



FEATURE



# THE CUTTING EDGE OF TACKLING CLIMATE CHANGE

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Peter Cheney is a thermal engineer and shop steward at Astrium where earth-observing satellites are built that help in the battle against the biggest threat the world has ever faced: climate change.

Photo: Andrew Wiard





Satellite engineers at Astrium are developing new technologies that will assist in protecting the environment. Their union, Unite, helps Astrium stay at the cutting edge of technology by fighting for better pay and conditions, enabling the company to recruit and train the best people. →



The blanket is gold-coloured and smooth to the touch. Look closer, and you can see the flimsy layers beneath the shiny surface. It looks as if it's been discarded by one of the Wise Men in a school nativity play, but this material is destined for better things. The "blanket" is a sheet of aluminium coated in Kapton, a plastic film designed to be stable at a wide range of temperatures; it's a substance used in space as the protective coating of satellite modules.

I'm at the UK site of Astrium, one of the most advanced companies in the space industry. From the unprepossessing surroundings of Stevenage in Hertfordshire, Astrium's UK plant designs and builds satellites and vehicles destined for outer space.

The plant has long been at the cutting edge of the aerospace industry. Perhaps Astrium's most famous project was Beagle 2, part of the European Space Agency's first (and ultimately unsuccessful) Mars mission. But the Beagle 2 project is just a fraction of the exciting work carried out at the plant.

Right now, Astrium's engineers are constructing the Gaia spacecraft, an unmanned craft set to launch in 2012. Its mission is to map a billion stars, using the most powerful telescope ever created. Gaia's equipment is so sensitive that if the craft was on the moon, it could measure the thumbnail of a person standing on Earth.

Astrium has also been chosen by the European Space Agency (ESA) as prime contractor for one of the most ambitious space projects ever undertaken: the ongoing construction and assembly of the International Space Station, which includes an orbital laboratory for scientists to carry out cutting-edge experiments in a low-gravity environment.

## A GLOBAL VIEW

But it's when the focus returns to our own planet that things get really interesting. The Earth-observing satellites built by Astrium are helping with the battle against the biggest threat the world has ever faced: climate change. Peter Cheney, thermal engineer and shop steward, explains why weather satellites are essential for monitoring climate change: "To combat global change, you need to have a global view, and you can't have a global view from the ground."

Currently that global view is given to us by ENVISAT, a satellite launched as part of Europe's biggest and most complex Earth observation mission to date. "It's about the size of a bus, a single-decker bus," says Peter. ENVISAT

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**Peter Cheney, thermal engineer and shop steward**

orbits the earth every two hours and returns high-quality data on ten different aspects of environmental change including wave height, wind speed and ozone layer thickness. When the European Space Agency was planning ENVISAT, it chose Astrium UK for the most crucial part: creating all the instruments for measuring the Earth's environment and the technology for sending that data back to Earth. (The work was done at its now-defunct Bristol plant.) Astrium's French and German sites were also heavily involved.

Scientists agree that the Earth's temperature risks hitting a "tipping point" where climate change becomes unstoppable. Where they disagree is how soon we'll reach it and whether or not it's already too late. Accurate measurements of global climate change indicators – sea temperatures, wind speeds, polar ice thickness and so on – are vital for feeding into computer models and helping scientists to evaluate the threat. But the potential for satellites to help us cope with climate change goes beyond even that.

## ADVANCE WARNING

With climate change comes the increased incidence of hurricanes and other extreme weather events, and weather satellites can give countries the advance warning necessary to prepare for such events. Gordon Larkins, engineer and fellow shop steward, tells me that Thailand signed up to satellite disaster monitoring shortly after the December 2004 tsunami. Satellite technology is also a lifeline after a disaster strikes. Peter explains that extreme weather events often knock out phone lines on the ground. "How do you communicate then? Someone turns up with a box of satellite cellphones." When the immediate emergency is over, satellites still have a role to play, providing the reconstruction planners with important information about the extent and nature of the damage.

Astrium's next weather satellite, AEOLUS, will be even more sophisticated than ENVISAT. Alistair Scott, the plant's communications manager, describes it as "the next generation of everything". The stereoradar used by AEOLUS is so sensitive that it can tell the difference between corn and wheat, between tarmac and concrete. Named after the keeper of winds in classical mythology, AEOLUS specializes in monitoring wind speed and direction throughout the whole height of the Earth's atmosphere.

AEOLUS will also be able to spot human activity that contributes to climate change. It is sensitive enough to pinpoint areas of deforestation, recording evidence of climate-wrecking behaviour by individuals, companies or governments. Peter explains that such fine-grained detail is also very useful for managing resources on a smaller scale, even at the level of telling a farmer that there's something wrong with the crops in one field.

Peter is a Midlander with a gift for translating complex engineering concepts into plain English and making them interesting into the bargain. But he didn't always plan to become an engineer. His first job after leaving school was in the Warwickshire constabulary, but left the police force after a motorcycle accident. After that he briefly studied chemistry. Perhaps it was a fluke of geography that led Peter to a career in engineering: his family home in the East Midlands was near a nuclear power plant, so he took a job at the plant, discovered his flair for engineering and gained professional qualifications there.



Peter Cheney sees the union at Astrium as “guardians of the pension scheme”. When the union fights for better pay and conditions, it’s helping the company to recruit and retain the best people in the industry, he argues.

Photo: Andrew Wiard



His move to his current workplace was a matter of circumstances too. The company that ran the East Midlands plant began discussing a move to the north of England just as Peter and his wife-to-be were planning a wedding and a life together in the south. So Peter took a job at BAE Space & Communications, at the Stevenage site now known as Astrium. 1981 marked the beginning of both his marriage and his career at the plant.

## PROTECTING PENSIONS

He joined TASS, an engineering union that later became part of Unite, shortly after starting the job at Stevenage, but didn't become active in the union until 1994, when BAE sold the plant to GEC Marconi and workers had to leave the BAE pension scheme. He explains: “BAE at the time was sitting on a very large pension surplus, but they initially didn't want to let us have any of it!” The union was instrumental in getting a much better pension settlement from BAE than the one originally proposed. A few years later, BAE bought the Stevenage plant back from Marconi and again the union successfully fought for a better pension deal.

His most important union work so far was done in 2004, when Astrium was sold to EADS (European Aeronautic Defence and Space Company). Once again, the fight was about pensions. The new management planned to replace the existing final salary scheme with a money purchase scheme that would have left older employees worse off: it would have been in the financial interests of most workers over 50 to leave and take their pension payment straight away rather than to stay at the company and defer it.

Peter sees the union at Astrium as “guardians of the pension scheme”. It's one of the few issues that staff would be prepared to strike over. But, thanks to Peter, it didn't come to that.

He carried out negotiations in two ways. As shop steward for the UK plant, he negotiated with management at the site in the traditional fashion. But European law gave him another way of getting the company to listen. Companies of EADS's size and international scope are obliged to establish European Works Councils. These bodies bring together workers' representatives from all the countries the company operates in, so that they can meet with management and give their views on decisions that affect them.

Peter's role as a workers' representative on the Works Council gave him access to EADS senior management in France and a chance to explain the problem with the pension scheme: that a money purchase scheme would be a financial incentive for anybody over 50 to leave sooner rather than later. In other words, the company risked losing a large proportion of its most skilled, experienced employees. Senior management saw Peter's calculations and recognized the strong business case for keeping the existing pension scheme, so they changed their plans. Existing employees would now get a final salary pension scheme that mirrored the one they'd been on before. New employees are on a hybrid scheme, a mixture of final salary and money purchase.

When EADS saw how successful the mirror scheme was at Astrium, they extended the concept to the company's other subsidiaries, such as Airbus and McAlpine Helicopters. Peter believes that bringing a social conscience to bear on business decisions is a big part of European culture, which is why it was possible to get a good, lasting pension deal from French management. But his two-pronged approach, speaking to senior EADS management through the European forum as well as negotiating at the UK plant, must have been a major contributing factor.

## NEGOTIATING SOLUTIONS

The traditional British image of a trade unionist is a militant figure, someone more interested in threats than in dialogue. Peter couldn't be further away from the stereotype. In fact, his union activities brought him to the attention of management in a positive way: his skills at negotiation saw him elected as co-chair to Astrium's European Works Council. He subsequently became co-chair of Astrium's European Committee for Space and gave up technical work in order to concentrate on his committee and union work.

Peter believes that the union has played a role in keeping Astrium at the cutting edge of technology. When the union fights for better pay and conditions, it's helping the company to recruit and retain the best people in the industry. EADS management clearly agrees: he is paid by the company for the time he spends on union work, as are the two other shop stewards at Astrium.

Peter also sees the satellites themselves as tools for negotiation and communication. On a basic level, a satellite is a switchboard in the sky, designed to send information back and forth. At a human level, satellites provide information that could help to solve international arguments. The example Peter gives is of competition for water supplies, a situation likely to get worse as the



Shop steward Peter Cheney speaks with a worker at Astrium.

Photo: Andrew Ward



Earth's climate becomes drier. If people in one area of the world try to steal the water supply from another area by diverting a river, it will be obvious from space what's going on. Peter believes that satellites can help with arbitration of water disputes, because they provide neutral evidence of what's going on. It's just one example of how the technology created at Astrium can help us to deal with the effects of climate change.

But on a national level Peter's union, Unite, struggles to communicate a coherent policy on environmental issues. As a relatively new union, it still doesn't have an official policy on climate change, let alone a strategy for how members can work together to fight it.

Bernie Hamilton, Unite's national officer for the aerospace and shipbuilding sectors, expects the union to finalize its policies on the environment and other issues at its policy conference early next year. Since Amicus and T&G, the two unions which merged to form Unite in 2007, were both very aware of climate change issues, Bernie believes that the new union will come up with a robust policy on tackling climate change.

However, there are signs that the picture may be more complicated than that. Many of the workers represented by Unite are in high-carbon sectors such as vehicle manufacturing, passenger air travel, offshore drilling (for oil and gas) and shipbuilding.

Perhaps the most problematic sector is aviation. Per capita, British people emit more emissions from flying than any other nation in the world. If aviation expansion in the UK is

allowed to continue as predicted, the British government will find it almost impossible to achieve its own targets for cutting emissions. Aviation will gobble up half, perhaps more, of the total emissions allotted to the whole country.

That's why most of the UK's big workers' unions opposed recent plans to build a third runway at London's Heathrow Airport. The unions joined with environmental groups last year to take out an advertisement in *The Times* that called on the government to scrap Heathrow expansion.

Unite was the only British workers' union to come out in support of the Heathrow plans. How does this square with a commitment to protect the environment?

"The fact that the union supported the third runway is not incompatible with fighting climate change," says Bernie. "There is undoubtedly going to be more air travel and there are going to be airports throughout Europe which are aiming to be hub airports, and a hub airport is a big airport. We have to acknowledge the inevitability of increased air travel, or Britain could be left out.

## TECHNOLOGY & INVESTMENT

"The hub could be elsewhere in Europe, or somewhere like Singapore. But if it was in the UK, then the BAs of this world would then be in a position to drive change." Bernie's point is that an international hub airport built in the UK would produce fewer emissions than the same hub anywhere else, because British industry would build and run the airport in a lower-carbon way.

"Companies [in the UK aviation sector] constantly strive to bring new technologies onto the market. They're striving to substantially reduce their emissions, but the green lobby wouldn't recognize that."

So why doesn't Unite speak out for emissions cuts as clearly as it spoke out in favour of aviation expansion? "Unite is already promoting cleaner technology. For example, Unite in Scotland is pushing for carbon capture on coal-fired power stations. There's lots of policy bubbling along but it hasn't been unified into a clear statement."

The most recent research on aviation and climate change suggests that improved technology won't be enough to prevent the damage. Even with optimistic estimates of increased fuel efficiency and better air traffic management, the CO2 emissions from aviation are still set to quadruple by 2050.

But according to Bernie, we already have technology that could go a long way towards cutting emissions; the real problem is a lack of interest and investment. "Rolls-Royce has done work on a more fuel-efficient plane, and it's ready to launch, but they don't know if the market's ready. The new advanced planes are 20-30 per cent more fuel-efficient than current planes, but they won't launch because they fear they'll be a flop in the current climate. Airlines are on their knees just now; they don't have the liquidity [to invest in new solutions]. Any new technology is a new purchase."

Bernie also believes that many workers in the union fail to see any connection between their jobs and climate change. "It should be more linked. As unions we are here to address climate change, just as we're here to fight fascism or show solidarity for workers in Cuba. But the drive has to come from the top."

## COOPERATION ESSENTIAL

Peter and Gordon at Astrium agree that technology can't solve climate change on its own. "The technology exists to do all these wonderful things, but having the technology and using it are different things," says Peter. "At the moment, the majority of technology we need to monitor climate change and fix it is already there, but we need someone to direct it."

They both believe that the key is international cooperation on climate change. "We need an international organization," Gordon says. "But it takes political will and money!"

Peter and Gordon are both committed to their work as shop stewards and fully aware of the need to tackle climate change. But neither of them see an explicit link between their union membership and their commitment to prevent climate change. Nor do they believe that other workers see any such link. Climate change is an increasingly important part of Astrium's work for the European Space Agency, but workers tend to focus on their own job rather than looking at the bigger picture.

Nevertheless, Astrium could be the place where a clear link between union membership and climate change awareness is finally forged. The relationship between union and management represents a step away from old-style British union relations. Rather than having a combative relationship, both sides work together to lobby the government for greater investment in the aerospace industry. "It's very much a partnership between company and union," says Peter. "The idea is that we communicate the same message." This cooperative way of working underpins Astrium's success at the cutting edge of the aerospace industry. Perhaps it also demonstrates a better way to handle industrial relations in the 21st century.

"You've got to cooperate," says Peter, who believes that working together is essential for addressing climate change on a political level, as well as for developing the technologies to monitor and tackle it. Many traditional union qualities are exactly what's needed to fight climate change: solidarity, an international outlook, a proactive approach and a focus on social justice. The joint focus on cooperation and technological excellence seen at Astrium is a model for fighting the world's biggest threat. At the moment, we don't have an effective international strategy for climate change. There's no global agreement on who should be doing what. But one thing we do know: the satellites will continue to do the job they were built for, spinning around the Earth and giving us the information we need to act.



Peter Cheney catches up with Dave Norris a member of Unite who has been working at Astrium for 12 years and is now looking forward to retirement.

Photo: Andrew Ward