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An Occasional Newsletter from Parry People Movers Ltd,  
Intermediate Technology Workshops Ltd, Parry Building  
Products Ltd and Pre-Metro Operations Ltd

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## NEW MAYOR: LONDON'S AIR QUALITY PROBLEM CANNOT BE IGNORED

### Mayor Sadiq Khan Sets Out His Priorities to Include Affordable Trams

Referring to the relevant words in Sadiq Khan's political Manifesto that won him election as Mayor of London, we read the commitment 'to be a leader in low carbon innovation' and 'to clean up our dangerously

polluted air'. For example he intends to pedestrianise shopping streets but that would not necessarily exclude the running of trams. He intends to take on the strategic Chairmanship of Transport for London. Mayor Khan's Manifesto speaks



London's Regent Street photographed in May 2016. The buses are of the hybrid diesel/battery variety, the taxi has a diesel engine. The air of the street could hardly be described as 'fresh'.

against 'vanity projects' even those relating to buses, but plans to extend the use of light rail and trams while, at the same time, emphasising 'affordability'. All these can be seen as clear pointers to how PPM technology can contribute to London's future plans.

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Parry People Movers' provisional suggestion for urban transit in Central London. Everyone is familiar with double deck buses which all visitors will expect to see, but PPM can adapt its Class 139 railcar design to create a clean hybrid double deck tramcar equally popular.

## Mood Change?

The existence of life depends utterly on the energy of flywheels. We dwell on one. Without the benign effects of Planet Earth continuing to spin, warming and cooling its surface, creating tides and weather, there would be no life, no 'us'.

Evolution of the human species on the reliably-spinning planet led to industriousness. Practical people such as tool makers and builders of shelters, food stores and bridges, began to change mere 'animal' existence into a prosperous society by enhancing human productivity. Quite soon afterwards, a few especially astute individuals introduced a form of 'counter-industriousness' to benefit just themselves, applying superstition and fear to persuade gullible folk to provide them with incomes without work. These were the soothsayers and witchdoctors. Even now, deep in the forests of New Guinea, the successful ones still don't have to engage in much toil. In contemporary Britain, counter-industrious individuals are mainly those that are cleverest with money, or see the opportunity through gambling or other forms of addiction to get less astute people to reliably part with their livelihoods.

As with soothsayers and witchdoctors, some 'c-i' specialists command income by creating artificial barriers, installing gatekeepers, speaking in obscure languages or casting spells. Amazingly, those that have accumulated the most wealth for the least effort have tended to be the most admired. A true elite.

But is there a perception that the mood is changing. Eliteness does not always generate affection.

## On Light Bulbs

Academic education is a good thing, but keep in mind that there can be too much of a good thing. Changing a light bulb is said to be a challenge for Islington intellectuals. With the benefit of education, a solution can be found. Bring in a specialist to undertake a Method Study with full Risk Assessment, put in place the appropriate training and insurance - then carry out the task.

## Let's Do It!

A change of mood in national and local politics sends alarm signals. The enthusiastic reception of UKIP's Battle Bus has been a message to the main Parties. 'Don't disregard the industrial backbone of the British nation. We don't all spend all our waking hours with eyes fixed on a

computer screen studying the internet and looking for income without effort. It may work for some of the time, but not for long.

## Elite Syncopations

To crave for status and recognition is only to be expected in a society which has lost touch with practical things. If the troubled light bulb changers assess the Lessons Learned they will realise that putting in the light bulb took 20 seconds but the preparations, 2 days. The analogy to recognise is well

known by yacht owners. Barnacles accumulate on a vessel's hull until it is perceptibly slower through the water. It could be that by trying to do the right thing in education and training we have made it too difficult to get anything done. Faced with the actual 'light bulb' challenge the best solution may not be to engage experts who make money by elaborating the process, but to find someone who has changed a light bulb before! By recognising the difference between information and *knowledge* the organisations with problems to solve should turn for guidance to those that know what they are doing.

## SANDWELL'S NEW LEADER TAKES A LOOK AT PRE-METRO OPERATIONS AND PPM

### Discussions During Visit Consider the Alternative Transport Modes

On June 2nd Cllr Steve Eling, Sandwell Council's new leader visited Stourbridge Light Rail service which is now in its 7th year of operation and saw for himself the technical and popular success that has been achieved by local Black Country firms. He noted the lack of unnecessary complexity and very low capital and operating cost compared with the fully electrified form of LRT recently installed in Nottingham, Edinburgh and Birmingham.

He was well aware that an alternative approach to developing Light Rail services to run on old heavy rail infrastructure in South Yorkshire is turning out to be far from straightforward. The trial project which was initiated about the same time as the Stourbridge exercise has still not entered service and may not do for at least another year. Meanwhile PMOL, the operator of the Stourbridge Rail Shuttle is able to function as a viable business with a strong cash flow, the *creator* of the technology has not had benefit

of follow up orders or grant finance to help it progress development of future versions of the successful Class 139 railcars. There has been some loss of momentum in aspects of the work which depends on fresh R&D funding. There are also reputational issues. Statements have been made implying that progress in developing innovative forms of light rail has been slow due to a 'lack of supply chain to support the initiatives' and 'impression that such technology is unproven and risky'. Clearly untrue from the point of view of PMOL which has nothing but praise for the support given to its Stourbridge service by its able and willing supply chain. With years of safe and reliable service and the railcars passing annual inspections without adverse comments, the evidence is that the risks are adequately managed and the technology well proven. The time is ripe to give it more solid backing.

Following the June 2nd visit to the Stourbridge line, including the maintenance depot, Cllr Eling came to Cradley Heath for informal discussions concerning future plans

Contact from the Council has confirmed that a further meeting is to take place before the end of June with economic development officials to discuss the proposed establishment of an Intermediate Technology Centre in Cradley Heath.



Cllr Steve Eling (on the left) leader of Sandwell Metropolitan Borough Council pauses for a photograph with PPMs Chairman John Parry

# LIGHT RAIL PARTNERS LTD - **GUIDANCE FROM GENUINE 'DOERS'**

## Providing Specialist Advice to a Growing Local Public Transport Sector which is Changing Rapidly in the Quest for Affordability and Environmental Responsibility

### Overview

One of the most widely held assumptions of the post WWII era (and the most mistaken) was that travel to work by local rail would be phased out and people would make this and most other journeys by private car.

Things have turned out differently. Transport planners in Britain and many other countries are struggling to create the means to cope with the growth of passenger numbers wishing to use existing local railways. Measures such as operating longer and more frequent trains can create big increases in capacity but to have more stopping places reduces the average speed and reduces capacity. Because a high proportion of the passengers arrive by car which they need to park, facilities are having to be built either multi-storey, costing several million pounds or consuming acres of ground space causing passengers to have to walk a long distance to reach the train. Local road traffic at peak times, with hundreds of extra car movements in the vicinity of the P+R is like those occurring in town centres



Multi-story station car park: \$15,000 capital cost per parking space



Parking at grade can take up to 10 minutes to walk from furthest point

### Coping with the Unexpected

Reacting to increased demand for travel by rail has been the massive growth of LRT, Light Rapid Transit. The key difference between LRT and heavy rail is less need for full segregation from road corridors and the ability to handle steeper gradients than possible with heavy rail trains. A further benefit from the lighter engineering used is the ability to run at shorter headways. For suburban trains to

run at 10 minute intervals is considered an intensive service. In their heyday on the busy American streetcar systems in St Louis and Boston, 100 passenger streetcars ran with headways of 1-2 minutes between services, as do some Metros.



80 years young, the PCC Streetcar conceived in 1933, the basis for modern LRT. (Corgi model)

### Growing the Twigs

In order to cope with unmanageable volumes of car traffic and over-large car parks in the vicinity of main commuter boarding points, the solution is 'to grow twigs on the branches', in other words to spread the public transport network further into the residential areas through which the main rail lines pass. The agenda resembles the creation of hundreds of new street tram systems at the start of the previous century.

### Strategic Light Rail Links

Affordable light rail technology is expected to become an important part of the transport mix of tropical developing countries of Africa, Asia and Latin America as traffic congestion associated with urban growth becomes an increasing drag on economic progress



Traffic congestion in a West African City

### New Gathering of Knowledge and Experience

Based on the successes including the path-finding operation at Stourbridge a group of firms and individuals have agreed to collaborate under a collective banner of 'Light Rail Partners'. The expertise that is available comes in five categories-Operating Know-how, Track Design and Installation, Railway and Tramway Rolling Stock Engineering, Guidance re Funding and Vehicle Manufacturing.

### Operating Know-how

Rail service planning and operation, training, writing business cases and scenarios, applying the expertise of directors and staff of:- PRE METRO OPERATIONS LTD – Licensed train operating company, specialising in local services.



Light replaces Heavy, PMOL expertise crucial developing safe, legal procedures for Stourbridge

### Track Design and Installation

Permanent way, cost estimating and procurement advice, QS services and risk management applying the expertise of Mathew Taylor and his partners in VIADUCT.UK.COM - Combining also the expertise of specialists in new forms of track engineering, to speed construction.

### Railway and Tramway Rolling Stock Engineering

Built up over 20 years culminating with the successful Class 139 railcar and street tram derivatives applying the expertise of Directors of PARRY PEOPLE MOVERS LTD-Principal innovators of small-scale modern light rail technology.



Light railway railcar fleet in service since 2009 over 3.5 million passenger journeys provided up to 2016

### Manufacturing

Long established industrial mining and tunnelling railway specialists, CLAYTON EQUIPMENT LTD have provided assistance to the developers of kinetic energy/hybrid light rail over 2 decades since 1995. Clayton possess all of the facilities and skills needed to integrate light rail vehicles into operational readiness and install and support them in service.

### Guidance - re Funding Partners

Defined commercial skills concerning transport infrastructure transactions Relationships with institutional funders: Debt and Equity project financing available for viable transport infrastructure (ie light rail) Sound understanding of risk/reward ratios for project financing.

# GUIDE TO THE PERPLEXING MIX OF LOCAL TRANSPORT

**A briefing for those who wish to better understand the differences between LRT, Trams, 'Bus Rapid Transit' and Guided Busways.**

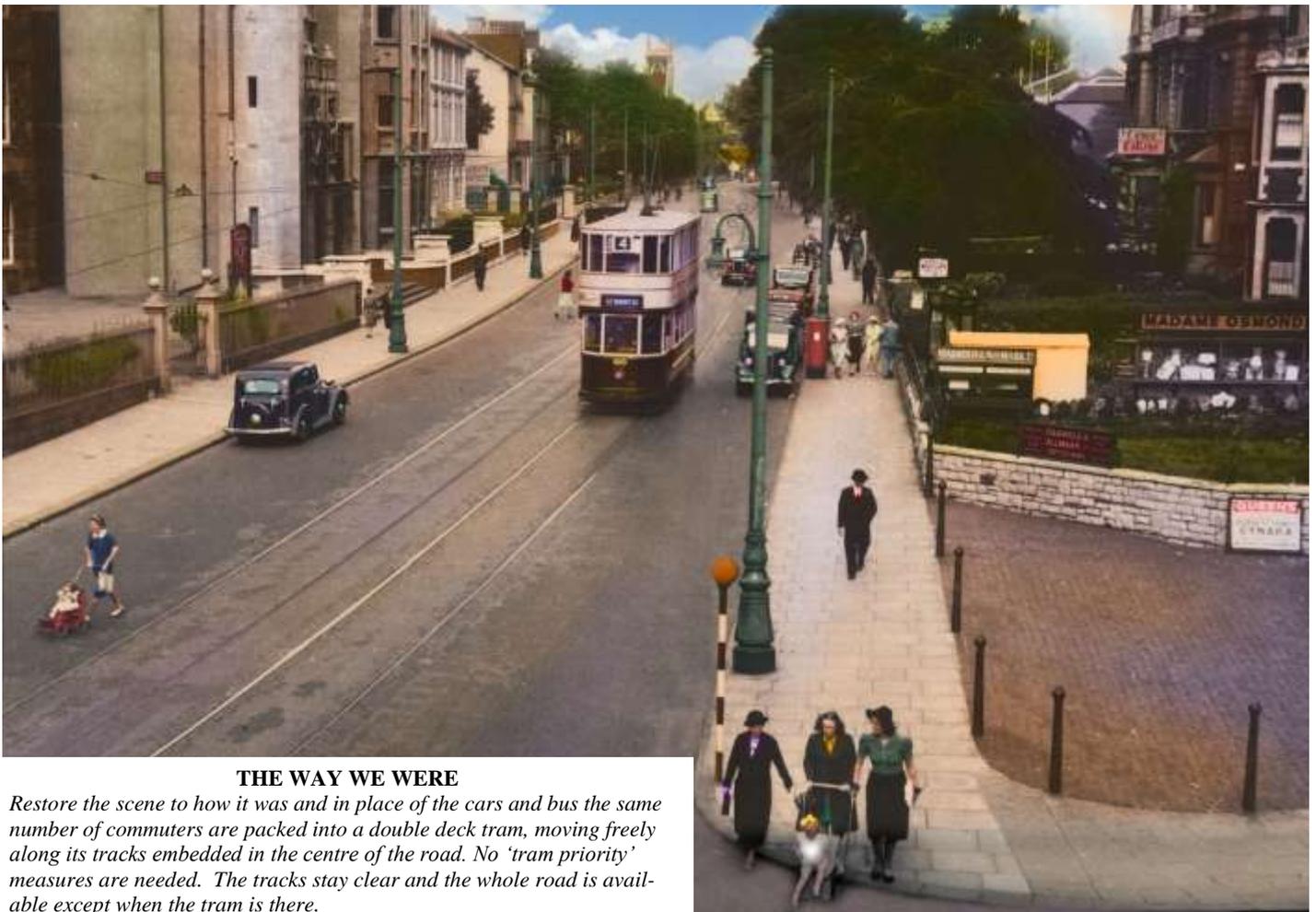


## IMPROVED WORSE

*A 'made up' scene based on an old photograph of Newport Road, Cardiff as if present day bus priority measures were in force. In the foreground state-of-the-art number plate recognition cameras. The original photograph take in 1939 by Mr Henry Priestley is in the National Tramway Museum's collection.*

*Once bus priority is in place the normal road traffic huddles in the middle of the road creating severance for anyone wishing to cross the street, which will also have uncomfortable amount of exhaust fumes in the air.*

*And not just the exhaust fumes! In heavy traffic conditions the surface of the road becomes worn down by the tyres of all the road vehicles, and the tyres get worn by contact with the roads. The fine dust impregnates the air with particulates which are as harmful as exhaust fumes. So what was it like before all the road traffic congestion?  
See below:-*



## THE WAY WE WERE

*Restore the scene to how it was and in place of the cars and bus the same number of commuters are packed into a double deck tram, moving freely along its tracks embedded in the centre of the road. No 'tram priority' measures are needed. The tracks stay clear and the whole road is available except when the tram is there.*

**THERE'S A BUS THAT THINKS IT'S A TRAIN**

There are several examples of former railway alignments have been converted from steel rails into 'guideways' formed from reinforced concrete beams on which specially equipped buses can be steered automatically like trains are by their flanged wheels. The new kerb-guided busways are being operated quite successfully as they provide more predictable journey times by being segregated from the rest of the traffic on all or part of their routes. The buses are nearly standard fleet vehicles but require to be fitted with side acting guide wheels which protrude outside the envelope of the bus when it turns sharply. Meanwhile the guideways are expensive and require more maintenance attention than sleeper track railways.



**A TRAIN THAT THINKS IT'S A TRAM**

Rail vehicles have begun to return to British urban streets in a different form from the double deck unit seen running along Newport Road, Cardiff in 1939- in the picture on the opposite page

Following the typical European model, Light Rapid Transit (LRT) or Super-trams are closer in function to commuter trains but instead of arriving at a station the vehicles disembark their passengers on street and with little room left for other traffic. They are a popular and successful mode but their application is limited due to their disproportionately large size compared with other vehicles.

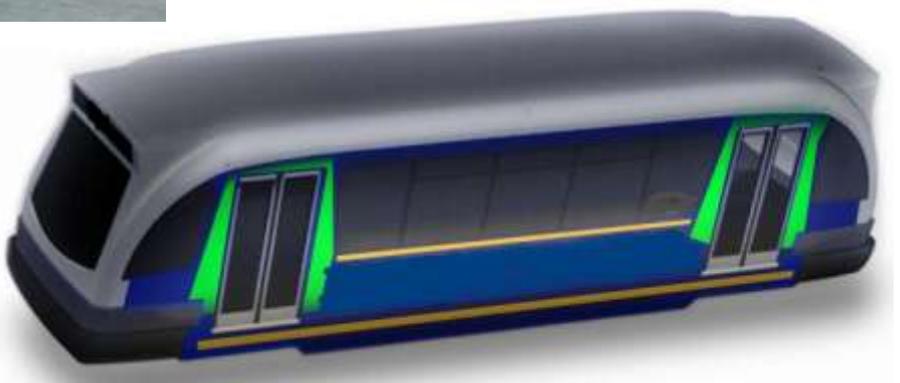


**AND A BUS THAT THINKS IT'S A TRAM**

If a hen can be taught to quack it may think its a duck until it tries to swim. The 'Sprint' Bus Rapid Transit vehicle has covers concealing its rubber tyred wheels making it more tram-like and with an articulated trailer section in tow and elegant styling, the mode aims to reproduce the attractive features of LRT without running on rails. Bus priority measures clearly speed up the journey for bus passengers but can be controversial if they take away road space that was previously available for other traffic. Previous experience with 'bendy-bus' operations in London, York and Swansea revealed disbenefits in the areas of road safety, revenue protection and the difficulties retrieving broken down vehicles.

**WHY NOT SIMPLY A SMALL TRAM?**

The Class 139 railcars that have operated 7 days a week on the West Midlands Rail Network for the last 7 years are already considered by many of their passengers to be 'trams'. This is partially because their passenger accommodation is in length and width the size of a typical road vehicle, single deck bus or traditional tram. The other reason is due to the traction system employed which is quiet and gives out no perceptible exhaust emissions.



It is considered that by reducing the floor height to enable passengers to disembark at low platforms, it will become practicable to produce a vehicle with all of the attributes of a tram and the great advantages of not requiring a continuous supply of traction current through overhead wires. People Mover technology is poised to deliver an affordable form of tram as either a single deck vehicle as shown above or modern double deck as suggested for London on the cover page.

## SNAGS DELAY START OF S.YORKS TRAM-TRAIN DELAY TO YORKSHIRE TRAM TRAIN TRIAL PUTS AT RISK OTHER UK TRAM TRAIN PROJECTS



Already arrived in Yorkshire and 'raring to go' 37m long 66 tonne tram-train built according to established European practice

While some in the UK Transport Industry will say that 'tramtrains' have been running in Manchester for the last 20 years, the DfT, Network Rail, Northern Trains and the South Yorkshire Passenger Transport Executive decided almost 10 years ago that the European version was sufficiently different to warrant the tramtrain mode to be evaluated in a special trial joining part of the rail network to the Supertram system in Sheffield. It now looks as if the trial will not be able to begin on schedule for early 2017 (two years after it was previously hoped to begin). There are several reasons for this involving new works:

- delay in the 750v electrification of the freight railway between Meadowshall and

Rotherham

- building of special section of platform for the tramtrains at Rotherham Central and Parkgate
- adaption of the Supertram network to accommodate the tramtrains' wheel profile.

The problems are bound to cause frustration and some financial setbacks as two of the £4 million pound vehicles have already been delivered and 5 more are in manufacture in Spain. The tram-train concept had generated interest throughout Britain with applications under consideration in Greater Manchester, the West Midlands, Wales and elsewhere in Yorkshire.

## IMPORTANCE OF PRE-SERVICE TRIALS WHEN INTRODUCING NEW RAIL VEHICLES

When PMOL began to promote the conversion of the Stourbridge Town Branch, the Passenger Transport Authority asked for a trial service to be undertaken lasting a year running on Sundays (when the line was available). The lessons learned led to a detailed specification of a full 7 days a week service to operate within the national rail franchising system. The specification not only covered the rolling stock, but the responsibilities and skill training of operating and maintenance staff and the on site depot where the railcars were going to be based. There was also the question of the railway track. This while far from ideal and largely made up of materials dating back many decades should at least provide proper clearance and a safe, if not particularly smooth surface to run on. This pre-trialling has apparently not been the case for the new Yorkshire tram-trains. This is where an organisation such as Light Rail Partners can step in and clear the way to the eventual service implementation. After the one year trial, In 2006, Network Rail commissioned Parry Associates to provide a detailed "Lessons Learned" report which contributed to the all important service specification.

## ASSESSING TRACK CONDITIONS BEFORE SPECIFYING ROLLING STOCK



In 2013 when Parry People Movers were in contention to supply rolling stock to a Turkish customer, it was judged as prudent to make an assessment of the state of the track on which it was proposed to run the transport service. In the photograph, PPM's Turkish born engineering associate Mr Muzapha Turan, who is also proprietor of the West Midlands engineering company WDB Ltd., and PPM's CEO J Parry are viewing the line where the sugar factory branch joins the main railway about 3km from Cumra.

## TDI/SEVERN LAMB RAILCAR FOR TURKEY



TDI-designed bogie railcar under test at the Railway Technical Centre, Long Marston before it was shipped to Cumra in Turkey at the beginning of 2016

The order to supply a railcar to the Turkish customer was eventually placed with the Warwickshire based firms, TDI and S.L Transportation. Adopting the original PPM suggestion for an 18m long, bi-directional single car with 120 passenger capacity, the railcar has a diesel engine. This drives a gen-set with electric power transmission to the bogies, but does not contain hybrid or brake energy-recovery features. It is believed that the railcar has not yet entered passenger service.

# CLAYTON-PPM COLLABORATION TO COME OFF THE BACK BURNER



*The company moved to new premises in Burton upon Trent after a full management buy-out in March 2005*

On 9th May 2013 Clayton Equipment Ltd of Burton-on-Trent and Parry People Movers Ltd of Cradley Heath agreed to work in harness in submitting an offer to supply a 120 passenger Railbus for a large agro-industrial corporation in the Middle East. This was the culmination of many years of close and amicable collaboration dating back to the time when Clayton was part of the Rolls Royce Group of Derby.



*Clayton's proprietor, Steve Gretton and John Parry outside a Customer's Middle East offices in May 2013*

Between mid 2013 and 2016 the collaborative endeavour and agreement to work together has had to stay on the 'back-burner' due to external circumstances affecting both companies.

Clayton has implemented a diversification which has been a great success having identified that urban rail projects were springing up throughout the world with extensive application of tunnel boring machines. The company's vast experience bringing out ore from subterranean deposits was a close fit to the need to extract millions of tonnes of spoil when digging a railway tunnel.

Due to a slow down in activity Clayton had to rapidly diversify away from a mainstream business



*PPM railcar 139000 in 2012 at Clayton's works for removal of its body for engineering examination after a transmission failure during commissioning trials.*

providing traction and materials handling rolling stock to the international mining industry. The company is now ready for further diversification and providing both manufacturing and business promotion support to PPM is a natural step for the immediate future. Steve Gretton has departed for Manila in the Philippines returning to the UK in early July when discussions will resume.

## AFRICAN INTEREST IN LOCAL TRANSPORT SOLUTIONS

### Governments and Private Developers Begin Investigating Light Rail in Order to Reduce Road Traffic-Related Problems in Cities

As clearly predicted as long ago as the 1990s in the report of the Technology Foresight Transport Panel, the growth of road traffic in the 'burgeoning cities of developing countries' would soon begin to impact on both their living environments and economies. Massive road building programmes could make matters worse for urban centres so, belatedly, means need to be devised to improve local journeys in cities and especially the daily commuters. It has now become a matter of international concern as gridlocked traffic generates much extra carbon entering the atmosphere and declining living standards and failing economies are a spur to migration.

In recent months we have learned from our independent 'cousins' at Parry Building Products Ltd of Stourbridge that an increasing proportion of new sales enquiries are expressing interest in 'people mover' systems to link to their new developments. There is credible interest from the Sudan, Sierra Leone, Tanzania and Nigeria.



*The first of several important visits by African transport officials and diplomats to the Stourbridge operation in the summer of 2016. Tanzanian Railway representatives led by CEO Mr Masanja Kungu, on the left, during appraisal visit to the line on June 2nd.*

## THE FLYWHEEL CONTROVERSY

### Blame the Victorians

By deciding to take a fresh look at an engineering component well known to Victorians, the energy-storing steel flywheel, Parry Associates inadvertently set in motion a controversy which has raged ever since:-

- ◇ on one side the advocates of batteries dismissed flywheel energy because of its comparative limitation to the quantity of energy stored
- ◇ on another side flywheel specialists advocating new high performance fibres dismissed steel as too primitive because the future of flywheels was to spin them at incredibly high speeds on the grounds that each doubling of the rpm quadruples the energy stored.

### Why Not 45,000 rpm Flywheels in Trains?

High speed composite flywheels have been around for 2-3 decades and an eminent engineering company has even gone so far as to suggest in an article published in July 2014 that the consortium that they

were part of could provide a “DMU Energy Breakthrough” by installing high speed composite flywheels into a modern diesel train. The main purpose of this would be energy recovery during braking. 18 months later Ricardo’s Chief Engineer for Innovation Prof. Jonathon Wheals gave a lecture on Innovation in Flywheel Technology to the Derby Railway Engineering Society meeting on Feb 16th 2016. While explaining the mathematics of energy recovery which was impressive, he revealed that an aspect of railway operation, the shocks; jerks and jolts were raising real doubts about finding adequate measures to protect the high speed bearings needed.

### It’s Candyfloss Jim - but not As we Know It

A lot of the content of the lecture concerned what happened when a composite flywheel fails or ‘bursts’. The initial image showing candy-floss as sold at fair grounds was reassuring, but less so when he mentioned that the conversion to candy-floss was accompanied by an explosion equivalent to 2kg of nitro-glycerine. The scientists clearly enjoyed the failure testing, looking to purchase war time Anderson shelters but

## INTERMEDIATE TECHNOLOGY NEWS

having to settle for 4 tonnes of sand bags to hide behind instead. The previous installation of composite flywheels in Formula 1 racing cars was just a minor additional risk in an environment where risk was accepted and managed. The Prof. said it must be recognised that train passengers would have less appetite for excitement than Formula 1 drivers, so there was more work to do.

### Nothing Wrong with Steel

PPM Ltd believe that engineering nostalgia gives a warm feeling but pragmatism is more useful. The decision to achieve higher energy content by increasing rotor diameter instead of rpm keeps drivelines turning at Intermediate tech. speeds of 2000-5000rpm which are within conventional limits in transport applications. For the flywheels to be rather heavy is not a problem for railway safety as weight is one of the factors that prevents derailment.



*Amber Kinetics Large Capacity Steel Flywheel provides low cost standby*

PPM Ltd are ‘not alone in the universe’. An American engineering firm, Amber Kinetics of California has recently introduced ‘Longer Duration Lower Cost Flywheels’ which can store and hold energy for up to 4 hours which will be very useful in power generation and distribution backing up power supplies during black-outs and coping with ‘spikes’ in demand. The company claim energy storage capacity of 100kWh using equipment installed in a conventional shipping container.

### PBP’s New Crusher



*Stone and rubble-crushing machine newly-developed by Parry Building Products Ltd has received its first orders. PBP and ITW plan to collaborate on developing a large scale unit.*

## STILL PRESSING ON AFTER ALL THESE YEARS German Brick Expert Discovers Old ‘Associates’ Brick Presses



*Left: Uganda brickmakers working with mud-splattered presses supplied about 25 years ago and still giving good service.*

*Above: CAD drawing of prospective re-engineered design to be marketed by PBP*

In early May, our independent cousins, Parry Building Products Ltd (PBP) of Gainsborough Trading Estate, Stourbridge contacted ITW in Cradley Heath following enquiries from Gerhard Mershmeyer, a leading expert in small scale brick technology who worked on projects with the original Parry Associates firm in the 1980s and 90s. He had recently visited a project in Uganda to which his German agency had procured some brick presses of an old Parry design which worked with typical Ugandan valley bottom clays which are a quite plastic variety: In the meantime the brick producers had obtained

and tried other brick machinery, none of which had proved to be satisfactory. But there, pressing on, making good bricks were the Parry Type ‘E’s which the operators swore by. ‘Associates’ had discontinued supplying this press more than 20 years ago, promoting instead machines which could work with stiffer (less plastic clays). It has been agreed with PBP that some work should be done to revive the old model as the original machines have proved their worth.