

# Heflen International Limited

## High Efficiency Low Energy

### Reduction of Risk

Meets and exceeds current European H & S Directives. Will greatly improve the current NIOSH recommended operator RPE by increasing the safety factor through reducing hazards and airborne particulates at source. RPE not certificated.

### Cost of Goods

In line the EPA BAT Notification to be affordable with a reasonable price.

Our yearly spares costs are circa 10 - 15% of the spraygun purchase cost.

Where other spraygun spares costs are circa 200 – 400% purchase costs

### Legislation Breakthrough

Meets and betters global environmental and health, safety & welfare legislations. Beters the EPA spraygun 65% T.E. by 30%. Termed Engineering Control by the HSA.

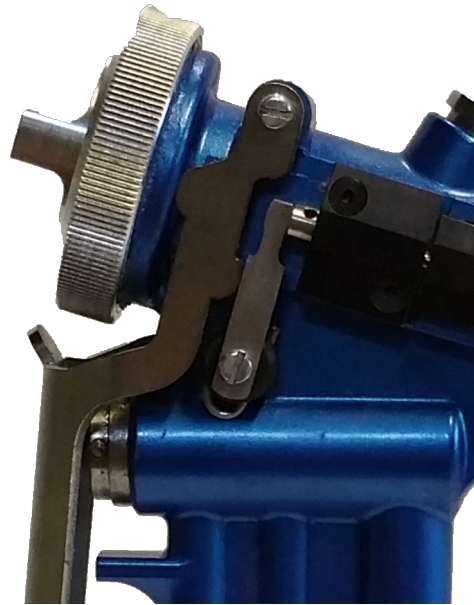
### Innovation Breakthrough

A Low velocity larger droplet prevents bounce back and improves the formulated design flow characteristics of the material which improves performance and quality.

Dual chamber controls that provide optimum atomizing pressure and fan patterns.

### Competition

Currently no other system can safely deliver a low energy flat fan spray application of 10µm wet film requirement to the Nano coating industry



### Technology Impact

- ◆ A low energy spray applicator for the Nano Coating Industry
- ◆ Design, Manufactured, Third Party Certified, deemed an Engineering Control by the HSA.
- ◆ Reduction of hazard by 60%
- ◆ 5 - 500micron wet application
- ◆ Working pressure as low as 2psi with micro fluid flow
- ◆ No bounce back
- ◆ Consistent spray pattern
- ◆ Reduced Carbon footprint for end users
- ◆ Reduced Waste by 60%
- ◆ 6 month ROI for end users
- ◆ Reduces all aspects of spray facility maintenance

### THE HEFLEN SOLUTION

The Heflen solution applies technology which concentrates on the higher efficiency use of air. This leads to a transfer efficiency that is greater than 85%, whereas conventional technologies try to achieve transfer efficiencies to a maximum of 65%. In reality, most can only achieve 30%.

Our objective is to bring a new approach to the spray industry. We have third party certification from CREST DTI to gain a Transfer Efficiency Certificate (T.E.C) in conjunction with Health Safety Authority (HSA) and Environmental Protection Agency (EPA). Heflen's technology has been deemed an "Engineering Control" by HSA as it betters the Best Available Technology (BAT) Notification in reduction of emissions.

### Green Apple Life Time Award

Green Apple Life Time Award for the innovation Low Energy Spraygun for its impact on Nano Coating application.

Our technology breakthrough made by the Low Energy spraygun enables the user to reduce hazardous exposure to the personal and the environment.

This technology leap was achieved utilising PtD at the outset assists in meeting current COSHH (BSI 2007b), NIOSH (2013) and German (IFA 2009) guidelines for Nano material application.





## Management Team

Patrick Henderson (COO)

James Lindsay  
(Technical Director )

## Technology status

- Scientific testing completed
- Prototype manufactured & tested
- 3rd party certification
- Patent , PCT & Design Protection
- Recognition by HSA as an Engineering Control
- Testing on coatings from 2% to 75% solids completed
- Auto finishing T.E. testing achieved & measured by CREST at 85%+
- Registered FETAC Health & Safety supplier for education
- Quality Control Manuals for Operations and Training written

Function Analysis completed for all main positions

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## Background of Development

The experience of gaining the domain knowledge on the spraygun technology and the stricter legislation on paints and coatings it was apparent that the existing applicators would not meet the demands of the new Nano coatings.

At this juncture Heflen invested in a range of instruments to determine why conventional sprayguns worked. These instruments supplied unique information on gas pressure losses between entry and exit due to the gas ratio changes created within the central chamber during siphoning gas for flat fan patterns. The instruments indicated significant adverse ratio changes that affect the atomising gas efficiency against the flat fan patterns as the pressure increases. Limiting the use of conventional sprayguns with high solids paint and Nano Coatings

Evaluation of the quantitative information provided the direction for a design and manufacture of an operational prototype spraygun with unique internal low energy characteristics. Further scientific tests proved that by reducing the pressure loss ratios the transfer efficiency increased with optimum gas input pressures. Field tests on a range of high solids paint and Nano coatings provided a high quality of finish with micrometer adjustment of film thickness at very low pressures without the mist associated with other sprayguns. The prototype was submitted to CREST for independent transfer efficiency accreditation according to EN 13966-1:2003 Test Protocol Method 2, where a test result of 85% T.E. was recorded.

## Overcoming Nano Safety Concerns

The main concern in Nano paints is the lack of health information, and prognosis of continuous use without adequate protection to the operator and others.

The low energy spraygun is considered an **Engineering Control** through greatly reducing the hazard at source. This significantly increases the safety factor, improving recommended controls.

## Range of Paints and Coatings

We are finding the range is limitless, from the very thin nano 10 microns to high solids protective architectural at 500 microns, in between we have the automotive transport, aerospace, steel construction, traincare industries, also solving problems where restrictions are often met with open air and above water spray applications – all from the same low energy spraygun.

## Competitive Advantage

Safely apply nano-coating	No need for thinners or dilution	Micro spray fan adjustment
Transfer Efficiency > 85%	Spray > 60% solids at 25psi	Reduce waste by over 50%
Reduced Airborne Hazard by 60%	5 to 300 microns applied in one pass	Same aircap and needle used with range of spray tips
Lowest Carbon Footprint	Spraytip operational for 6 month	Limited lifetime guarantee
Filter Usage reduced by 50%	Spray gun maintenance < 3 mins	Lower Masking & Labour cost

## Product Status

First production batch manufactured and field tested. Next production batch being prepared for sale as Gravity and Pressure Feed Systems, auto spraygun to follow late 2015.

## Nano Materials tested

HMRA Hospital coating, Sound Proofing coating, Hygienic wipe down coatings, various varnishes Standard coatings from Auto lacquer to High solid industrial coatings

## Current News

Environmental **Green Apple** Award in August 2015, presentation ceremony at Houses of Parliament 16<sup>th</sup> November 2015

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