



ENVIRONMENTAL
TECHNOLOGY
BEST PRACTICE
PROGRAMME

SMALL COMPANY BENEFITS FROM HVLP SPRAY GUNS

**A GOOD PRACTICE CASE STUDY
AT DB PARTNERS LTD**



Be Solvent Wise

This Case Study demonstrates that small, as well as large, companies can save money by changing to high volume low pressure (HVLP) spray guns.

Used properly, HVLP spray guns increase transfer efficiency, reduce paint consumption and produce a high-quality finish. Volatile organic compound (VOC) emissions are reduced as a result of the reduction in paint consumption.

DB Partners Ltd - a small company with 43 employees - bought 15 HVLP spray guns and fully-enclosed spray gun cleaning equipment to reduce its use of solvents and so meet the requirements of registration under Local Air Pollution Control. The change was accompanied by specialist training for all operators so that the benefits of using the new spray guns could be fully realised.

The benefits of the project include:

- An initial reduction in paint use of 21%
- A payback period of three months
- Continuing paint savings worth £40 500/year
- Reduced environmental impact

GC136
FINAL RESULTS



GOOD PRACTICE: Proven technology and techniques for profitable environmental improvement

Background

Over recent years, increasing numbers of companies that use paint spraying equipment have switched to high volume low pressure (HVLP) spray guns to reduce solvent use and meet the requirements of the Environmental Protection Act (EPA) 1990. These companies have also made substantial cost savings from reduced paint consumption because HVLP spray guns are potentially more efficient than conventional designs.

In general, smaller companies have not followed this trend. This has been mainly because their solvent use falls below the 5 tonnes/year threshold for registration under Local Air Pollution Control (LAPC), so they have not been required to change to HVLP spray guns. In addition, it has been unclear whether any cost savings would be sufficient to make the change worthwhile.

This Case Study focuses on the experience of DB Partners Ltd - a small company that registered under LAPC as part of a commitment to becoming 'best in class'. Although its solvent use fell below the threshold for compulsory registration, the Company believed that registration would enhance its standing in the marketplace and lead to increased orders.

To improve the efficiency of its operations, the Company bought 15 HVLP spray guns and installed a fully-enclosed spray gun cleaning station. Since buying the spray guns in Autumn 1995, DB Partners has made significant cost savings, showing the benefits which can be achieved by any small company switching to HVLP guns.

HVLP Spray Guns

Compared with conventional spray guns, HVLP guns atomise paint using a higher volume of air at a lower pressure. Paint spray is therefore less likely to bounce off workpieces, and overspraying is reduced considerably. HVLP spray guns increase transfer efficiency, and ensure that more paint gets onto the pieces being sprayed.

Experience in many applications has shown that modern HVLP spray guns, when used properly, are as effective as conventional guns and will produce as good a finish.

Training

When DB Partners bought the new spray guns, all its operators received three day's training in the modified spraying technique required to produce a high-quality finish. A consultant provided theoretical and practical training, which covered all aspects of finishing, including paint and spray gun technology, and a practical demonstration of how to set up and use the spray gun. The training also provided hands-on experience, highlighted how to get the best out of the new system, gave general hints on spraying, and emphasised the need for care to prevent low-quality finishes and waste.

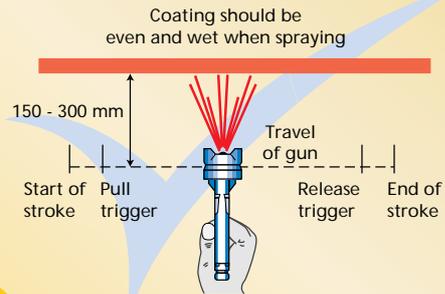
Although it was an extra expense, DB Partners saw this training as an essential part of the project. It realised that misuse of the new equipment would result in low-quality finishes. In fact, the training was so successful that operators are now reluctant to use traditional spray guns. The quality of finish achieved with the new equipment is at least as good as it was with the old.

Remember - spraying with HVLP spray guns is different from conventional spraying

Useful tips for using HVLP spray guns

To get the most out of HVLP spray guns, operators need to change the way in which they spray. Most importantly, they should:

- spray a little closer (150 - 300 mm is a good distance);
- keep the spray at right angles to the workpiece - don't bend the wrist;
- reduce the paint flow, or spray a little faster, to save material.



Financial Benefits

Measurement of paint and solvent use in the six months following installation of the new spray guns has shown that there was a 21.2% reduction in paint use (2 393 kg of solvent used instead of the 3 037 kg that would have been required for the conventional spray gun). This reduction is equivalent to 894 litres of paint and represents a cost saving of £11 175 at an average price of paint of £12.50/litre. The 15 spray guns cost £300 each, and the three days of training cost £400/day. HVLP guns use less compressed air than conventional guns, so there is a potential energy saving which will reduce running costs. Maintenance costs remained unchanged.

Table 1 shows the annual savings calculated from paint and solvent use during the first six months, capital and training costs, and the payback period.

Table 1 Economic analysis

Cost savings	
Annual savings in paint consumption	£22 350
Costs	
Purchase of 15 HVLP spray guns	£4 500
Training	£1 200
Total costs	£5 700
Payback period	3 months

DB Partners continues to make savings, now at an even higher level because of increased business. The Company currently uses 8 764 kg of solvent/year compared with an estimated 11 098 kg/year it would have used if it still had conventional spray guns. This represents a reduction in paint consumption of 3 240 litres/year, which is worth £40 500/year. The reduction in solvent consumption means that the Company has also reduced VOC emissions significantly.

Results of Experimental Comparison

The efficiency of an HVLP spray gun was tested against that of a conventional spray gun by having an operator coat identical components on identical jigs using the same paint. The tests were run consecutively and the dry film thickness was measured after spraying. The surface was inspected visually to confirm the acceptability of the finish. The dry film thickness of the HVLP coating was found to be slightly thicker.

The spray guns were weighed before and after spraying to measure paint use. The average paint use per jig with the conventional spray gun was 212.5 g compared with 135.7 g for the HVLP spray gun. This represents a 36.1% reduction in the paint used.

These calculations are based on the amount of paint sprayed from the paint cup. In normal use, efficiency improvements might be lower because of factors such

as residues in the spray gun after spraying and waste from filtering or stirring the paint.

Further Information

The Good Practice Guides listed below provide further information on the efficient use of solvents and are available free through the Environmental Helpline on freephone 0800 585794.

Good Practice Guide (GG50) *Cost-effective Paint and Powder Coating: Materials Management*

Good Practice Guide (GG51) *Cost-effective Paint and Powder Coating: Surface Preparation*

Good Practice Guide (GG52) *Cost-effective Paint and Powder Coating: Coating Materials*

Good Practice Guide (GG53) *Cost-effective Paint and Powder Coating: Application Technology*

Can You Benefit From Using HVLP Spray Guns?

The graph below provides you with a simple method of working out if your company would benefit from using HVLP spray guns. All you need to do is answer these two simple questions.

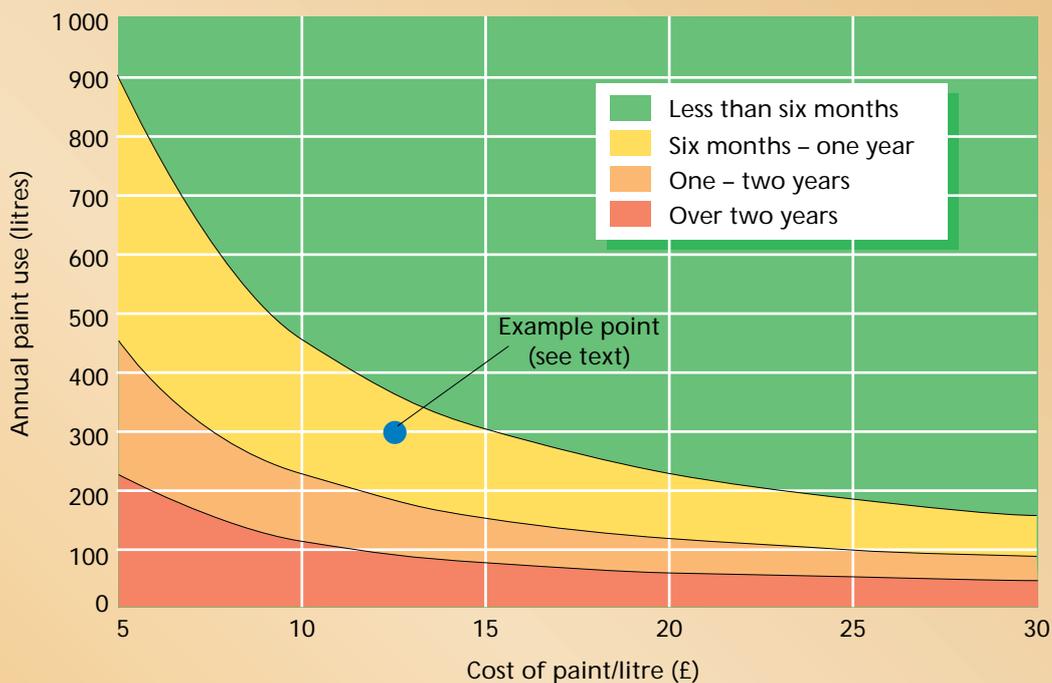
What is your average paint cost per litre?

£

How many litres do you spray a year?

litres

Locate your paint cost along the horizontal axis of the graph and then move up vertically to the point corresponding to your annual paint use. The range of payback period that you are likely to achieve through the effective switching to HVLP guns is indicated by the colour in which your point falls. The example point in the graph is for a company using 300 litres of paint/year costing £12.50/litre. The payback period is between six months and a year.





Mr T Bennet (Chairman) with Mr A Watson and members of staff

DB Partners Ltd

DB Partners Ltd is a contract finishing company based near Cheltenham. It was formed in 1981 and employs 43 full-time staff.

The Company's core capabilities cover metal and plastics finishing operations and include surface pre-treatment, paint coating and powder coating. It also carries out other specialist activities including screen printing and conformal coating.

The Company has enjoyed considerable growth over the last few years, winning contracts with a range of well-known industrial clients.

Comments from DB Partners Ltd

DB Partners Ltd is a finishing company with a wide range of expertise. Staying ahead of the competition means controlling costs, developing staff and maintaining quality.

Using HVLP spray guns to achieve compliance has helped to save us money. We have also reduced the environmental impact of our operations.

Being able to demonstrate compliance with legislation provides assurance to our clients that we are a responsible and well-run organisation. It's better for the environment and better for our business!



Mr A Watson
Quality and Marketing Director
DB Partners Ltd

*“Using HVLP spray guns to achieve compliance has helped to save us money...
It's better for the environment and better for our business!”*
