Cheshire Innovation® / Latent Power Turbines Ltd

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Submission summary
As a small business owner and private researcher I provide evidence of management level research integrity failings that I have witnessed in my dealings with two British Universities. This evidence may be helpful in broadening the Committee's concept of 'Research integrity failure.'

I also make reference to a journal paper that will be published during the next few weeks. This may also be helpful to the Committee because I make recommendations for improving standards of research integrity based on my novel standpoint as a concerned observer and victim of research fraud looking in on the university system.

Dear Science and Technology Committee,

I wish to submit evidence to your inquiry into research integrity from the perspective of a small business that has received taxpayer funding to work with two universities, to develop two different inventions.
In both instances the projects failed due to a lack of research integrity.
The novel feature that makes this evidence worth reading is the involvement of university managers. We were unable to resolve the integrity issues because the primary interest of the university managers was to hide the research failings, rather than rectify them.

Justification for this submission
My purpose in describing these cases is to illustrate the damage that can be done to small businesses and the UK economy when university research integrity fails.

These cases should be of particular interest to the committee because of their unusual nature. They relate to **the deliberate suppression of promising research findings** to save face for research managers. This contrasts with the traditional type of research fraud, which tends to be concerned with wilfully exaggerating positive research findings to enhance professional reputation..

I am *not a*ppealing to the committee to investigate these case studies.

1 First case
Trading as Cheshire Innovation I worked with Manchester University attempting to develop a novel crash protection mechanism; Shock Absorbing Liquid (SALi)

This case came to the attention of the editor of the Journal for Biological Physics and Chemistry because the evidence presented on my Cheshire Innovation website also implicated the UK Research Integrity Office in hiding research fraud.
Our correspondence resulted in two companion journal papers being written. The first paper describes my experiences as a victim of research fraud and has been published as
'*A private researcher's struggles against research fraud Part One, Case Study*,'.
An unsolicited copy of this paper was sent to your committee by email on 28th December 2016.
A PDF copy of this paper can be accessed online at

http://www.cheshire-innovation.com/Meta-fraud%20fight/A%20private%20researcher%E2%80%99s%20struggles%20against%20research%20fraud%20JBPC%20%20Vol%2016,%20No.%203.pdf

The second companion paper is currently being peer reviewed.
The revised version is unlikely to be available before the final submission date for your enquiry.

It is written from my 'outsiders' perspective, first as a physics teacher who became convinced that the fraud habit needs to be tackled at the GCSE and A levels, before the habit sets in. Then, in my second career as a private researcher, when I became a victim of university research fraud.

Hopefully, my novel perspective will offer you possible solutions to the problem that are not obvious to those inside the university research. For this reason I am requesting permission to submit the paper at a later date, after the official deadline for making submissions has closed.

2 Second case
Trading as Latent Power Turbines Ltd I worked with Lancaster University attempting to develop a novel type of low cost, environmentally friendly power generator

2.1 Background
I studied thermodynamics as part of my Applied Physics degree at Hull University back in the 1960's. At that time one of my hobbies was meteorology.
I discovered that the textbooks on power generating heat engines (gas and steam turbines, jet engines, car engines etc) had missed a trick that was used by nature in weather system heat engines. (Tropical hurricanes, Foehn winds etc.)
I argued with my fellow students and tutors that we could start a power generating revolution if we were bold enough to build a new type of power generator that mimicked the behaviour of tropical hurricanes.

However, my arguments were so radical that they were dismissed by academics at the time and most engineers that I have debated with ever since.

This was my core argument:

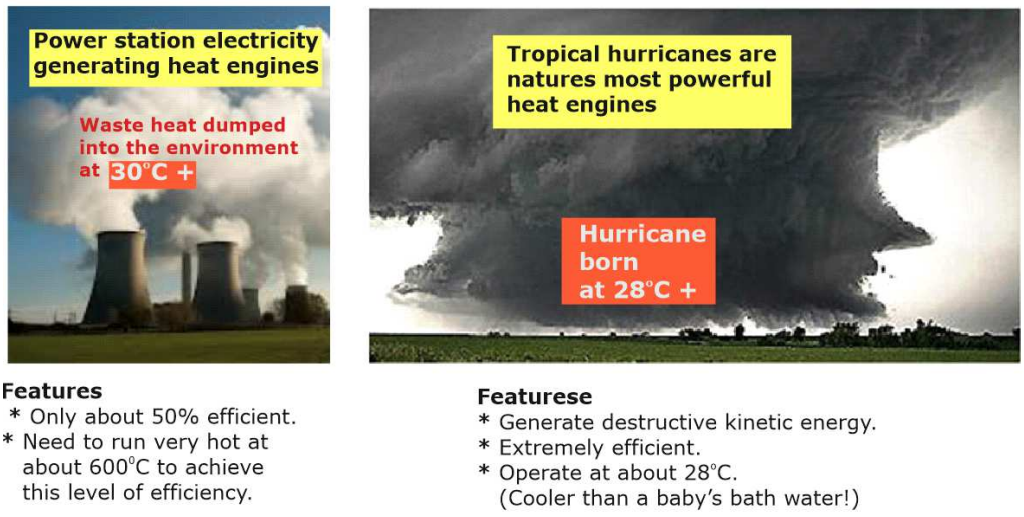

Figure 1. Since the 1960's I have been arguing that by imitating nature, we should be able to generate electricity far more efficiently.

The prospect of building a power station to test my theory was totally unrealistic so I identified a door opening experiment that could change the way engineers think. It turned out that the theory I was proposing also implied that Bernoulli's equation, an equation that had been around since 1738, would require a correction term to be added.
But the prospect of Bernoulli's equation requiring a correction term was dismissed by all the experts I have spoken to.

> "If it was that obvious, the need for a correction term would have been spotted long ago."

In the 1980's and 90's I changed my designs so that the invention operated as a refrigerator instead of a power generator. One of the reasons for making this swap was the call from environmentalists for a new type of refrigerator that did not damage the ozone layer.

By 1995 I had obtained two patents to protect my refrigerator designs [GB 2273133 and GB2306580]. The current version of this refrigerator can be seen on my website at www.cheshire-innovation.com/news/cryocooler.htm

2.2 Why Shock Absorbing Liquid (SALi) took over as my primary invention for development

Unlike power generators and refrigerators, prototype SALi based impact absorbers were simple devices that I could make on my kitchen table. By exploiting SALi to establish my reputation as an inventor, I could gain the funding I needed to develop my other inventions.

However, as can be seen from Section One above, my plans for SALi came to nothing and I fell into a period of depression and general ill health.

Then in 2004 I had a stroke of luck when Dick West of West & Co [www.west-consulting.co.uk] recognised the prospects for my power generator designs and agreed to work with me. We set up Latent Power Turbines Ltd and obtained Technology Strategy Board funding[1] to work with Lancaster University, doing bench top research to test my Bernoulli equation correction and hurricane inspired power generator designs.

Unfortunately the research assistant employed to do this work suffered a personal crisis resulting in her behaving unprofessionally. As a consequence, nine months into the contract, she had still not started work on designing the required test rig.[2] The final straw came when we discovered that one of the reasons we were unable to make contact with her on our visits to Lancaster University was that in addition to supposedly working full time for us, she had also been working two days a week, (with Lancaster management knowledge), teaching at Leeds University.
Leeds is 91 road miles from Lancaster.

We requested the University to supply a replacement research assistant as a matter of urgency. But no serious effort, for example placing the job offer on the university computer network system or externally, was made. So with only four months left before the TSB contract required the work to be finished, somehow the work had to be done without a research assistant. Matters were made worse

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[1] TSB Project Number 130037
The Technology Strategy Board (TSB) was subsequently rebranded as Innovate UK

[2] To be fair to the research assistant, she made the following important discovery during her literature search.
In 1937, steam turbine researchers at Oxford University provided experimental evidence to support my claim that a correction term was required for Bernoulli's equation. But the Oxford researchers saw this as a nuisance, not an asset to be exploited.
The correction term and the supporting evidence from Oxford University are outlined in Appendix 2.

because the research assistant's supervisor then went on a (long pre-arranged) extended world tour holiday but no replacement supervisor was supplied for us.
This meant that there was no alternative but for me to do the work in a university setting that I had no prior knowledge of, and without the support of an existing member of the engineering staff.

This posed several problems resulting in a poor project outcome.

(i) The original schedule had assumed that the test rig would be built during the quiet summer months when demands on the technicians to support student projects were low. But by the time I started work in September 2010, demands on technician time were at a premium.

(ii) The technician team was understaffed and the technician instructed to work with me was a temporary appointment from industry. So he did not know his way round the University either. For example, he did not know what combinations of thermometers and temperature recording equipment were available for us to use.
A full time technician came to his assistance by supplying a ***thermocouple thermometer*** system.

(iii) I am registered partially sighted and for health and safety reasons I was (quite sensibly) barred from entering the engineering laboratory without a member of the University escorting me. I was also unable to read the test rig instruments for the same reason. An engineering undergraduate student was appointed as my escort, but he was studying for his finals and his spare time was limited.

(iv) As they had these busy schedules, synchronising the escort student and technician meeting times was challenging. On three occasions I made the six hour return journey to Lancaster University only to find that the work for the day had to be abandoned because of last minute schedule changes.

2.3 Why this unreasonable interpretation of the research contract by Lancaster University was tolerated

By any normal business standards, our TSB approved contract with Lancaster University was not being honoured and my business partner and I could have walked away from it. If we had been really determined and could have afforded the legal representation, we could have claimed damages.
But I had waited forty five (**45**) years to obtain experimental evidence to support my hypotheses and time was running out. My eyesight had recently deteriorated and my health in general was poor as a consequence of my long running battle to expose research fraud at Manchester University.
I also knew from my dealings with Manchester University that it was easy to create false truths to hide research failings because in a dispute between an unknown small business and a highly regarded British University, the word of the University would be accepted without supporting evidence.

2.4 What actually happened at Lancaster University

Due to these problems very little research data was collected, but the results were in line with my predictions.
This is the small bench top test rig we built to test my hypotheses.

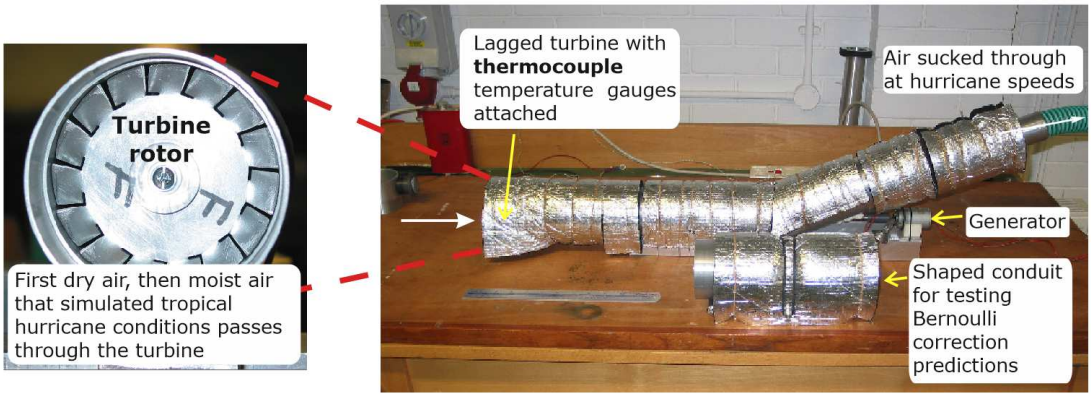


Figure 2. This bench top test rig was built with the aid of public funding (2010).

Our aims were to test two of my 1960's predictions
(i) That by mimicking the thermodynamics of hurricanes, unprecedented levels of power generation efficiency could be achieved.
(ii) The physics and engineering textbooks needed rewriting because the two hundred and fifty year old Bernoulli equation required a correction term to account for the behaviour of moist air similar in composition to that found in hurricanes.
[There is no need for the Committee to understand this correction term. But just in case they are curious, details are attached as Appendix 2.]

Explanation of the bar charts below:

I apologise for having to go into some technical thermodynamic details. But it is important for the Committee to have a basic understanding in order to grasp what the UK may have lost in an attempt to save face by hiding research failings.
You may also wish to submit my thermodynamics arguments to expert per review.

One of the outward forms of the second law of thermodynamics is the Carnot equation.
Engineers use this Equation to predict the maximum possible efficiency with which a heat engine can run.
[Heat engines include power station gas and steam turbines, and also internal combustion and jet engines.]
They use this equation to justify operating their heat engines at the maximum possible temperature that the construction materials can withstand.
For example, Rolls Royce jet engines are famous for running at extremely high temperatures, where without the incorporation of sophisticated cooling, the engine blades would melt.

Since the 1960's I have been arguing that by over-simplifying the way in which the textbooks interpret the Carnot equation, engineers have been missing a heat engine efficiency trick that can be seen in nature.
The Lancaster University research results (2010) finally gave me the evidence that I needed to support my argument.
Unfortunately, Lancaster's refusal to let me publish the results in a peer reviewed journal paper has resulted in the myth surviving.

Here is a summary of our bench top experiments into power generators that mimic the properties of hurricanes:

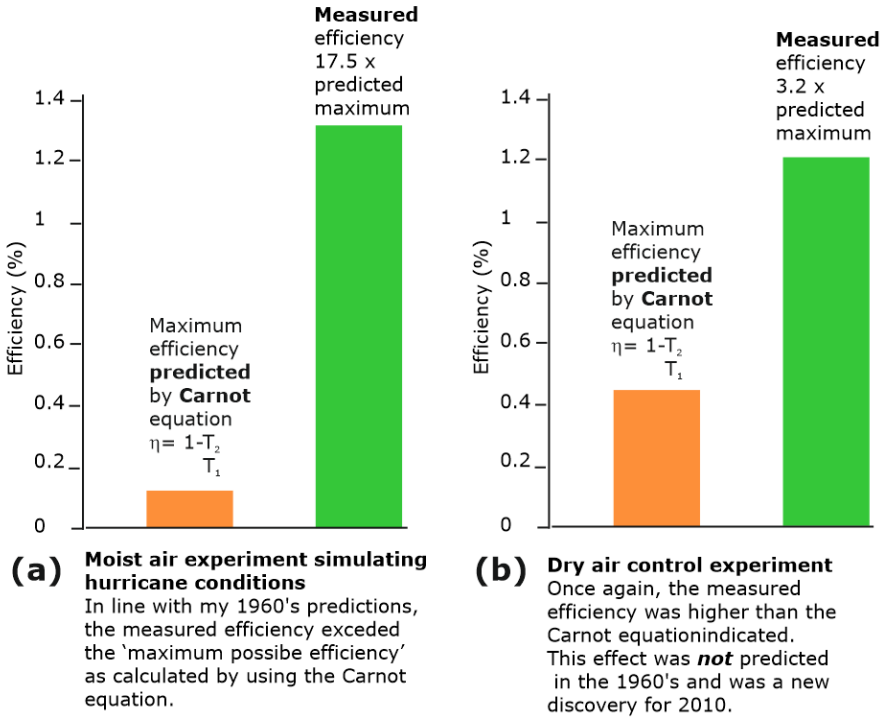


Figure 3. The moist air results were in line with the behaviour of tropical hurricanes. But the real surprise was the dry air results.[3] We knew that it was impossible to violate the laws of thermodynamics: so something we had not accounted for was influencing the results.
The rational explanation that we (Courtney & West) came up with led to a breakthrough in our power generator design.

This diagram explains the key reason for our results[4]:

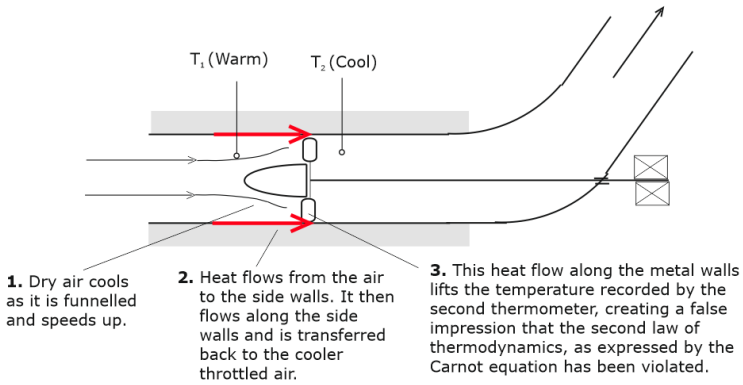


Figure 4. This explanation of our apparent violation of the second law of thermodynamics is really quite trivial and of no great engineering consequence. ***But*** it was hugely significant in changing our (Courtney & West) thinking.

[3] These important results were only obtained thanks to the contributions made by Dick West (Latent Power Turbines Ltd), Phil Spence (temporary lab technician at Lancaster University) and Shashank Sheshadri (The 'escort student' who did the experimental work on my behalf.)

[4] In fact we came up with three different effects that worked together to create the surprising dry air results. But the effect explained in Figure 5 was the key one in terms of revising our power generator design.

We realised that we could gain benefits similar to mimicking a tropical hurricane, but without all the mess caused by water condensing inside the system. This could be done simply by funnelling dry air using a tapered metal tube so that it cooled and draw in heat from the atmosphere, through the side walls of the tube.[5]
Our research journal, commercial product and patent searches revealed that our idea was not completely original. The Iranians and Arabs had been using this funnelling technique to pump hot air out of buildings for over a thousand years. But what was new, was the use of this captured heat to provide fuel for a power generator.
(A modern example of this Middle Eastern air cooling technology is provided in Appendix 3.)

In the end of project report that we presented to the Head of Engineering at Lancaster University and the TSB Moderating Officer, we explained how our discovery could lead to the development of a new class of clean power generators that could run on heat extracted from the atmosphere, without violating the laws of thermodynamics.

Here is a brief explanation of how our proposed generator would work:

Essentially the new power generating system consists of a large closed loop of metal pipe work enclosing a fan and turbo-generator.

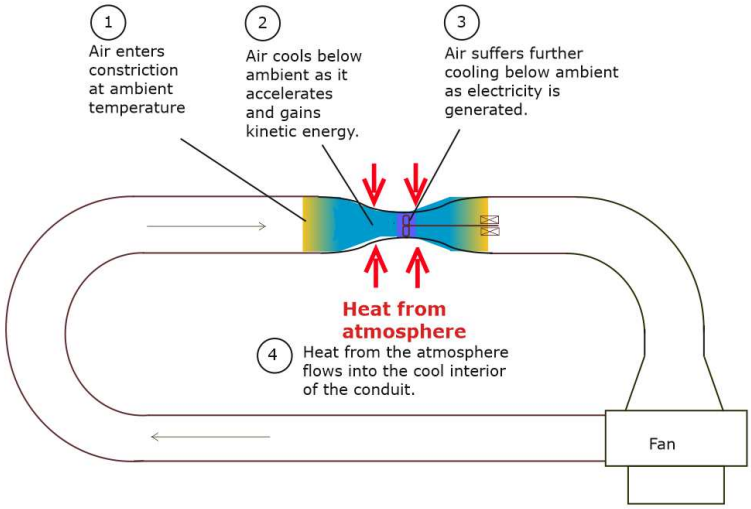


Figure 5. The laws of thermodynamics tell us that heat can only flow from a warm body to a cooler body. Conventional engineering thinking since Victorian times is that this implies that the working gas or steam must enter the turbine at at a higher temperature than the environment.
But, previous to us, nobody had cross fertilised Western power generating technology with Middle Eastern air cooling technology.

What we had realised was that by funnelling moving room temperature so that it both speeds up and cools down below room temperature, it should be possible to run a turbine by drawing in heat from room temperature air.

We wanted to publish this work as a journal paper, but the Head of the Engineering department refused us permission, arguing that because we had only done the experiment once, we did not have sufficient experimental data to support such a radical power generator design. Also, he pointed out that the **thermocouple thermometers** we had used were unreliable and that we should have used **platinum resistance thermometers** instead.

[5] One of the aims of the 1937 Oxford University researchers was to try and limit the damage to steam turbine blades caused by condensation droplets hitting the blades at high speed. We had discovered a radical solution to this problem: replacing steam with dry air and funnelling it through a metal tube.

However, when questioned by the he TSB Moderating Officer Tom Harris, who was present at the meeting, he admitted that the department did not possess any platinum resistance thermometers, which were very expensive to buy.

The moderating officer suggested that some of the money saved by not employing a research assistant could be used to purchase a set of platinum resistance thermometers. He also said that the TSB would tolerate a two week extension to the contract, to allow the additional experiments to be done.

These proposals were rejected by the Head of Engineering on the grounds that the laboratory space was now required for other work. This was not a very convincing argument because it can be seen from Figure 2 that the whole test rig occupies a table small enough to fit into a small kitchen.
[We now carry this rig around to presentations in a sports bag that comfortably fits a squash racket and changing room kit.]

2.5 The consequences of our failure to publish

Publication of our work would have challenged conventional engineering thinking on how we combat global warming.
It would have given the power generating industry an alternative to the use of wind turbines, solar panels and hydroelectric schemes.
It would also have helped the UK to maintain good relations with the EU during our Brexit negotiations. For example if you visit our webpage at www.cheshire-innovation.com/Sky%20Tube.htm you will see from **Section 10** on this page, Latent Power Turbines could be used to create jobs in southern Europe.

However, our paper would have been so radical that it would also have been subjected to very close engineering scrutiny. This in turn could have exposed the unprofessional way in which Lancaster University had handled a TSB (British taxpayer) funded project.

The TSB records, including quarterly meeting minutes and TSB Moderating Officer reports should provide independent evidence for the above claims about unprofessional behaviour at Lancaster University.

2.4 Our current position

We needed to involve a medium/large sized engineering company to convert our dry air Latent Power Turbine into a commercial product. In particular, we needed a partner with turbine design skills, which my business partner and I did not possess. We travelled throughout mainland UK, covering England, Scotland and Wales, making presentations and trying to attract partners. But we had nothing to show them in the way of peer reviewed research papers where our research results could be scrutinised.

To keep the momentum going, we decided to bid for additional TSB funding to test our dry air power generator hypotheses, even though we lacked a suitable turbine rotor design.
We were eventually successful in winning TSB funding.[6] This allowed us to build a large scale test rig. But following bad experiences at two universities, we opted to contract the work out to a private research company. After hearing good reports, we decided to work with C-Tech Innovation. Their costs were higher than working with a university, but they were far more professional. They kept to agreed deadlines and were completely transparent with us.
But we were still dogged by a lack of turbine design expertise.[7]
Consequently, we had to use a completely inappropriate shape of turbine rotor based on a cannibalised air conditioning fan working in reverse. This created a lot of turbulence, preventing the

[6] Innovate UK (TSB) Project. 131512
[7] C-Tech Innovation were transparent in admitting to us that they did not possess turbine design skills.

rig from working efficiently. Nevertheless, we were able to verify the power generating process summarised in Figure 5 above. But until we can find a partner who has turbine design skills our work is at a halt.
For the last two years we have been unable to make progress and rig shown below languishes in an empty room on UCLAN (University of Central Lancashire) premises.

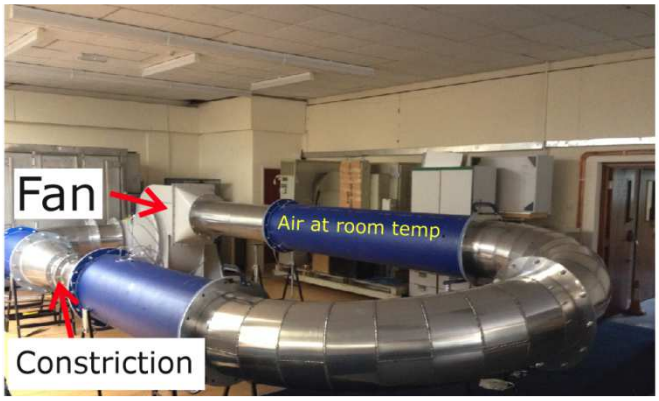


Figure 6. This is the test rig that was built by C-Tech Innovation with the support of Innovate UK funding. It performed in line with our expectations, producing pressure and temperature changes in line with our calculations.

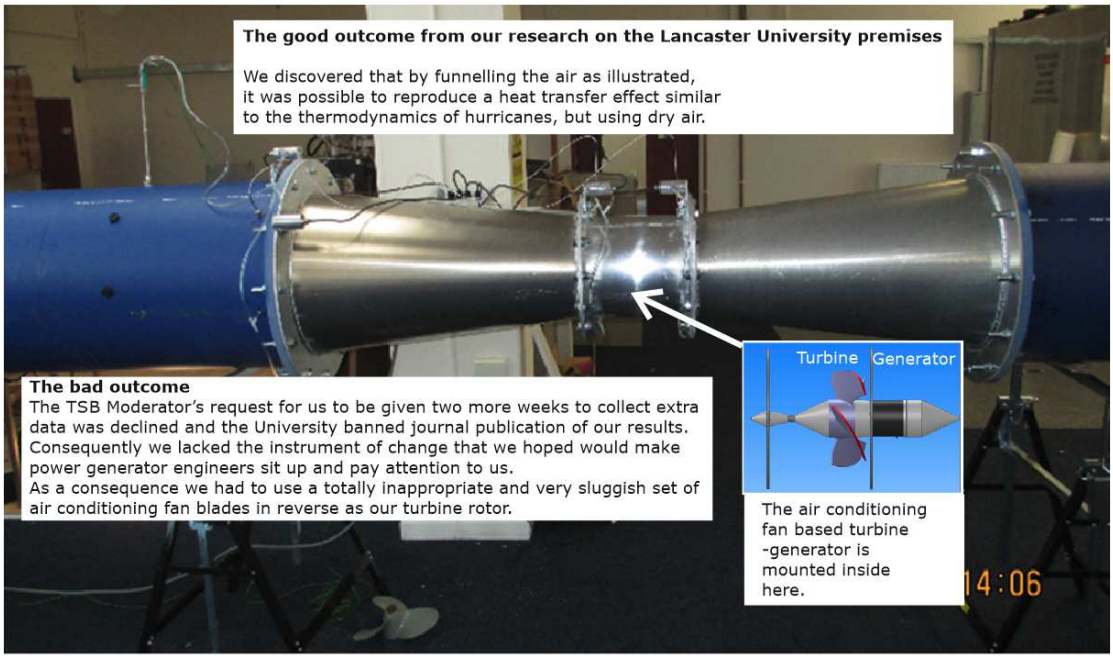


Figure 7. Apart from the turbine design problem, our experimental results were very promising. Details can be found in our end of project report for Innovate UK.
The C-Tech engineers dismissed the Head of Engineering at Lancaster's argument that platinum resistance thermometers were necessary. Instead they went ahead and used thermocouple thermometers. They obtained consistent temperature readings on successive test runs, verifying that thermocouples were perfectly adequate for the research.

3 Three 'Ifs' with serious consequences for UK innovation

If Lancaster University had given us permission to extend the project by two weeks, then we would have been in a strong position publish a journal paper that provoked engineers into thinking differently about how we generate electricity. Hopefully, this would have attracted a large engineering company to work with us.

If Manchester University had been prepared to tackle difficult research integrity issues, the SALi based smart car bumper could have saved lives and generated the royalty income for me to finance all of the Latent Power Turbine research myself. This could have led to a new British industry building a new class of patent protected power generators.

If the smart car bumper had incorporated a graphene based packaging then Britain would have been credited with producing the world's first mass market graphene product.
[Graphene and my Shock Absorbing Liquid (SALi) were contemporaneous developments at Manchester University. Lessons learned from working on SALi should have been transferred to provide patent protection for graphene. Please visit my webpage at www.cheshire-innovation.com/sali/SALi%20and%20graphene.htm for details.]

4 Estimated time losses

I estimate that about four years have been lost in the development of Latent Power Turbines if we start the clock ticking at the time we experienced research integrity problems at Lancaster University. Alternatively, I estimate that we have lost about eight years in their development, if we start the clock ticking at the time of the research integrity problems at Manchester University. This second estimate assumes that I had been able to gain status as an inventor and earn royalties from the successful development of SALi.

5 A necessary danger

Promotion of my inventions in research papers, media stories and on my website

An invention cannot be patented after details have been released into the public domain. Consequently, I have had to file patents at a steady rate over the last 25 years as a precursor to publicity. A selection of my most relevant patents is presented in Appendix One below.
During the 1990's I hoped that my work at Manchester University would generate sufficient income to cover my patenting costs. In reality, the opposite has happened and I have lost my £140,000 retirement savings instead. I have also had to abandon most of these patents because the cost of maintaining them has become prohibitive.[8]

The British taxpayer has also lost out because the £500,000 of public funding that I have won for research into my SALi and power generator inventions has been squandered.

Conclusion
There is widespread awareness of research integrity problems at individual researcher level. My evidence suggests that the Committee needs to look wider, taking into account the fact that market forces are tempting university managers to collude with the fraudsters instead of confronting them.

Later this spring, the Journal of Biological Physics and Chemistry is scheduled to publish my paper
A private researcher's struggles against research fraud
Part Two – Suggestions for reducing the fraud problem

[8] These problems are described in the journal paper that was sent to the Committee on 28th December 2016.

If the Committee grants permission for me to submit a copy of this paper after it has been peer reviewed, I would be happy to do so.

Q. Why didn't I develop my scientific thinking on green power generation back in the 1960's?

A. In 1957 I failed my 11+ exam and went to a secondary modern school, where all my peers were working class children. In spite of this, due to an error in the newly establish University Clearing House System, I ended studying Applied Physics at Hull University.

[In 1964 I was interviewed for a BBC Third Programme (now Radio Three) documentary on the University Clearing House System, UCCA. I was selected for interview because as a working class secondary modern pupil, I was seen as someone who had 'over-performed' by accidently ending up on a 'hard' Applied Physics degree course.[9]]

As a result of this early labelling, I was dogged by a sense of being an intellectual imposter until I reached middle age.
My 1960's power generator theories were far too complex for me to develop at home. Then in 1986 I invented Shock Absorbing Liquid (SALi). This was far easier for me to investigates on my kitchen table – as filmed by the BBC for 'The Money Programme'. This public interest gave me the confidence in middle age to overcome my "imposter syndrome".

Figure 8. This was my kitchen table SALi test rig that BBC viewers saw in 1996.[10] The theme for this edition of The Money Programme was Britain's inability to convert its inventive talent into wealth creating businesses. Ironically the programme concluded things might be about to change. In my case there was hope because I had recently starting working on SALi under expert guidance at Manchester University. But the minor celebrity status I enjoyed following this and other media coverage caused a certain amount of resentment at the University and my research was sabotaged.
FOOTNOTE BBC 2. 27th October 1996.

The failure of this spirit of 1996 to materialise was one of my main motivations for trying to think outside the box on how we could improve research integrity.

[9] I had in fact withdrawn my university application form because well meaning adults had advised me. that as an 11+ failure who lacked the grammar school background, I may not be able to cope with a degree course. But teething problems during its first year of operation caused the UCCA system to accidently offer me a university place.
[10] *The Money Programme*, BBC 2. 27th October 1996

Appendix 1

A selection of my patents relating to SALi and Latent Power Turbines

How they are linked to research integrity
The patents were filed in anticipation of obtaining useful outcomes from collaborations with British Universities. Failures due to research integrity problems meant that investment in these patents was wasted. This means that the UK has lost potentially valuable intellectual property assets.

Shock Absorbing Liquid (SALi)

1 Courtney, W .A. Device incorporating elastic fluids and viscous damping, *World Intellectual Property Organisation*, WO 97/25551 (1997).
Subsequently granted as GB2324352.

2 Courtney, W. A. Improved impact absorber with viscous damping, *World Intellectual Property Organisation*, PCT/GB98/03594 (1998).
Subsequently granted in the UK, Germany and France as EP (UK) 1068460.

3 Courtney, W. A. Impact absorbent building structures, *British Intellectual Property Office GB9805887.8* (1998).
Subsequently granted as GB2335447.

4 Courtney, W. A. Impact energy absorbing device incorporating bunching capsules *British Intellectual Property Office***,** GB0907996 3 (2009).
Subsequently granted as GB2470180.

5 Courtney, W.A. Improved vibration isolator, *British Intellectual Property Office* GB0915807.2 (2009).

Latent Power Turbines

1 Courtney, W. A., "Combined power generator and water desalination plant" Patent granted as GB 2427249.

2 Courtney, W. A., "Improved saturated vapour driven turbine system" Patent granted as GB2459326

3 Courtney, W. A., "Phase change turbine incorporating carrier fluid" PCT/GB2011/000936

4 Courtney, W. A., 4 "Hybrid heat engine" Patent Application GB1116309.

5 Courtney, W.A. "A heat engine inside a mechanical engine" Patent Application GB 1418029.3 .

Appendix 2

A correction term for Bernoulli's equation

Why the link between this correction and research integrity is important

The need for this correction term was identified by Courtney in the 1960's but the opportunity to provide the experimental evidence only became available when the TSB granted funding for work to be done at Lancaster University.

Daniel Bernoulli revealed his equation in 1738.
[https://en.wikipedia.org/wiki/Bernoulli's_principle.]

Publishing the correction term and supporting evidence in a journal paper would have been another small triumph for British science. In particular, it would have provided aspiring young British scientists with hope that they too could still make interesting discoveries in apparently established and very mature science.

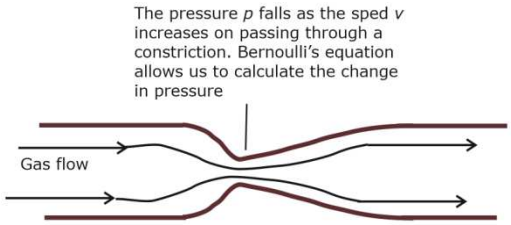
Above all, it would have provided a good example of the importance of continually challenging established scientific thinking.

Here are some notes to give you a flavour of what the equation and correction looks like.

To access the full explanation you will need to read our 2011 end of project report for the TSB. (TSB Project Number: 130037.)
I can supply a copy if required.

(i) The Bernoulli equation in its 1738 form.

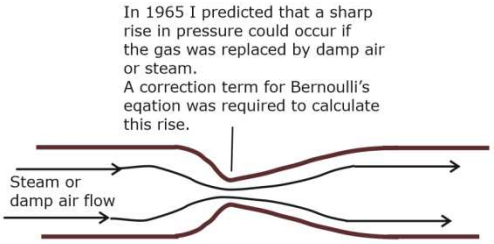
Engineers use this equation to calculate the changes in pressure that occur when the speed of a gas increases as it passes through a constriction in a pipe.



$$p + 1/2\rho v^2 + \rho g h = \text{A constant}$$

(ii) The 1965 Bernoulli equation with my correction term ($- dQ_L/dV$) added.

This correction term is needed to calculate the sudden rise in pressure that can occur when steam or damp air passes through a narrow gap.



$$p + 1/2\rho v^2 + \rho gh - dQ_L/dV = \text{A constant}$$

According to the literature search carried out at Lancaster University, the new term dQ_L/dV has never been described in the scientific literature.

(iii) The evidence from 1937 research at Oxford University

The Oxford researchers were concerned with the damage to steam turbine blades that sometimes occurs when droplets of water spontaneously condense out. They were not focused on Bernoulli's equation and their paper makes no reference to it.

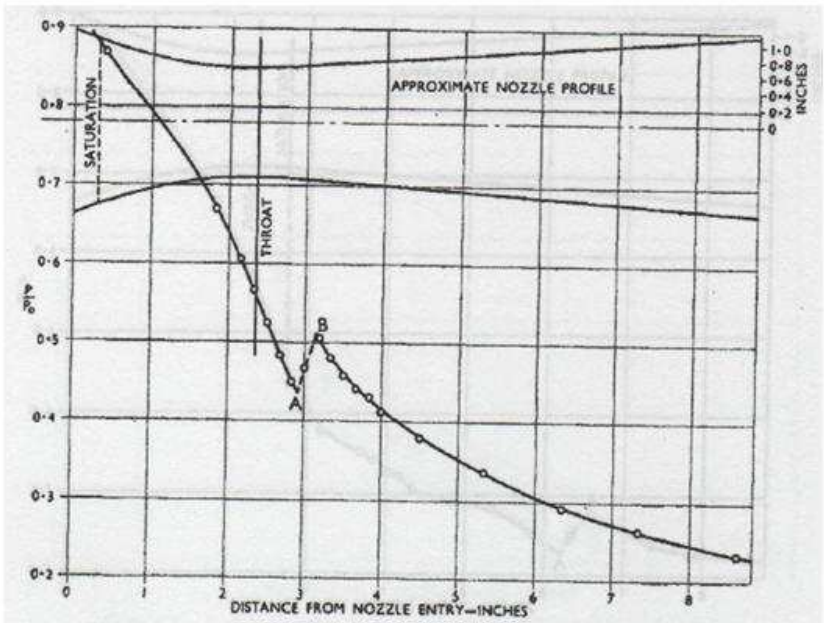


Fig. 10. Axial Pressure Distribution (Test No. 49)

P_o, 20·88 lb. per sq. in. abs.; T_o, 245·7 deg. F.

[A. M. Binnie and M. J. Woods, Oxford University, The pressure distribution in a convergent-divergent steam nozzle. Proc. Inst. Mech. Engrs. 138 (1937), p229-266.]

Binnie and Woods provided some experimental evidence in favour of my correction. But their work needed to be supplemented with additional data collected at lower flow speeds.
Fortunately (from my perspective) their paper did not link the results to Bernoulli's equation. So the opportunity to publish an original paper that caught the attention of scientists and engineers remained.

This opportunity was denied, thanks to the cover-up and a lack of research integrity at Lancaster University.[11]

Management level research integrity failure
The Head of Engineering at Lancaster University was presented with Binie's evidence that we were tantalisingly close to obtaining proof that a standard textbook equation that had been used by engineers for over two hundred years required a correction.

In spite of this, he refused a request from the TSB Moderating Officer that we be granted two weeks extra laboratory time to obtain additional evidence.

Appendix 3

The cowlings on these buildings are a modern application of a very old Middle Eastern technology for pumping hot air out of buildings. We have taken this idea one stage further; using this heat extracted from the environment to provide fuel for a power generator.

[11] To ensure that credit for discovering this correction to Bernoulli's equation was not entirely erased from the public record, it was written down for posterity in patent GB2459326, "Improved saturated vapour driven turbine system", Courtney, W. A. '