

4 Production

"As Toyota's production capacity increases significantly in Europe, we continue to actively demonstrate our commitment to the protection of the environment. Each production plant's Management System fully incorporates the principles of the Toyota Global Earth Charter and practices the values of 'green, clean and lean'. To achieve the best environmental manufacturing performance, we strive to:

- Develop our members as environmental 'champions'
- Achieve zero waste to landfill, promoting a recycling society
- Adopt best practice to minimise the impact of climate change
- Minimise the use of all natural resources
- Promote the use of the most environmentally friendly materials."



Alan Jones
Executive Vice-President
Toyota Motor Europe
& Chairman TMUK

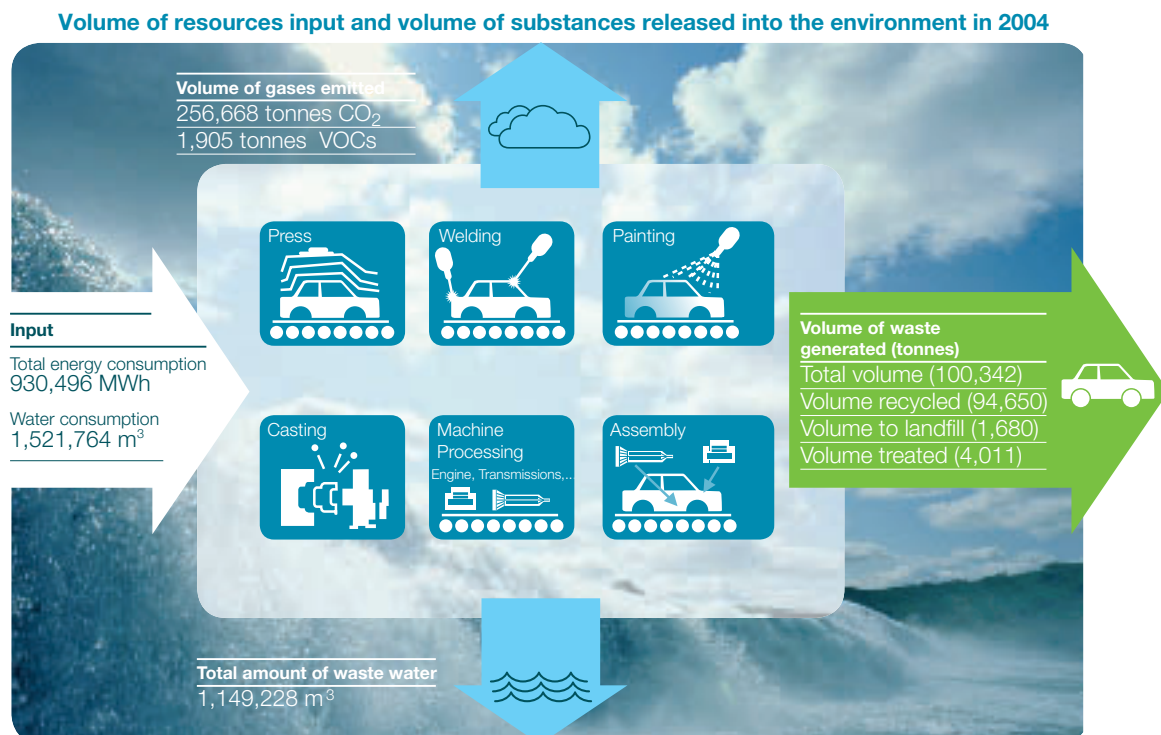
European Production Capacity Increase

"Towards Sustainable Production" means building an operational structure that is less vulnerable to currency fluctuations, and that makes a tangible contribution to the societies in which Toyota does business. Toyota believes it can successfully combine increased output and profitability with measures that actually reduce the impact on the environment. This is reflected in the continued progress towards Toyota's aim of "Zero Emissions" production. In February 2005, a joint-venture plant with PSA Peugeot Citroen launched production of the Toyota Aygo in Kolin, Czech Republic. The Aygo will make up one-third of the plant's total 300,000-unit production capacity. The transmission plant in

Walbrzych, Poland, has been expanded to include new casting and engine lines. This site is now producing engines and transmissions for the AYGO, Yaris, Corolla and Avensis models manufactured in Europe. Toyota has also opened a second engine plant in Jelcz-Laskowice, Poland. The plant has begun to supply 2.0-litre and 2.2-litre diesel engines for the Toyota Corolla, Corolla Verso and Avensis vehicles made in the UK and in Turkey. The plant has a production capacity of 180,000 units/year. During 2004, capacity at the assembly plants in France and the UK was expanded. In total, Toyota now has an annual production capacity in Europe of about 775,000 vehicles.

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Environmental Impact from Production



The manufacturing of cars, engines and transmissions has a potentially significant impact on the environment. Toyota has therefore established a set of key environmental performance

indicators (KPIs) for each of the most significant aspects of production, and this chapter provides a summary of each area in turn.

The six key performance indicators are:

1. Energy usage
2. Water usage
3. VOCs (volatile organic compounds) released from painting operations
4. Reducing waste
5. Degree of compliance with environmental regulations
6. Number of complaints from external (neighbourhood) parties



Environmental Yokoten (best practice sharing) between Toyota's European manufacturing sites.

Annual targets are set by each plant for each key performance indicator, and data is reported on a monthly basis to Toyota's European Head Office via an intranet-based system. This ensures that the progress towards achieving our "Third Environmental Action Plan FY 2001-2005" targets can be closely monitored and evaluated. This year's report highlights the progress made against the 5-year target for each key performance indicator. To support the achievement of these targets, Toyota introduced the Yokoten concept in Europe in

2003. Yokoten is a Japanese word that roughly translates to "best practice sharing". Yokoten was strengthened through the work and regular quarterly meetings of the Production Working Group, which is made up of representatives of all plants and reports directly to Toyota's European top management. With careful attention paid to "Best Practice" at all of Toyota's European production facilities, Yokoten helps to ensure that all plants "level up" to the best performance in the group.



Production line at TMMF.



Energy Usage

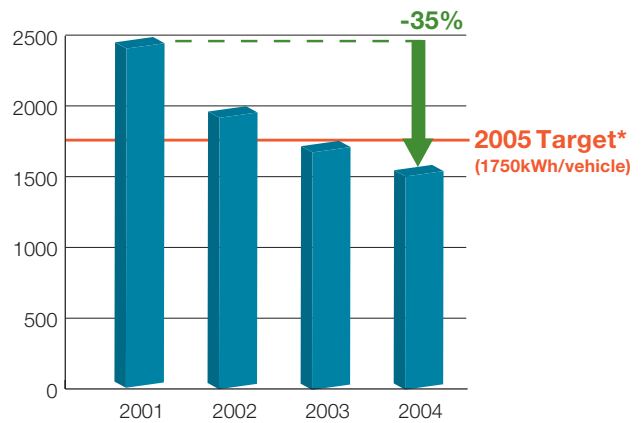
All of Toyota's plants in Europe have made valuable contributions towards achieving their targets by continuously seeking ways to make step-by-step improvements (Kaizen) in electricity and gas usage. As the following graph shows, our focus on reducing energy usage has already succeeded in us achieving our 'Third Environmental Action Plan FY2001-2005' target of 1750 kWh/vehicle, and therefore further reduction targets have been set.

In 2003 and 2004, reductions in compressed air usage and improvements in the efficiency of heating, ventilation and air-conditioning (HVAC) systems were carried out. In general, energy savings and the effect of increased production volumes have resulted in a 35% reduction in energy usage since 2001 - to 1560 kWh/vehicle in 2004.

Consolidated Data

Fiscal year	2001	2002	2003	2004
Number of plants included	4	5	5	5
Data (kWh/unit)	2,424	1,949	1,697	1,560

Energy consumption (kWh/unit)



* The 2005 target was set in 2001 as part of the Environmental Action Plan FY 2001-2005. As the 2005 target has already been achieved, stricter targets have been set for FY 2005.

Energy Use – Best Practice

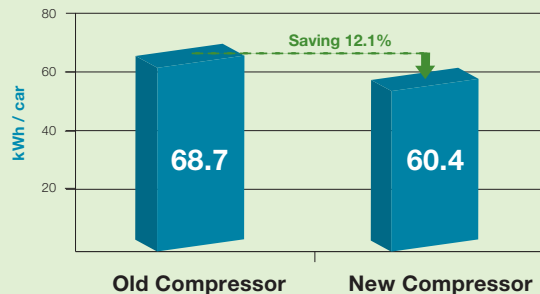
At most Toyota plants, a series of compressors is needed to supply compressed air to hand-tools and machinery. The difference between normal and peak demands

usually means that the last compressor is used intermittently. This often presents an opportunity to improve energy efficiency.

TMMT (Toyota Motor Manufacturing Turkey)

At TMMT, all compressors initially were turbo compressors, which release excess compressed air into the atmosphere in times of low demand. Applying Yokoten (knowledge transfer) based on the experience of Toyota's UK plants, TMMT exchanged the third compressor with a variable-speed-drive compressor, which automatically adjusts the amount of compressed air supplied to meet the current demand, thereby reducing overall energy consumption by 12%.

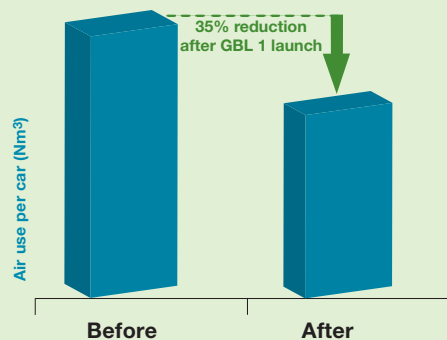
VSD Compressor Application Result



TMUK – Burnaston (Toyota Motor Manufacturing UK)

At the Weld Shop in TMUK, production robots and hand tools were powered by compressed air, which is a convenient way of supplying power to equipment. While compressed air is effective, it is not the most energy efficient method, with 12 times more electricity needed to power the air compressor than is used by electricity powered equipment. Through the installation of a new Global Body Line at TMUK, compressed air usage in the Weld Shop has been reduced by 35%.

Weld Shop compressed Air Use



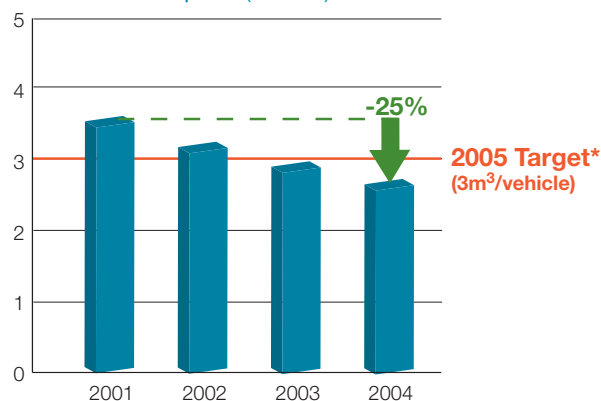
Water Usage

Toyota's continuing efforts in the area of water conservation have yielded a steadily declining per-unit figure for water use. In 2004 water use was reduced to an all-time low of 2.6 m³ / vehicle, which is 13% below our 'Third Environmental Action Plan FY 2001-2005' target. The decrease in water use in 2003 and 2004 was mainly due to improvements in the efficiency of reverse-osmosis units and improved cleaning of surface-treatment dip-tanks. The re-use of wastewater as boiler raw-water feed and the effect of increased production volumes have also contributed to this 25% reduction since 2001.

Consolidated Data

Fiscal year	2001	2002	2003	2004
Number of plants included	4	5	5	5
Data (m ³ /unit)	3.5	3.2	2.9	2.6

Water consumption (m³/unit)



* The 2005 target was set in 2001 as part of the Environmental Action Plan FY 2001-2005. As the 2005 target has already been achieved, stricter targets have been set for FY 2005.

Water Use – Best Practice

At Toyota's vehicle paint shops, a series of dip-tanks is used to coat the car bodies with water-based, anti-corrosive paint. Wastewater is treated through an ion-exchange resin and recycled from one dip-tank to another. To maintain paint quality, the dip-tanks and ion-exchange resin need to be cleaned and refilled from time to time. Lengthening the periods of time between cleanings can lead to significant water savings.

In 2004, Toyota's production facility in France (TMMF) achieved just such savings. By making several modifications to the ramps that guide the car bodies into the dip tank, the concentration of the paint mixture in the tanks could be reduced, which in turn led to a reduction in the required number of cleanings with the ion-exchange resin.

All together, TMMF's conservation measures have contributed to a 40% drop in water consumption since 2001.



VOC (Volatile Organic Compound)

Yokoten (knowledge transfer) once again played an important role when the Production Working Group decided to sponsor a series of investigations by Toyota's global expert on VOC emissions to uncover further means of reducing VOC emissions at the company's European plants. Implementing knowledge gained from experience across the group contributed substantially to the improvements that were realised during 2004.

Volatile organic compounds (VOCs) are released into the air when organic solvents – a constituent of many paints and sealers used in vehicle manufacturing – evaporate. Some VOCs may cause ground level ozone contributing to the creation of urban smog.

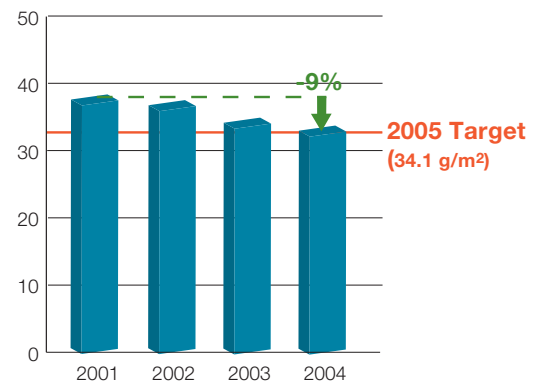
VOC emissions from Toyota's three paint shops in Europe fell to an average of 34.3 g/m² in 2004. The 9% reduction in total VOC emissions since 2001 is mainly due to a reduction of the solvent used for cleaning and improved solvent recycling and recovery. The introduction of robots that use paint cartridges and therefore require less solvent rinsing has also contributed to this reduction and will ensure that the 'Third Environmental Action Plan 2001-2005' of 34.1 g/m² can be achieved in 2005.

Consolidated Data

Fiscal year	2001	2002	2003	2004
Number of plants included	3	3	3	3*
Data (g/m ²)	37.7	37.5	35.6	34.3

* Toyota only operates three paint shops in Europe.

Paint shop VOC emissions (g/m²)



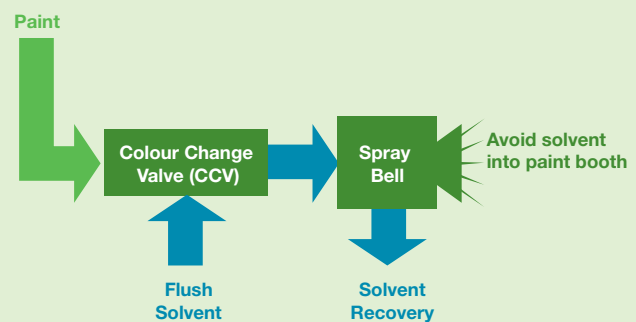
Paint cartridge robots at Toyota's European manufacturing sites.

VOC - Best Practice

At Toyota's paint shops, a series of robots are used to coat the car bodies with the different layers of paint. To maintain the quality of paint finish, the paint guns need to be flushed from time to time – either to change paint colour, or to prevent small particles or “seeds” from forming. Typically, solvent is used to flush the robots, but this leads to the emission of VOCs.

During 2003 and 2004, TMUK worked on optimising the use of solvent in their flush cycles. Previously, solvent was pulsed through the paint gun to clean the spray bell. Between pulses, the solvent was redirected to a recovery tank.

Benefiting from Yokoten (knowledge transfer) based on experience at other Toyota plants, TMUK was able to switch to a less-frequent flush cycle that uses just one short pulse of solvent through the spray bell. This allows more solvent to be redirected to the recovery tank, resulting in a solvent reduction of almost 160 litres per week.



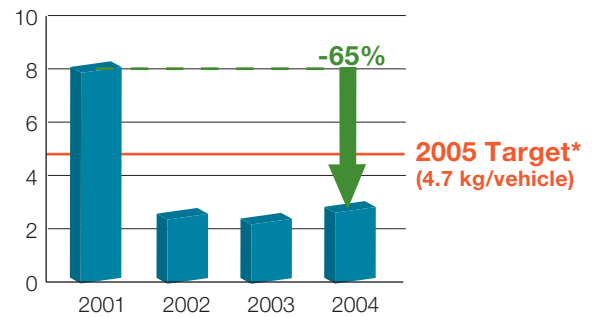
Reducing Waste

Since 2001, Toyota has been successful in reducing its total landfill waste from all European plants by 65%, to 2.8 kg/vehicle in 2004, down from 8.1 kg/vehicle in 2001. This was a direct result of the achievement of the Zero Waste to Landfill* objective at Toyota's plants in France and the UK.

Reducing the amount of waste still further has been challenging. Nevertheless, in 2003 and 2004, enhanced waste segregation and recycling resulted in further reductions. The plant at Walbrzych, Poland, has set a target of Zero Waste to Landfill for FY2005.

This target will be achieved by involving all plant employees in a review and analysis of the wastes currently going to landfill and by the application of the principles of Yokoten and Kaizen (continuous improvement) to reuse or recycle any wastes that cannot be eliminated.

Waste to Landfill (kg/unit)



* The 2005 target was set in 2001 as part of the Environmental Action Plan FY 2001-2005. As the 2005 target has already been achieved, stricter targets have been set for FY 2005.

Consolidated Data

Fiscal year	2001	2002	2003	2004
Number of plants included	4	5	5	5
Data (kg/unit)	8.1	2.5	2.4	2.8

* Zero Waste to Landfill is defined as <3% of waste in the baseline year.



Waste segregation at TMUK

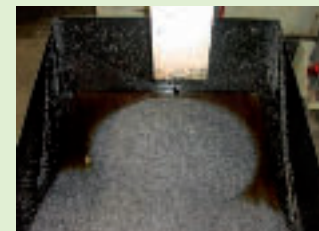
Reduction of Waste - Best Practice

Not only does Toyota strive to reduce the amount of waste going to landfill, but also the total amount of waste. One such example is from TMMP, Toyota's engine and transmission plant in Poland.

Machining plants use a lot of oil and coolant to maintain correct cutting temperatures, prolong tool life and achieve the required surface finish. Toyota's engine and transmission plants, therefore, are continually looking for opportunities to use oil and coolant more efficiently. At TMMP, a large amount of lubricant oil was being lost along with the cut metal chips from the machining lines. This oil could regularly be seen settling in the metal chip collection containers.

TMMP added a metal mesh wall to all collection containers so that the coolant oil could be drained off and reused. This modification currently reduces waste oil by 400 litres per month at TMMP.

Before



After



Initiatives to Reduce Environmental Risk

In order to ensure strict compliance with legal standards Toyota has further enhanced its proactive approach towards minimising the risk of a legal non-compliance.

At each of our European manufacturing facilities, the environmental department has been working closely with production departments to identify where any further improvements can be made in the daily control and operation of significant environmental equipment such as waste water treatment plants or thermal oxidisers, and to reduce the potential risk of soil and groundwater contamination for example from bulk chemical storage and handling.

For each significant piece of environmental equipment, a process control standard has been developed to strengthen the link between the legal standards and the key control parameters that must be controlled to ensure strict legal compliance. For example, internal control limits have been tightened, and the risk of spillage has been reduced by improving the design of secondary containment used for spillage retention.

In support of this activity, training has been provided to each plant, to share best practice and to help enhance their skill and knowledge in managing the risks associated with manufacturing operations.

Internal audits have been undertaken at each of our European manufacturing facilities to follow-up and verify this activity.

In parallel to this activity, the environmental design of new processes has also been improved through the implementation of an audit system that verifies environmental standards have been incorporated into the design of new equipment such as dust collectors or oil containment for new presses.

As a result of these activities, there have been no legal non-compliances (fines, prosecutions or notices of violation) from Toyota's manufacturing operations in Europe in 2004. There have also been no incidences of leakage to soil or groundwater contamination that presented a danger to the environment.



Risk reduction audit at TMMT

Key Environmental Performance Indicators

Key performance indicators have been devised to identify the significant environmental aspects of Toyota's manufacturing operations and to track performance. Consolidated targets for FY2005 have been set and targets for 2010 are now being developed.

Absolute figures have increased due to increased production. However, looking at the per-vehicle data on the previous pages, it is clear that significant improvements in environmental performance continue to be made.

Absolute Emissions	FY2002 ⁽¹⁾	FY 2003	FY 2004
Total CO ₂ (1,000 tonnes) ⁽⁶⁾	203	234	257
Total Waste to Landfill (tonnes)	1,179	1,252	1,680
Total Solvent Emissions (tonnes)	1,368	1,672 ⁽²⁾	1,905
Total Water Usage (1,000 m ³)	1,337	1,496	1,522
Other Indicators			
Total Energy Usage (MWh)	817,943	873,611 ⁽²⁾	930,496
Total Waste (tonnes) ⁽³⁾	11,272	13,464 ⁽²⁾	14,789
Total Number of Complaints	0	2 ⁽⁴⁾	1 ⁽⁵⁾
Legal Compliance			
Total Number of Fines	0	0	0
Total Number of Prosecutions	0	0	0

(1) FY2002 is 12 months at all plants except France, where performance data has been calculated using data from January 2002 to March 2003.

(2) Data has been corrected since publishing the 2004 Update

(3) Excludes scrap steel at all plants and some recycled wastes for which revenue was gained.

(4) One noise complaint and one odour complaint.

(5) One noise complaint was received and fully investigated. This was attributed to a temporary contractor activity. Immediate corrective measures were implemented and confirmed with the complainant. No subsequent complaints have been received.

(6) This includes direct emissions from fuels and indirect emissions from purchased electricity

Toyota's European Manufacturing - Overview



Toyota Motor Manufacturing UK (TMUK) Vehicle Plant

Plant Location: Burnaston, UK
2004 Production: 244,435 units (Corolla Hatchback & Avensis)
Start of Production: 1992
Number of Employees: 4,500
ISO 14001 Certification: 1996



Toyota Motor Manufacturing UK (TMUK) Engine Plant

Plant Location: Deeside, UK
2004 Production: 109,320 engines
Start of Production: 1992
Number of Employees: approx. 859
ISO 14001 Certification: 1996



Toyota Motor Manufacturing Turkey (TMMT)

Plant Location: Nehirkent/Adapazari, Turkey
2004 Production: 134,380 units (Corolla Verso, sedan and station wagon)
Start of Production: 1994
Number of Employees: 3,126
ISO 14001 Certification: 1999



Toyota Motor Manufacturing France (TMMF)

Plant Location: Valenciennes, France
2004 Production: 203,880 units (Yaris)
Start of Production: 2001
Number of Employees: approx. 3,250
ISO 14001 Certification: 2002



Toyota Motor Manufacturing Poland (TMMP)

Plant Location: Walbrzych, Poland
2004 Production: 195,163 gasoline engines and manual transmissions
Start of Production: 2002
Number of Employees: approx. 1,100
ISO 14001 Certification: 2003



Toyota Motor Industries Poland (TMIP)

Plant Location: Jelcz-Laskowice, Poland
Production: diesel engines
Start of Production: 2005
Number of Employees: 330
ISO 14001 Certification: Planned 2006 (no data in this report)



Toyota Peugeot Citroën Automobile Czech (TPCA)

Plant Location: Kolin, Czech Republic
Production: Toyota AYGO, Citroën C1, Peugeot 107
Start of Production: 2005
Number of Employees: approx. 3,000
ISO 14001 Certification: Planned 2005 (no data in this report)