and maintenance crews should consider the following factors when implementing dual-wall systems.

#### Design considerations

- Check machine availability – dual-wall systems are only available for select assets
- Longterm investment – increased upfront cost compared to exhaust and blankets setup; TCO<sup>2</sup> should factor in blanket replacement costs
- Space constraints – assess clearances to ensure that larger pipes and bends will fit
- OEM integration – space restrictions may prevent replication of the OEM exhaust path. When commissioning a custom solution, ensure replacement parts are available.

#### Implementation considerations

- Additional weight – dual-wall pipes significantly heavier than single-wall and blanket setups
- Bracket and clamp replacement – dual-walls require new hardware for larger pipe diameters
- Initial installation – new installs require experienced fitters; Aletek can assist



### DUAL-WALLS EXCEL FOR DRILL RIGS, ULTRA CLASS & SOUND

Experience has shown that dual-wall exhausts are an excellent consideration for the following applications:

#### Rotary Blasthole Drills

- Protection for workers from exposed mufflers and exhaust pipes
- Enhanced fire mitigation and asset protection
- Popular solutions: (Atlas Copco) Epiroc DML60, PV235 & PV275

#### Large equipment (Ultra Class Trucks & Excavators)

- Purpose-built systems for increased uptime and maximum productivity
- Durability and engine fire protection (add turbo, manifold and junction blankets)
- Less ongoing service requirements, no blanket-related maintenance on engine pipes
- Popular solutions: Cat 6040, 6060 & 794AC, Komatsu 830E-AC, Liebherr T282 & R996B

#### Sound Suppression solutions

- Dual-wall utilised for engine pipes, silencers, tailpipes, etc
- Custom dual-wall systems help realise acoustic benefits
- Options for central insulation (MDG 15<sup>1</sup>) or acoustic-lined inner wall
- Solutions include: Cat 785B/C & 793D, Komatsu 830E-AC, Liebherr T282

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<sup>1</sup> MDG 15 Guideline (NSW, Australia) <sup>2</sup> TCO: Total Ownership Costs