

# Award Winning Quiet Fan Technology

## Silence fans at source without silencers



Our award winning **Quiet Fan technology (QFt)** is the dream solution for many centrifugal fan noise problems - with very substantial benefits compared with conventional technology.

- low cost retro fit
- no ductwork modifications
- quick and simple to fit
- no maintenance
- lasts the lifetime of the fan
- handles debris
- handles corrosive gases
- no hygiene problems
- fit and forget

**Climate Change** - *unlike silencers, QFt has no effect on efficiency for the life of the fan*

**Best Available Technology (BAT)** - *QFt constitutes BAT for many applications*

**Self-financing** - *QFt will often pay for itself in reduced running costs*

**Capital Costs** - *typically cuts capital costs by an order of magnitude*

### Award winning INVC fan noise control project saves £1,000,000

**Prestigious award for one of the most successful noise control projects - ever..**

We have recently celebrated a hugely successful project for leading steel maker Corus. The project has resulted in seven figure cost savings for Corus and has earned us the Rushlight Noise Abatement Award at the recent Environmental Awards ceremony. The Award is presented annually for the most significant development in noise control technology over the previous year.

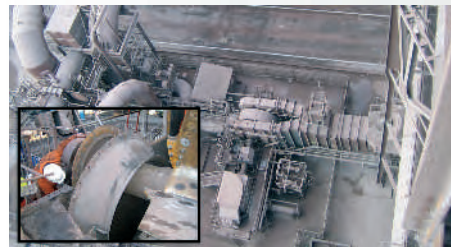


A low frequency hum at around 162Hz from 3 very large centrifugal fans on the Corus Scunthorpe site had caused noise complaints over a wide area. As the fan speeds vary, tuned resonator silencers were ruled-out, leaving the option to fit very large conventional silencers. These would not only be extremely expensive, but would also reduce efficiency. As each fan is a 4MW unit, the 5 - 10% reduction in efficiency associated with silencers would have represented a substantial increase in running costs and in the carbon footprint.

The company approached us for a second opinion. We developed an innovative set of aerodynamic modifications for the fan casings, avoiding the need to modify the existing duct-work or the stacks. The results were spectacular. The tonal noise was reduced by 12dB with no effect on fan efficiency and the modifications are maintenance-free.

The willingness of Corus to invest in new and innovative technology has reaped very substantial rewards. Compared with conventional silencers there have been savings of c£800,00 in capital costs and c £200,000 p.a. on power and carbon running costs.

*"INVC's modifications have brought about a huge reduction in fan noise, improving the environmental conditions across a wide area around the Plant. They've also saved us a large amount of money by negating the requirement for major capital expenditure, so it's been a remarkably successful project."* - Grahame Wallace, Corus.



These results make this project a good candidate for the crown as perhaps the most successful, greenest and cost effective fan noise control project in history.... Versions of the technology are available for all sizes of fan.

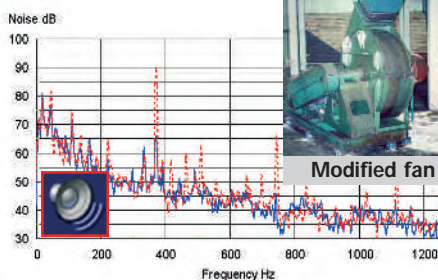
### Re-defining Best Practice in Fan Noise Control

**Get a second opinion on your noise control project - and save 50% - 80% of the cost...**

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### Case Studies

#### Scrap Can Fans - cans, noise and costs cut



Up to 23dB off the tones and 22dB(A) quieter

A set of scrap can extract and chopper fans caused serious occupational and environmental noise problems. Conventional quotations involved fitting silencers, enclosures and lagging at a cost of over £35000 / system with continuing maintenance costs plus issues with access. The **QFt** source control modification fitted to all the fans over a couple of days reduced the tones by up to 23dB and provided an overall noise reduction of 22dB(A) - and the total cost of the installation was only c £3000 / system. There are no problems with access and no running costs - the modifications will last the lifetime of the fans without maintenance despite the passage of cans.

Case Studies - continued

**Grain Dryer - placebo fan silencers**

Nine identical fans on a new grain drier caused widespread complaints about "hum". The Local Authority restricted use of the drier to daytime only, causing serious production difficulties. **QFt** was fitted at a cost of c £50/fan. This reduced the 146Hz tone by 15 dB and the first harmonic by 20 dB. As the noise was almost indistinguishable from the background (even at night) the operating restriction was lifted. However, additional (and unnecessary) "placebo" silencers also had to be fitted to satisfy the expectations of the user!



**Thermal Oxidiser Plant - over £100k saved**

The conventional noise control package of silencers, enclosures and earth berm to reduce the environmental noise from a new regenerative thermal oxidiser plant installed at CMB would have been very costly. The engineers involved asked us for a second opinion on "Best Available Technology (BAT). The problem was a combination of blade pass drone; tonal modulation ("beating"); regenerative damper noise and broadband fan noise. The solution involved:-

Quiet Fan technology; slowing one fan by 100rpm; changing the damper type and position; fitting small secondary conventional silencers.



This eliminated the tones and reduced the overall noise by 15dB(A) at a very small fraction of the cost of the conventional package. CMB company policy is to contact INVC for all fan related noise problems.

**Combustion Fan Silencing - hot fix**

Combustion fan noise from a new waste heating system at a Palgrave Brown MDF site was the source of complaints - and an abatement notice. The supplier and consultants had tried conventional measures (additional silencing, reduced fan speed) over an extended period to no avail. On the point of admitting defeat, they were referred to us for a second opinion. Our **QFt** was fitted in hours - next morning, it was hard to tell the fan was on. The tonal noise was reduced by 22dB and the overall level by 9dB(A) - quickly, permanently and at low cost. The results have been so impressive that Alan Fillingham, the Director, has recommended our approach throughout the group.

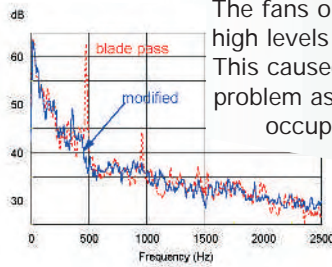


*Jim welds 22dB attenuator inside the burner fan ...*

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**Boiler Combustion Air Fans - quick and easy**

The fans on 3 boilers generated high levels of tonal noise at 490Hz. This caused an environmental noise problem as well as contributing to occupational noise. Silencers would have been a nightmare to fit due to space limitations and extensive modifications to the whole building structure would have been needed to meet the noise targets. **QFt** (fitted during normal maintenance down-time) reduced the tonal noise by 99.4% (22dB), eliminating it entirely.



**Acetone Extract Fans - safer and cheaper**

15 off 2m diameter high speed fans were the cause of noise nuisance to neighbours. The conventional solution was to fit acoustic lagging to long lengths of inaccessible ductwork and to scrubber tanks etc. (silencers were not possible as the air contained acetone) at huge cost (6 figures). **QFt** provided a 20 dB reduction in the 540 Hz tone at a cost of only c£6000 for all 15 fans.

**Brick Oven Fan - 22dB reduction, negligible down-time**

A 3.5m diameter brick oven fan generated a huge hum (112 dB) at 62.5Hz. This generated 90 dB(A) in adjacent rooms and a serious environmental noise problem involving the Local Authority. Traditionally, the fan would have had to be moved to accommodate a very large silencer and enclosure at a cost of well over £15,000 which would have caused serious production problems (24 hours/day, 364 days/year operation). Our modification was designed, manufactured and fitted during a normal maintenance period with a downtime of just a few hours at a cost of just over £1,000. Occupational noise was reduced to 79 dB(A) and the 63 Hz octave band level reduced by 22 dB, eliminating the environmental noise problem.



**12 Foundry Fans - cloning quiet**

The quote to reduce noise from 12 identical extract fans to meet mandatory environmental noise targets using conventional technology was £34,000. This covered extensive ductwork modification and sets of silencers - which would have required regular downtime for cleaning to maintain performance. As the noise problem was tonal, the best solution was to fit the **QFt** modification. The total cost was reduced to c £2,000 - with no disruption to normal operation, no ductwork modifications and no maintenance - ever!

**Contact us for more information about all aspects of fan noise and vibration control. Further information and case studies at - [www.invc.co.uk](http://www.invc.co.uk)**

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