



An Occasional Newsletter from Parry People Movers Ltd ,
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CALL TO i.t.'s LIVING LEGENDS TO COMBAT CLIMATE EMERGENCY

Experts in Energy, Construction, Transport and Agro-industry to work
on combining carbon reduction measures with poverty alleviation

Whichever Party forms the UK Government after 12th December, it can be assumed that more money will be assigned to reducing global warming. It seems obvious that the impacts of climate change are being felt everywhere. Already in the UK over £½ billion has been assigned to reopening Beeching closure lines making it possible for more local journeys to be made by rail. This decision will concentrate efforts into making rail more affordable. PPM and its collaborators are well on with the task.

With great foresight, as early as 1970, economist, Dr EF Schumacher was alerting us to threats to the world environment and to civil society resulting from pollution and worklessness.

The reactivation of the Intermediate Technology 'brand' will be one means of focussing minds on quicker, simpler solutions.

On 2nd December a meeting of a group of Schumacher's former associates is being held with officers of Dudley College of Technology to consider a way forward.

TIMELY COLLEGE INTERVENTION STEPS UP THE PACE

Dudley College of Technology, a major West Midlands academic institution, has boosted progress with First of A Kind development of the unique Class 139 flywheel hybrid bogie which opens the way to larger capacity vehicles with 90-120 passenger capacity. The College has generously allocated workshop space to enable practical work to proceed in first rate conditions. See Pages 3, 4 and 5

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CAN THE TASKS OF MITIGATING CLIMATE CHANGE INVOLVE THE POOR?

My now dismembered and late lamented consulting engineering firm, JPA Ltd, had a special understanding of the economic and technical issues which affect poorer countries.

As a boy, I visited and lived for a while in Polynesia, Latin America and the Caribbean. I studied International Relations at University, spent several years in the Merchant Navy and in Britain's Overseas Civil Service and have subsequently absorbed a lifetime of experience working overseas in around 43 different countries. During that time I assembled a network of friends and colleagues with similar views and links with them remain strong.

JPA's directors included Dr TF Wright, the economic historian, David Astor, the former editor of the Observer newspaper, and Malcolm Harper, Professor of Enterprise Development at Cranfield. JPA was aiming for a better world by devising mainly engineering technologies and encouraging the creation of the institutions to apply them.

Purpose? To alleviate poverty, produce stability and counteract the adverse circumstances that provoke populations to migrate en masse.

But what about Capitalism? The quest for enrichment which stimulates creativity, exceptional effort and determination that are the vital ingredients of entrepreneurship have to be blended into the mix. But not in the words of the song:- 'Money makes the World go around'! That's wrong, It is good engineering that makes the World go around and the right application of money that provides the lubrication. Rampant money mania, especially bad money, can gum everything up. Lawyers please take note.

The financial melt down of 2007-8 was an iceberg collision event caused by commercial appetites outweighing common sense. On the Titanic, the unscrupulous behaviour of some crew members auctioning spaces in the too few lifeboats was avarice of the worst kind. Some actions in the post 2008 'global restructuring' she-nanigans were equally unscrupulous. Bad behaviour by banks, legal and financial firms must stop.

The opportunists that circle like sharks in and around troubled businesses may actually have been the brightest and the best coming out of Universities and law schools, but their training should have discouraged actions that only serve the self-serving.

Meanwhile, who is it that are going to work to save the Planet's vulnerable species from extinction? Don't look to the handful of super rich to be able to do very much. The task is going to need a billion willing hands. The billions are the present day poor, working in millions of new small enterprises requiring appropriate equipment and training.

The task is to work intensively on

creating the micro enterprise clusters providing livelihoods while solving climate problems. Some new technologies are now under development. An important role is emerging. This is to coordinate the work of the best qualified specialists to guide the technical programmes.

Three of the technologists who have hands-on experience applying intermediate technologies in developing countries are:-

Prof Peter Fraenkel MBE. Visiting professor at University of Edinburgh, leader in the development of tidal power generation and one of the founders of Gravitricity Ltd.



Peter was heavily engaged in the past in energy projects in Africa

Ian McChesney. Founding director of Energy for Sustainable Development, specialist and innovator in biochar, briquetting, pyrolysis and energy systems generally. Ian, currently working in Ghana, is developing substitutes for charcoal and on restorative additives to put into soils no longer fertile due to poor husbandry.

Drummond Hislop. Founder director of HiETA Technologies, an innovator of sustainable energy systems, with experience in rural power, micro hydro and improved cooking stoves. As designers of heat exchangers, his firm can design equipment to extract heat from exhaust systems so it becomes available in the form of clean, warm air, similarly with compressed air motor exhaust which is cold, a resource for air conditioning.

BOGIE R&D PROJECT GETS TIMELY HELP FROM LOCAL DUDLEY COLLEGE

A New Collaboration

PPM's current rail vehicle programme is fully funded under the First of A Kind scheme which is backed by the Department for Transport and Innovate UK. Dudley College has come forward with crucially important workshop space needed to integrate all of the sub systems into the complete bogie traction frame.

While Dudley College of Technology has a well established role serving the training needs of local firms, mainly SMEs, the College has begun a collaboration with Parry People Movers Ltd, and the ULRPartners organisation. By providing workshop facilities and technical support the College is speeding the progress of the 'First of A Kind' Research and Development programme leading to a self-powered bogie for railcars and trams. This is a departure from established practice.

Building on the arrangement and results being achieved at nearby Stourbridge, the town of Dudley would fulfil its aim to become a focus of light rail development activity. This paper raises the prospect of the College's other engineering resources assisting the development of a new track system. Similarly it could become involved in a different strata of *training* activities from that applicable to heavy rail and LRT Metro, including ULR.

Cooperating with the PPM project may require Dudley College to alter its Business Model. If this were done on a commercial basis and should the institution take a fully fledged role in accommodating and participating in R&D activities, it would need to be factored in.

As PPM's work on the rail bogie has now reached the half way point in terms of time, progress with the current £330,000 project is seen to have been good. Although the external budget covers the build and testing of just one bogie, there is clearly a wish from all sides for the project to go further. The most promising routes to market based on customer needs are:-

Route 1 – Light Railcar Operations on Reopened Branch Lines

The reason why so many railway lines were closed by Dr Beeching after the 1960s was that declining population density resulted in fewer people using the trains. Six decades later longer distance commuting is far more prevalent so, by creating rail connections which provide frequent services, towns and villages can be revitalised.

Route 2 – Lines which will have on street Sections

Towns which lost their railway connections in the 1960s inevitably lost their stations within the town as well. The tracks were turned into roads barring any future access by ordinary trains. This is why developing small, affordable *tramtrain* lines provides the key to accessing these town centres.

Route 3 – Purpose Built Light Rail Lines to serve new Housing

The phenomenon of Transit Oriented Development is familiar to all large developers. When the means exist to use a frequent 'turn-up-and-go' service people will pay more for a house. 10 per cent is not unusual, so for a 1000 house development with units priced at £200,000, the high quality rail connection can add £20 million to the value of the development.

Route 4 – Converting Bus Routes to Tramways

Legislation is making it more difficult to plan bus service routes that penetrate right into the heart of a town because of the environmental impact of conventional rubber tyred traffic. However, LRT and Metro lines in the UK have been so expensive to construct and take so long in planning and execution, that the major transport operators generally feel that, no matter how strong the long term benefit, for them to become a significant sponsor is not advisable. Completion of a fast-to-build demonstration system which passes all safety scrutiny should alter the calculation of the business case and so the Bus Operator may at last become a tramway promoter.

Innovative Track System

In 1994 consulting engineers, JPA Ltd, sought the cooperation of the rail safety regulators, HMRI, and the urban authorities of Birmingham, Barking and Dagenham, Brighton and Swansea. They were keen to see the system comprising 600 mm gauge 'Carpet Track' with 20lb/yard weight of rails as used by narrow gauge lines. The PPM vehicles had under 20 person carrying capacity, but the stakeholders recognised it could be scaled up to commercially-viable operations. They began planning light tramway projects, but then their developments were shelved when Whitehall transport officials announced that they were not going to encourage R&D into tram technology,. Instead government adopted a strategy to enhance the performance and image of 'the humble bus'. Nevertheless work by JPA and PPM on an intermediate, affordable form of rail transport did not stop.



Originally manufactured in 1997, PPM Car 10 fly-wheel-powered Railbus donated by Sustraco Ltd



Wooden mock up of a 90 passenger vehicle with provision for installing bogies at each end



Table top scale model of tramtrain alongside its American predecessor, a PCC streetcar



Computer-generated image of a PPM 90 compact tramtrain in a Midlands town centre



Special framework designed to house the traction driveline for a fully integrated bogie



Cradley Heath welders, Oakham Fabrications, at work building the first prototype bogie frame



3D CAD image of bogie frame with primary and secondary drivelines and energy-storing flywheel



Testbed unit envisaged after completion and on test with new bogie mounted centrally



Specialist engineering transport company's heavy duty forklift truck delivering Car10 to College workshop



Following removal of body from chassis using the workshop's 10t crane., flywheel extracted for overhaul



PPM's locomotive collaborators Clayton Equipment's factory in Burton making 90 ton loco for a steelworks



Skilled coachwork designer Severn Lamb of Alcester with one of a fleet of battery trams for Egypt



Heavy and light trains at Stourbridge Junction - on the right, a PPM Class 139 light railcar



On site workshop at Stourbridge where PMOL fitters carry out all engineering maintenance and repairs



The Severn Valley Railway's Kidderminster station where the bogie testbed will be tested in 2020



Scene in 2005 PPM Car 12, (the Class 139, prototype) tested and used for crew training on the SVR

WIDENING SCOPE FOR PARRY TAPPING INTO WORLD EXPORT MARKETS BUILDING PROJECTS

One of the pleasant tasks for Oliver Glendenning and his team running Parry Building Products Ltd is the quite frequent arrival of messages from customers who bought production plants in previous years. They often contain proud pictures of what they have built using the products made on their Parry machines.



PBP customer in Khartoum has recently sent a picture of a ceiling which is the underside of a lightweight flat roof built with the Parry 'High and Dry' waffle technology.



Oliver Glendenning and Steve Foley in PBP Ltd's factory

Many businesses are doing well and want to order more machines. Current orders now being made up for Zambia, Kenya and Zimbabwe include two that had bought Parry machines previously. Occasionally an echo comes from a distant past (over 30 years ago), an enquiry from Francistown in Botswana which is also interested in PPM.

Over my years of international travel, in a diverse number of cities and countries, it is becoming very clear that affordable, sustainable, low emission rail transport is a priority. PPM Ltd has been operating on the UK rail network over the last ten years, performing at best in class standards and setting a real benchmark for the industry. This would not have been possible had it not been for the patented design of self contained traction bogie utilised on the 139 super-hybrid light rail car.

The key to future success will be transferring this technology to a PPM 90 style tram train which can operate in countries such as Botswana, Malawi, South Africa, Sierra Leone where prospects are active due to either open lines or closed lines which could be reopened. In addition to this, there are many other areas where this type of vehicle can be effective in solving transport and emission challenges. There are considerations related to the gauge variations which will need to be tackled but these are hurdles we would expect to overcome.

PPM's MALAYSIAN COUNTERPARTS POISED TO SUBMIT GOLDEN TRIANGLE TRAMWAY PROPOSAL TO PM's OFFICE



Dato'Haji Nik Ahmad Azmi, PPM's colleague and friend in Kuala Lumpur

Proposed light tramway route in Wawasan Financial District



Richard Pearman, General Manager Europe, Southco Manufacturing

The final element regarding urban development is the need for rapid installation of track. Developers will be looking to install embedded track at a more competitive cost than the current electrified track. The development of a carpet track/waybeam method and the use of fasteners (something which I am very familiar with) is perhaps the final piece of the jigsaw and may really open doors. It appears that there is a great deal of excitement around the possibilities and I for one am delighted to be involved in supporting this new phase for PPM Ltd.

As reported in issue 77 of Parry News, PPM's Malaysian counterparts, D'Tram have been in advanced discussions with the government regarding an invitation to submit proposals for a light tramway network serving the City of Kuala Lumpur.

In the last few days PPM has been sent copies of the draft submission to the Prime Minister's office .

THE BACKDROP TO THE PPM 2020 BUSINESS PLAN

- Conditions in cities in many parts of the tropics threaten the stability and quality of life of inhabitants. Civil disturbances are occurring and people with sufficient means are seeking a better life elsewhere.
- Citizens are objecting angrily to the pollution, in part due to road traffic. Climate change seems to be causing already hot tropical temperatures to rise still further.
- Cities in the West have been able to introduce LRT/metro systems but they cover only a limited number of routes leaving most districts and smaller towns without any prospect of rail-based transit. Too expensive!
- PPM 's pathfinding system in Stourbridge was a radical departure from conventional practice and so has been subjected to detailed scrutiny, but is approaching its eleventh year of 7 day a week service. It is now treated as having provided convincing evidence of reliability, cost efficiency and passenger approval.
- Having held back for a long period of time, the main national R&D grant providers have made available the first tranches of money. More is indicated.
- PPM is earning the attention and respect of serious customers and its design and development work is going well,. It is leading to provision of a 'lower strata' of railway and tramway operation ('Intermediate Rail') at far less cost than conventional expectations.
- During the course of fabricating the traction frame and procuring the parts of the new type of railcar bogie it has been possible to firm up estimates of how much, say a 90 passenger railcar will cost to put on the

HOW THE INTRODUCTION OF CARPET TRACK WITH TWO WAYBEAM EMBEDDED RAILS WILL SPEED UP THE IMPLEMENTING OF TRAMWAYS.



Centenary Square, Birmingham City Centre Nov 1993. PPM Car 6 providing short demonstration rides for visitors along 100 metres of Carpet track. The tramway was installed in less than a week.

During 1993 and 4, consulting engineers, JPM Parry & Associates, installed carpet track light tramways at the request of the authorities in Birmingham, Barking & Dagenham, Brighton and Swansea. The track was laid like a carpet on the surface of the road.



Now being developed, an evolved form of carpet track with a pair of normal weight rails inserted in pairs into the upper surface of the road.



The design concept comprises a 'u' shaped sheet metal channel which houses the running rail surrounded by packing materials based on railway level crossing practice.



market. Indications are nearer to the cost of a bus than a 'super tram' as supplied to the six new urban cities in Britain. But this level of saving is insignificant compared with the massive cost savings which will be made if the running rails do not have to be electrified and the tramway just inserted in the top layer of the road.

Affordable rail within reach at last!

INTERMEDIATE RAIL MODE

Secondary network of well connected non interoperating lines running on less stringent rules than those needed for faster heavier trains. Rolling stock configured differently from the general LRT convention of long multi-segmented articulated vehicles. Returning instead to vehicles that are dimensionally more similar to buses.

INTERMEDIATE TECHNOLOGY CREATING NEW JOBS WHICH WILL 'GREEN' THE PLANET

Poor But Not Hopeless

The World has much to learn from the inhabitants of slums and shanty settlements about how to live within one's means. While the circumstances are assumed to be totally squalid, many of the residents work in factories and offices and, of necessity, have to reside in low standard 'informal sector' accommodation. They somehow arrive at work each day clean, healthy and smartly attired. Most notably, the children who attend school are often indistinguishable from ones that come from permanent housing areas.

Another surprising feature of shanty settlements is that most are hives of industry with businesses such as hair dressing, car and bicycle repairs, laundries, tailoring, and the stock rooms of market traders. In Bangladesh some slum dwellers are masters of recycling and though picking over the mountains of urban refuse appears to be the depth of desperation, after some deft attention, footwear, crockery and toys beautifully crafted from old tin cans re-enter the economy having once been thrown away. Shame on you, the throwaway society!

Kisawere Street

A past president of Tanzania, Julius Nyerere 'Father of the People' was no friend of Capitalism. He died in 1999. Early on in his tenure however, he instituted an extraordinary project in Kisawere Street in Dar es Salaam. A large workshop facility was provided with multiple plots and booths where small entrepreneurs began making everything from buckets to roof tiles. A central support unit

assisted the businesses buy raw materials such as tin sheet or cement. This also advised on marketing etc.

Green Energy Industries

Where it comes to combating climate change, the most valuable businesses that small entrepreneurs from the shanty towns might go into will be in harvesting and storing energy especially from the plentiful tropical sunshine.

Instead of using batteries which are expensive and have limited life expectancy, a product as simple as hot water in insulated tanks could be sold to customers for washing clothes or bathing.



Storing solar energy by gravity

The sun's energy can also be used to make ice by compressing air which can be pumped into storage facilities using below ground pressure tanks designed and built using reinforced concrete. Air compressed by solar energy during daytime can later generate electricity when run through an air motor. The exhaust air which expands while running motors is extremely cold and, as such, is a source for air conditioning which can be sold, as can ice cubes.

Not just relying on compressed air as a solar energy store, another method now under development by an Edinburgh firm led by Prof Peter Fraenkel is 'Gravitricity'.



Small scale roof tile entrepreneurs using intermediate technology

A massive weight is winched up on cables using solar-generated electricity at times when plenty of this is available and then itself generates electricity when the weight is lowered down again!

Brilliant ideas are a waste of space unless they can become solutions. A 6 sided Rubic Cube is described by Ian McChesney -

1. sourcing the material, 2. obtaining the machine or tools, 3. finding access to the market, 4. finding finance, 5. rules and regulations, 6. the enterprise/administration holding things together.

The new intermediate technology ltd entity hopes for close involvement from the College in Dudley using external funding support to develop and demonstrate concepts such as Carpet/Waybeam track and green energy micro-industries, marketing energy in the form of electricity, heat and cold, combustible gases and solids such as charcoal briquettes, fertilisers and other soil improvers.

Hot and cold water and the means of transporting and distributing these would also help to switch communities to using sustainable energy in place of fossil fuels.

