En route

Alberta: the province where the road is king
Since the dawn of time, roads have always shown the way forward. From the Old Testament’s Path of Moses to the Avenue of Cheops depicted by Herodotus, the father of history. From the Persian and Babylonian road linking Ephesus to Susa to the sacred routes of the Greeks in the century of Pericles. From the imperial network of the Roman Empire to France and its infrastructure-minded statesmen, Philippe-Auguste, Colbert, and more.

Since the dawn of time, on every continent, roads have enabled exchange. The exchange of goods. The exchange of ideas. Most of all, roads have become tantamount to liberty. Liberty to leave, liberty to dwell, liberty to return home.

On every continent, year after year, Colas - through its activity in road construction, safety, signing, waterproofing, civil engineering, pipes, building, rails - has played a major role in promoting this source of individual well-being and collective economic prosperity called liberty.

In 2006, Colas’ worldwide road made a brilliant leap forward in every activity. More than 7,000 newcomers joined the Group. Productivity continued to rise, thanks to its teams’ professional know-how, skills and efficiency. The implementation and reinforcement of quality, safety and environmental protection programs helped boost safety indexes and led to a number of new ISO 9001, 14001 and OHSAS 18001 certifications. The research laboratories pursued their work, encouraged by the overwhelming success achieved by the plant-based binder Vegecol, a flagship product for the future and a symbol of the Group’s commitment to the environment.

For 2007, additional progress is expected in every line of business around the world. New units will be added to strengthen the Colas network. New innovations will bear witness to the Group’s creativity.

Together, let us delight in the Group’s progress and harmonious growth. But we must remember to never disallow the rules imposed by the expanding reign of globalization.

Every morning in Africa, a gazelle awakens. It knows that it must run faster than the fastest of all lions if it doesn’t want to be devoured.

Every morning in Africa, a lion awakens. It knows that it must catch the slowest of all gazelles if it doesn’t want to starve to death.

Gazelle or lion: when the sun rises, it’s time to run.

If Colas is to stay on the road forward, everyone must be up and ready.
Following repair and refurbishment to the seafront devastated by tropical storm Galifo, Colas Madagascar has completed the construction of a branch of the Central Bank of Madagascar at Mahajanga, the largest town on the island’s west coast. The unusual contract lasting 17 months and worth €5 million required 200 skilled operators. In addition to the foundations built on 190 piles sunk to a depth of 10 m, the building has extremely ornate architecture. Features include timber clad facades in a Moorish style, 10-meter high colonnades, 9-metric ton cornices and an in-situ poured concrete dome covered in brass that rises 19 meters above the lobby. A beautiful building that is likely to attract a lot of attention.

Mahajanga gets a beautiful building

04 | site-seeing

From the French Caribbean to Thailand, in the UK and in France... a rapid trip around the world in words and pictures to see Colas jobsites, work in progress and finished projects.

The Cirque du Soleil chooses Vegecol

In Quebec, Sintra’s Laval-Laurentides region profit center carried out the Group’s largest-ever (11,750 m²) Vegecol contract in July, surfacing the parking lot of the Cirque du Soleil headquarters in Montreal. Highly aware of the issues of sustainable development and concerned for the visual aspect of the project, the customer chose the surface dressing for its low environmental impact and good appearance. Because it is manufactured at low temperature, greenhouse gas emissions are reduced and being transparent, Vegecol retains the color of the aggregates used in the mix. This makes it possible to obtain a surface that blends in perfectly with the landscape and harmonizes with the surrounding buildings.
Sacer Sud-Est and Colas Rhône-Alpes together on the A49

The Sacer Sud-Est Grenoble agency and the Grenoble profit center of Colas Rhône-Alpes have worked together to replace the asphalt surface on the Voreppe-Tullins stretch of the A49 motorway, which joins Grenoble and Valence. The contracted section (150,000 m²) was carried out in under a month. Work included planing the existing asphalt and production and application of the binder layer and porous asphalt mix. Over 9,000 metric tons of Sacerfalt, 11,000 metric tons of Drainophalt and 500 metric tons of Microlith were applied. The Sacer Sud-Est agency and Clermont-Ferrand agency of Colas Sud-Ouest also contributed by making available to the teams an extra-wide screed and a Franex feeder, respectively. Lastly, Perrier TP took part in the work on the emergency shoulders. The section under option, scheduled for 2007, will cover 41,000 m².

Colas is in the fast lane

The Terlaemen circuit at Zolder in Belgium, a former Formula 1 venue inaugurated in 1963, is well-known to all racing drivers. Recently the Colas Belgium VBG agency undertook a refurbishment program. The layout of the two loops has been entirely redesigned. New curbs and a specially adapted drainage system were installed in a number of locations. Safety of both drivers and spectators has also been considerably improved with the renewal of most of the safety barriers and separators, extending of the sand-traps and construction of a 225 meter long and 6 meter tall reinforced concrete wall. Just before the first race of the season, a new SMA-D2-type surface, which is very popular with racing drivers, was applied to the entire circuit (more than 50,000 m²).

Restoration of a 15th century market

The small town of Couhé-Vézac, in south-central France, has recovered its former glory thanks to teams from the Poitiers profit center of Sacer Atlantique. Six months’ work made it possible to totally refurbish the local heritage site and specifically the market, which dates back to the 15th century. The two contracts – for infrastructure work and surface work in faced limestone – were carried out simultaneously. Ten skilled operators laid a 3,000 m² surface of tiles and cobblestones and 4,000 m² of washed concrete. In terms of scale and quality the site has enhanced the reputation of the Poitiers Sacer Atlantique teams for their expertise in this type of execution. The success of the project was greatly helped by the excellent relations between the different companies involved.

FRANCE  Sacer Sud-Est and Colas Rhône-Alpes together on the A49

BELGIUM  Colas is in the fast lane

FRANCE  Restoration of a 15th century market
Recycold is a cold surface recycling technique and Ecoflex a range of low-temperature asphalt mix. By combining these two environmentally-friendly techniques on the Route 622 contract between the towns of Capens and Puydaniel in southwestern France, the Screg Sud-Ouest Toulouse profit center delivered a first. Teams began by planing 8 cm off the existing roadway. The RAP was then mixed with a regeneration emulsion using a grader, then re-laid with a Midland Paver. By recycling existing materials in place instead of dumping them at a landfill, Recycold reduces fuel consumption and transportation of raw materials (aggregates) and also saves energy. Once the roadway had been regenerated, the teams applied Ecoflex asphalt mix. This is manufactured and applied at low temperature, which has the dual advantage of reducing both energy consumption and greenhouse gas emissions. A win-win contract for environmental protection!

The Thonon-les-Bains bypass is a major project that was started in spring 2005 with the contract for the relocation and installation of a 24-km pipe network, 4 km of which is for the transport of the mineral water which has made the town famous. The Haute-Savoie profit center of Perrier TP, a subsidiary of Colas Rhône-Alpes, won the project. The contract for the bypass itself was awarded to a consortium consisting of Perrier TP and the Annecy profit center of Screg Sud-Est, at the start of February 2006. The Perrier TP excavation agency is working with another company for earthworks, construction of reinforced dirt walls and drainage contracts, and the Haute-Savoie agency is reestablishing the roads in partnership with Screg Sud-Est. The contract forms part of an overall framework project to improve communications in the Chablais area. The target is to provide an infrastructure network suitable for heavy traffic throughout the entire region, and to restore peace and quiet to Thonon-les-Bains. The contract, which involves a hundred people, will be completed in September 2008.
The world’s highest control tower (132 meters), the biggest air terminal under a single roof (563,000 m²) – there is no shortage of superlatives to describe the new Suvarnabhumi International airport in Bangkok. The facility, which has cost over €3 billion, can accommodate up to 45 million passengers. Thai Slurry Seal Company Limited (TSS), a Group Thai subsidiary, had a share in the contract.

Constructing the north and north-west access roads in concrete required 15,000 metric tons of polymer modified binder and 18,700 metric tons of normal asphalt concrete. TSS also surfaced the taxiways with asphalt over a surface of 17,500 m² and built the roads leading to the airport operations building as well as the Thai Airways aircraft hangar. Even though the schedules were very tight, the site was still handed over ahead of the completion date that had been set. TSS can be congratulated on an excellent performance!
FRANCE  Time to hit the green road

It is already enjoyed by walkers and cyclists even though it is not yet completed! Since July, the “green road” that runs alongside the Garonne and the Midi canals has been open to all nature lovers along a 40 km stretch between Agen and Le-Mas-d’Agenais in south-central France. Screg Sud-Ouest and the Agen agency of Colas Sud-Ouest have applied a light-colored wearing course to the old tow-path, a marked improvement over the former strip of muddy grass.

The teams also erected sheet piles and wattle fencing, and pruned trees. Two other stretches are scheduled for 2007, one between the Tarn-et-Garonne Department and Agen, a distance of 33 km, and the other between the river Gironde and Le-Mas-d’Agenais, a distance of 40 km. In Tarn-et-Garonne, teams from Screg Sud-Ouest and Colas Sud-Ouest’s Montauban agencies will carry out the work. They will apply the same surface dressing that was used by their colleagues from Agen.

FRANCE  Versailles: improved traffic

Following a series of improvements involving the creation of 30 kph zones, bike paths, bus lanes, the layout of the Chantiers mixed-development zone and urbanization of the Satory district, the town of Versailles had to redesign its traffic patterns. Sopac, a Somaro subsidiary specialized in traffic expertise, was involved in the project. The first step was to carry out a complete traffic audit involving directional flows, speeds, reasons for journeys, departure/destination surveys, accident studies and evaluation of public transport facilities available. Once the data was collected, a computer model of the traffic was constructed. The council’s various projects were then imported into the model. Sopac was able to suggest a number of ways these could be improved. It is now up to the town council to decide which solutions will be best for the inhabitants of Versailles.

CARIBBEAN  Martinique: Colas on the highway

Colas Martinique and GTC, both Colas subsidiaries in Martinique, are currently working on a major contract for the layout of a highway link located between the Dillon interchange and the Lamentin canal. The project calls for the insertion of a two-way reserved lane for public transport, installation of main networks (electricity, optical fiber, pipe works, etc.) beneath the surface, removal of the current median, application of 80,000 metric tons of asphalt mix and installation of lighting and safety equipment. Work will take place under traffic, according to a complex schedule, and is due to be completed in October 2007. The contract will be an excellent reference for the Colas Martinique subsidiaries, who also are looking at excellent prospects in the areas of road maintenance at the regional, departmental and municipal levels.
The banks of the River Odet, in Quimper, Brittany, are being rapidly eroded. Work has been performed by the Quimper Scred Ouest agency to stabilize them and provide flood defenses. A system of gabions, steel cages filled with material which are piled onto a geotextile membrane, was chosen as the solution. With the help of Suburbaine Châteaulin, a Spac subsidiary, this technique was used to build a retaining wall, curved to follow the line of the riverbank. Throughout the entire contract, teams had to pay particular attention to the surrounding ecosystem. They also took care with the quality of the filler material, in terms of both strength and appearance, because the wall of gabions is in fact visible along its entire length. It was decided that the aggregates used would all come from the same seam of granite to ensure uniform coloration. The final result was the highly successful completion of a contract that required a lot of labor to handle a total of 1,200 m³ of aggregates.

Vegecol by the sea

Perros-Guirec, in northern Brittany, is one of the jewels of the Pink Granite coast. Every year tourists flock to admire the beauty of the coastline with its many unusual rock forms of beautiful pink-orange stone. For the new layout of the Joseph-Le-Bihan promenade, along the Trestraou beach, the town wanted a colored surface dressing that would blend in perfectly with the curiosities made of local granite. Bourgeois-Richard, the local subsidiary of Colas Centre-Ouest, suggested Vegecol. Several test strips were carried out to decide on the most appropriate hue. 290 metric tons of pink-orange Vegecol were then applied by a 10-strong team in record time, as the works had to be completed before the beginning of the summer tourist season.

Quimper: reinforced embankments

The banks of the River Odet, in Quimper, Brittany, are being rapidly eroded. Work has been performed by the Quimper Scred Ouest agency to stabilize them and provide flood defenses. A system of gabions, steel cages filled with material which are piled onto a geotextile membrane, was chosen as the solution. With the help of Suburbaine Châteaulin, a Spac subsidiary, this technique was used to build a retaining wall, curved to follow the line of the riverbank. Throughout the entire contract, teams had to pay particular attention to the surrounding ecosystem. They also took care with the quality of the filler material, in terms of both strength and appearance, because the wall of gabions is in fact visible along its entire length. It was decided that the aggregates used would all come from the same seam of granite to ensure uniform coloration. The final result was the highly successful completion of a contract that required a lot of labor to handle a total of 1,200 m³ of aggregates.
The Certified Sustainable Building process has now been applied to road infrastructures, thanks to the Nord department in Northern France, which introduced the innovation.

Its “sustainable highway” concept was deployed for the first time on Route 76 near the town of Cambrai, through application of environmental alternatives supplied by the Valenciennes profit center of Colas Nord-Picardie. Certified ISO 9001, ISO 14001 and OHSAS 18001 compliant, Colas Nord-Picardie came with the qualifications to support the initiative. Savings were made on all raw materials with the Novafor process for in place recycling of 50,000 m² of base course. The Colbase technique has enabled the use of layers of road base asphalt concrete that are thinner but deliver equal performance. Additionally, 4,000 m² of Vegecol surface dressing were applied. Its low-temperature application reduces CO₂ emissions and its colorable binder helps to differentiate spaces, improving safety for users.

Boulevard Anfa is one of the main streets in Casablanca. It has seen significant property development over the past decade, accompanied by road and urbanization works. La Route Marocaine (LRM) was awarded a contract to refurbish the main roads and create parking areas, and Urbis Signaletique had the task of upgrading the pedestrian zones to European standards. Work lasted six months, with technical support of the Casablanca central laboratory. As traffic on the Boulevard is particularly heavy, work took place principally at night to cause as little disruption as possible to users and make maneuvering easier. The teams also had to work around other contracts being performed at the same time. A total of almost 9,000 m² of mastic asphalt was applied as well as 1,265 m² of resin over Résipoly mastic asphalt. For street furniture, granite and stainless steel benches, lamp standards and sunken spotlights, information kiosks and trees are now to be found the entire length of the street.

The finest boulevard in Casablanca

Route 76, a sustainable highway

The Certified Sustainable Building process has now been applied to road infrastructures, thanks to the Nord department in Northern France, which introduced the innovation. Its “sustainable highway” concept was deployed for the first time on Route 76 near the town of Cambrai, through application of environmental alternatives supplied by the Valenciennes profit center of Colas Nord-Picardie. Certified ISO 9001, ISO 14001 and OHSAS 18001 compliant, Colas Nord-Picardie came with the qualifications to support the initiative. Savings were made on all raw materials with the Novafor process for in place recycling of 50,000 m² of base course. The Colbase technique has enabled the use of layers of road base asphalt concrete that are thinner but deliver equal performance. Additionally, 4,000 m² of Vegecol surface dressing were applied. Its low-temperature application reduces CO₂ emissions and its colorable binder helps to differentiate spaces, improving safety for users.
Heavily used by cross-border workers in the Geneva area, the A40 highway has a lot of traffic all year long. The Somaro Bonneville profit center was selected by ATMB (Autoroutes et Tunnel du Mont-Blanc) for a project to upgrade safety equipment in and around the village of Bossey, near Mount Saleve, in compliance with recent standards. Two months were needed to dismantle all the existing equipment, protect the piers of bridges and install double safety barriers. Work was performed in summer, a time of year when traffic on the highway is lighter. Nonetheless, both passing lanes had to be taken out of service. To minimize disturbance for highway users, six teams – some thirty employees – were involved on the job and working hours were modified to cause the least disruption. A job well done.

FRANCE

Screg IDF/N’s Gennevilliers profit center laid a new Compolastic surface on the Alma Bridge in Paris. In the very heart of historical Paris, this was a project that none of the site team will easily forget. Works were carried out at night at the request of the City of Paris. After the original surface had been planed, 4,500 m² of Compolastic, a flexible but hard-wearing elastomer-modified asphalt concrete, were applied.
Spac gases it up!

In March 2007, the Gaz de France station at Cuvilly, north of Paris, is getting a new natural gas compressor unit that is fully automated and fitted with two 8 MW electric compressors. The new unit will increase the transit and interconnection capacity between the “upper France pipeline”, which transports Norwegian natural gas that comes in at the Dunkerque terminal on the French coast, and the “northern pipeline”, which carries gas coming from Belgium. The Spac Bordeaux agency was awarded the contract in partnership with Sofresid Engineering and is supplying and installing all the pipework elements. It is also carrying out earthworks and civil engineering work, construction, electricity and instrumentation contracts along with networks and landscaping. The execution of this first turnkey construction contract is of major significance to Spac over the next four years Gaz de France intends to launch around ten similar projects to modernize its installations.

Developed by research teams at the Colas Campus for Science and Techniques, 3E asphalt mixes (environmentally friendly and energy efficient) offer a significant decrease in manufacturing and application temperatures. As a result, they deliver notable energy savings and are therefore responsible for reducing greenhouse gas emissions. Working with the Haute-Savoie Department Council and Sétra (the highway department for technical studies), Colas Rhône-Alpes carried out an experimental site on the Route 12 highway at Saint-Pierre-en-Faucigny. The process being tested, 3E “LT” asphalt mix, is similar to a traditional asphalt mix production technique but uses an additive-modified “LT” bitumen binder. Aggregates are dried and heated to roughly 130°C. Conclusions of the experiment: manufacturing and application of asphalt mix at temperatures that are 45°C lower than conventional mixes involve no complications. This is also true for application and compacting. The surface texture characteristics comply with the required specifications and no perceptible odors or emanations arise during application, which is appreciated by the teams. Sétra continues to monitor the test-site characteristics.
Alberta: the province where the road is king

With its buoyant economic profile, the Province of Alberta can afford major spending on road maintenance and construction. This gives Works Alberta the opportunity to boost its business.
By the end of October, autumn has come to the Canadian prairies. There are already several centimeters of snow on the ground and the temperature has been below zero for several days. For Works Alberta, this means that the time for road work is over. “Our season lasts until the end of October,” says Jacques Michel, the president of the subsidiary. “For contracts in progress, we always try to keep to mid-October completion. After that, if the temperature is still okay, it’s a bonus. If not, well whether it’s -5°C or -15°C, it makes no difference to us because once the ground is frozen we cannot perform any surfacing work at all.”

Two major cities
Colas has now been operating in Alberta for nearly thirty years. At the start of the present decade, ColasCanada set up Works Alberta Ltd, with headquarters in Edmonton. The company has four subsidiaries which cover the entire province (Standard General Inc., E Construction Ltd, Wapiti Gravel Suppliers and Alberta Highway Services Ltd), as well as NWT Construction Ltd, whose business is in the Northwest Territories, north of Alberta. Jacques Michel continues: “Being established in the two major cities of Calgary and Edmonton is vital to us. This is where our market share is greatest.” At the present time, Works Alberta is handling approximately 400 contracts including the construction of viaducts in Calgary and Edmonton, roads in Fort McMurray, renovation of the landing strip at the military base in Cold Lake and refurbishment of Route 43, which links Edmonton and Grande Prairie. “Construction of rural and urban roads represents around 85% of our sales. There are other companies working in the same sector, but we are perhaps the only one to be involved in every type of contract,” explains Jacques Michel.

Colossal investment in roads
In 2004, Alberta, currently benefiting from a strongly expanding gas and oil industry, was able to totally reimburse its debts, which ten years ago stood at $23 billion. It is the only one of the ten Canadian provinces and three territories which does not have a budget deficit. The government has injected substantial sums into the development and refurbishment of the road network — a budget of almost $4 billion has been set aside for the next three years. “The state of the roads in Alberta is better than the rest of the country. The province doesn’t hesitate to invest in road infrastructure, as roads play a vital role. It would be hard to invest too much in this area!”
better than the rest of the country. The province doesn’t hesitate to invest in road infrastructure,” says Jacques Michel, adding with irony, “It would be hard to invest too much in this area!” In Alberta roads play a crucial role: cars are vital, on account of the huge distances, the cold and the fact that residential suburbs are far from city centers. Another specific feature that comes with the extreme climate is that the roads are 70 cm thick, with 30 cm of asphalt concrete surfacing and require refurbishment more frequently than usual. The average life of a road does not exceed ten years.

The search for labor

As a result of the high level of investment in the road network, Works Alberta is being awarded an increasing number of contracts and therefore has a pressing need for manpower. “The majority of our jobs are seasonal. Out of the 1,400 employees that we hire in summer, only five hundred are employed with us throughout the rest of the year. If we add to this the fact that there are a huge number of jobs available because of economic growth, the management of human resources has become complicated,” explains Jacques Michel. “We’re not the only people who are in need of personnel. All businesses are in the same situation.” Recruiting people from other provinces therefore became an option. To begin with, the Works Alberta subsidiaries looked to the neighboring provinces of Saskatchewan and British Columbia, then further eastwards to Manitoba, Ontario and Quebec. But today, newly hired labor is increasingly likely to be sourced in the Maritime Provinces – New Brunswick, Nova Scotia, Newfoundland and Labrador or Prince Edward Island – some 5,000 kilometers away from Alberta. “Petroleum exploration companies who are carrying out a lot of work in the region are also recruiting from far off, and the substantial bonuses they offer carry a lot of weight,” points out Jacques Michel. “This means we have to be fairly creative if we are going to attract job applicants. We put the emphasis on the interest of the challenges that await them, on salaries and on the potential for career advancement.”

ECONOMICS

BITUMINOUS SANDS: ALBERTA’S BLACK GOLD

Almost 40% of the population of Fort McMurray is involved, directly or indirectly, in the extraction of bituminous sands. This oil-like resource consisting of grains of sand coated with bitumen, constitutes the world’s second largest petroleum reserve of 180 billion barrels, spread over an area of 140,000 km². The use of bituminous sands was known in antiquity and the Canadian First Nations used them to waterproof their canoes. Rediscovered by the 19th-century colonists, they have been commercially extracted since the end of the 1960s. Although bituminous sands cost five times as much as conventional oil, recent substantial hikes in the price of a barrel are bringing them into greater use. As a result, Alberta is enjoying unprecedented economic growth which is benefiting all businesses in the area.
A promising future

In spite of the chronic labor shortage, future prospects look healthy for Works Alberta, which continues to post strong increases in sales. “We are also looking into projects for growth through acquisition,” remarks Jacques Michel. The company can count on the province’s continuing economic development. In fact, most economists are predicting that Alberta can be expected to maintain its current rate of growth for at least another five or ten years.

Some people change employers a number of times in their career. Others, on the contrary, develop a strong attachment to their company. This is the case for Dale Tillapaugh, equipment manager at Works Alberta. “I started on the bottom rung of the ladder and I climbed it one step at a time,” he says. Before Standard General Inc. was acquired by Works Alberta in 2000, Dale had already spent nearly 20 years in the company as a mechanic, rising to workshop supervisor and then facility superintendent before becoming equipment manager. Today everything that involves equipment used by Works Alberta’s five subsidiaries goes through his hands, or rather before his eyes, through a computerized system that was developed in conjunction with the University of Alberta. Currently, the company numbers 2,000 site vehicles and machines. “You can never have enough!” laughs Dale. “But all the same, we should have enough equipment to get jobs done properly.”

LEN STRYNADKA
GROWING WITH THE COMPANY

Len Strynadka is technical services and materials manager at Works Alberta. His job consists of ensuring that supplies of aggregates keep pace with the requirements of contracts, both ongoing and forthcoming. He joined the Group in 1994 and is delighted to see that his work is valued within the company. “I have always had the feeling that my day-to-day work makes a slight contribution to the growth of the company. In fact, each of us can be said to be growing along with the business,” he states. Based in the Works Alberta headquarters in Edmonton, Len spends almost half his time visiting subsidiaries and giving them the benefit of his expertise. He played a major role in the development of product quality control. “In 1994, quality control is something that was practically non-existent. We didn’t have any material testing labs, but today we have 19 of them, six permanent labs and 13 mobile labs.”
The story of Colas in India began in the early 1990s. Convinced that India, a gigantic country in terms of both geographical size and population, constituted a market with potential for the future, the Group performed numerous market surveys and began the search for a local partner with whom it could develop an industrial business, on the model of what it had already done in other Asian countries.

Astute anticipation

Today, all economic analysts concur in praising the dynamism of the Indian economy. But it has not always been so. For many years, with sluggish growth, political tension with Pakistan, protectionism enforced by the Indian authorities, poverty, etc., India’s social and economic context did not appear very attractive in the eyes of international investors. “In spite of all the country’s macroeconomic difficulties, we were sure that the time was right to invest in the Indian market,” recalls Etienne Le Bouteiller, Technical and Development Director in Colas’ International Division. “On the one hand, the state of the national road network required substantial investments in maintenance and construction; on the other, national companies were not very active on the emulsion and modified bitumen markets. Investigations carried out by Jacques Pastor, the Group’s Asia Manager, led us to see that the Indian government would soon make changes to the market and gradually remove restrictions in order to attract foreign investors.”

Established in India since 1995 through the joint venture Hincol, Colas is today the country’s leader in sales of emulsions and modified bitumen. This is a genuine achievement — few international companies have been so successful at creating an enduring business in India.
These predictions proved to be more than well-founded: in the early 1990s, the Indian government created the National Highways Authority of India, responsible for the development, maintenance, management and operation of the country's highways. Vast road construction projects were launched, many of them part of the “Golden Quadrilateral” program – construction of 5,846 km of express highways linking four of India’s major cities (Delhi, Mumbai*, Chennai** and Kolkata***) – and “North South East West Corridor” program.

The right partner

Hoping to take advantage of the favorable context, Colas set about finding the right partner with whom to establish a joint venture, in accordance with the Group’s strategy in Asia. It found one: the Indian oil company HPCL (Hindustan Petroleum Company Limited). Classed among the world’s hundred leading companies, HPCL owns refineries and a distribution network throughout the country. “The joint venture was set up in a matter of months,” relates Etienne Le Bouteiller. “The two chairmen, HL Zutshi for HPCL and Alain Dupont for Colas, played a vital part. With the conviction that the project was in the interest of the two companies, both men put all their weight into speeding up the process.” By joining forces, both companies could see promising prospects. Colas brought its technical know-how, with the Campus for Science and Techniques and the Equipment Department in particular, while HPCL contributed human resources and its market knowledge. The result was that Hincol (Hindustan Colas Ltd) was established in 1996 as a 50/50 joint venture between HPCL and Colas Asia. The first production unit was inaugurated by the two presidents in April 1996 in Mumbai, the economic capital of India. Seeking to meet the needs of the market, the plant produced a complete range of bituminous binders, including bitumen emulsion, fluxed bitumen and modified bitumen. Such a product offer was previously unheard of in India, either in terms of breadth or product quality. Hincol was assured of rapid growth and was able to establish a highly prominent reputation for itself.

Growing with the Indian market

“The first part of our strategy consisted in ‘popularizing’ the use of bitumen emulsion in road building,” explains YVV Raghava, managing director of Hincol. “Until then, road construction companies used it little, because of the poor quality of products manufactured by the industry.” While collaborating closely with Colas’ Campus for Science and Techniques on the development of high-quality binders, Hincol carried out numerous communications and technical assistance operations targeting the leading road builders. The company’s second phase consisted in concentrating on extending its coverage of the Indian territory and increasing its production capacity. “In such a big country, and in view of the role of the states in construction programs, it was indispensable for Hincol to be present in different regions and to grow with the Indian market,” continues YVV Raghava. After the first facility in Mumbai, Hincol built five new plants in the space of ten years.

Projects large and small

Pictured is a road surface renovation site in Vadodara, in the state of Gujarat.

The Vadodara plant

With an annual capacity of 20,000 metric tons of bitumen emulsion and 50,000 metric tons of modified bitumen, the facility supplies 65% of the local market.

Synergy

The vital importance of technology transfers

“Permanent dialogue and teamwork.” According to the managing director of Hincol, YVV Raghava, this formula is the secret of success. Colas may not have permanent expatriates in India, but contacts between Hincol teams and Colas teams in France and Thailand take place on a daily basis, constituting one of the chief factors responsible for the company’s success and competitiveness. “Technology transfers are organized in three ways,” explains YVV Raghava. “Firstly, as far as training is concerned, Hincol employees regularly attend training programs both in France and in Thailand to increase their knowledge of techniques and new products. For the development of new products, the Group’s technical resources are mobilized both at the level of the laboratory and on-site validation. Finally, Colas engineers regularly travel to India to back up Hincol teams for the technical and corporate promotion of our business to customers.” This teamwork has enabled Hincol to achieve more than 50% market share in ten years!
> years, in Delhi (in the north), Chennai (southeast coast), Visakhapatnam (northeast coast), Mangalore (southwest) and Vadodara (northwest). In 2007, a new plant will open in Jhansi, in central India. With a total of 88 permanent employees, the six Hincol plants have an annual production capacity of 150,000 metric tons of binders, representing a market share of more than 50%. Symbolizing its success and proof of the confidence that its products inspire, Hincol has supplied more than 60% of the emulsion used for constructing the Golden Quadrilateral!

Focus on innovation

Encouraged by this recognition, Hincol is now working on developing binders that correspond better and better to the needs of the market. It is supported in its work by the Group’s Campus for Science and Techniques and by Colas Asia’s Technical Department. A number of the technologies that it is developing have been homologated by standards commissions. Hincol itself participates actively in these commissions, and in so doing is contributing to improving road building techniques in India. Confirming recognition of the excellence of its products, HPCL (Hincol) has been chosen along with another oil company by the General Border Roads military authorities to supply binders to be used for building and maintaining border roads, some of which require very specific surfaces because they are at an altitude of more than 4,000 meters.

In ten years, Colas has already achieved a great deal in India, and has no intention of stopping there. Etienne Le Bouteiller has the last word: “We’ve only just begun!”

* Formerly Bombay
** Formerly Madras
*** Formerly Calcutta

INDIA, A MODERN-DAY GIANT

India’s road network, 3.3 million kilometers, is one of the longest in the world. Even so, the network is totally inadequate and is incapable of coping with the continuing growth of traffic. India’s population of more than 1 billion is growing by over 20 million individuals every year, and it is expected to pass the population of China in 2015. Boosted by the country’s economic growth, the number of cars in use in India has doubled in ten years. The modernization of transport infrastructures has thus become a vital challenge for the authorities. The poor state of the road network is now hampering the country’s economic development. 40% of villages are still not connected to roads that are passable in all weathers, and the annual loss of fuel attributed to the poor quality of the roads is estimated at €3.1 billion.
Although the image of the Airbus A380 has become rather tarnished recently on account of the delay in its delivery, it is nonetheless a magnificent technical achievement by the European aerospace industry. Designed by the European Airbus company, the project was first launched in 1993 and culminated on April 27, 2005 in the first test flight from the Toulouse-Blagnac airport. On this momentous day, the largest civil airplane ever designed (73 m long, a 79.80 m span and 24.10 m high) took majestically to the skies applauded by a large, admiring crowd of onlookers.

Whether watching it at the airport or on television, all who took part in the adventure felt a surge of pride when they saw the event. This meant not just Airbus personnel, but also the numerous OEMs and contractors who contributed, directly or indirectly, to the success of the project. Included among these are Group employees at a number of road construction subsidiaries, as well as Smac and Spac, who have also made a contribution. Even today, Smac is being consulted to perform new work.

Roads for extra-large items
The first type of contract involved road infrastructure improvements for the transport of A380 components. Under the terms of the European consortium, manufacture of the aircraft has to be
A380: KEY FIGURES

- 73 m long, 24.10 m high, 79.80 m wingspan
- 560 metric ton maximum payload on takeoff
- 4 engines each with power equivalent to 1,300 cars
- They should generate half the amount of noise of the rival Boeing 747, and consume between

Underground networks

The second type of contract involved work carried out underground on the Blagnac site. Once the A380 components arrive at their destination they have to be unloaded onto a logistics hub that is as secure as possible. To ensure the fastest possible response to an outbreak of fire, a high-pressure water network was built by the Toulouse Spac profit center. "We installed a network of pipes to carry water to all parts of the mixed-development zone," explains André Gonain, site supervisor. "The water is maintained under constant pressure in order to enable an instant response in case of a fire outbreak." The 5 kilometer-long high-pressure network is one of the largest in Europe. Spac laid 2,500 m of 600-800 mm diameter cast-iron pipes. The agency also redirected 800 m of gas piping on the site for Total Infrastructure Gaz France (TIGF). This work was carried out to clear the ground of a piece of land on which buildings for the A380 will be erected.

A gigantic assembly workshop

Another contract involved construction of the assembly workshop, a major structure. The Toulouse Smac agency was leader of a consortium of contractors carrying out roofing and cladding work. The impressive structure measures 490 m in length, 250 m in width and stands 46 m high. "60 m cradles had to be used," explains Michel Charrié, site manager. "Safety was central to our concerns, as it is on all sites involving work at height!" The complexity of the job was increased by the unusual form of the building, which has a series of arches 100 m long and 100 m wide. The cladding was carried out in brushed stainless steel, used for its robustness and durability. "The work took over two years to execute and substantial means had to be deployed," continues Michel Charrié. Close to the assembly workshop, Smac has also built a warehouse for components.

Runways and the Whisky taxiway at Blagnac

Some of the airport runways also required work. Colas Midi-Méditerranée refurbished the wearing course on runway No. 2. Sacer Atlantique, working in partnership with Colas Midi-Méditerranée and Screg Sud-Ouest, refurbished runway No. 1. When assembly of the first A380 was complete, the moment for the test flight finally arrived. The prototype taxied towards the takeoff area. "While it was maneuvering on the Whisky taxiway, we noticed that the wings of A 380 overhung the grass shoulders at the side of the runway," explains Florent Leculuse, site supervisor at the Toulouse Screg Sud-Ouest agency. "We realized that there was a chance that gravel could be sucked into the engines. So a decision was taken to lay two 7-meter asphalt-surfaced hard shoulders on either side of the runway." The job was given to Screg Sud-Ouest (in a consortium). This lightning-fast operation involved almost one hundred people working ten hours a day for ten days. A 21-hectare delivery platform was also built by Screg Sud-Ouest (in a consortium). Completed last November, the work required over thirty people.

Also at Charles-de-Gaulle and Orly airports

The construction and specific improvements required by the Airbus A380 were not limited to southwestern France and the Toulouse-Blagnac site. At Orly, the Paris-area road subsidiaries reinforced runway No. 4. At Charles-de-Gaulle airport, near Paris, as well, work has been carried out to accommodate the new “liner of the skies”, while new contracts are under way. During refurbishment work on runway No. 2 during the summer of 2002, the Group’s Paris area road works subsidiaries (Screg IDF/N, Colas IDF/N and Sacer Nord-Est) had already widened the shoulders in readiness for the arrival of the A380.
CONSTRUCTOR
AIRBUS: THE SKY’S THE LIMIT!

A subsidiary of EADS (European number 1 aerospace constructor and defense contractor), Airbus came into being in 1970 as a result of the merger of several European aircraft manufacturers. Because of the success of its aircraft, particularly the best-selling A320 (4,360 units ordered), this European company has managed within the space of thirty years to rival the civil aviation market supremacy of American aerospace giant Boeing. Airbus and Boeing are now engaged in fierce competition, clearly demonstrated with the new range of medium-size, long-haul passenger planes, by the competition between the future Airbus A350 and the Boeing 787. Headed since October 2006 by Louis Gallois, who is also co-CEO of EADS, Airbus currently has a total workforce of 55,000 in France, Germany, Spain and the United Kingdom.

> More recently, Aéroports de Paris, the Paris airport authority, contracted the roofing and part of the facades of the S3 air terminal, specifically intended for the new large-capacity Airbus to the Châteaufort Smac agency. “The engineering office worked for over 3,000 hours on this 50,000 m² project which consists of a large number of small different-sized areas,” explains agency head Didier Lahellec. The waterproofing materials used to perform 50% of the roofing were made by Axter, a Smac subsidiary.

Also at Charles-de-Gaulle airport, Smac is preparing to take part in building the A380 service and maintenance workshop. “The project includes four buildings,” says Didier Lahellec, “each of them 45 m high, and there is 15,000 m² of floor space. Because of their huge size, the frames and roofs will first be assembled on the ground and then hoisted into place.” The metal facades will be made next. Air France has also placed an order with Smac to roof the 8,000 m² rapid aircraft maintenance workshop. “We are going to use the high-performance noise-reducing Thermoson process,” explains Didier Lahellec.

Worthy of a mention, too, is the work carried out by Spac’s La Courneuve agency with the aim of modifying and extending the networks of pipeworks and kerosene storage located under the tarmac.

Finally, improvements to runways have also been carried out by Group subsidiaries in French overseas Departments and Territories.

This completes the overview of the contracts awarded to the subsidiaries in the context of the A380 project. Thanks to the efficiency of the Group teams working on the Airbus challenge, everything will be ready in time for the world’s largest aircraft, so it can proudly carry aloft the colors of European industrial cooperation.

FROM TOULOUSE TO PARIS-CHARLES-DE-GAULLE

The “lightning” operation at Toulouse-Blagnac involved almost 100 people working for 10 days to lay two asphalt-surfaced hard shoulders.

At Paris Roissy Charles-de-Gaulle (right), Smac carried out the roofing and part of the facades of the S3 air terminal.
Where would Screg Ile-de-France/Normandie’s Villepreux profit center be without Sandrine Laudin? She is the person who tracks the contracts from beginning to end: the letters of intent to begin work, safety and health protection plans, extra estimates, subcontractor contracts, billing, handover paperwork, organization of site catering, etc. “And don’t forget the agency reception desk, faxing and telephoning,” says Sandrine. Extremely multi-skilled, she is suited to her job. “The work I do means that I’m at the heart of profit center life,” she says. “I’m in contact with the site foremen, the site supervisors, the accountants. My tasks are very varied and not at all boring.” All her work is backed by a supportive team “where the atmosphere is good.”

“Public works professions are tough but fascinating”

VICTOR CANGEA
SITE FOREMAN
FRANCE

Viktor Cangea arrived in France from Moldavia in 2003 with an employment contract. “I always dreamed of working in France,” he admits. Already a fluent French-speaker and a long-time admirer of French literature, Viktor is the sort of engineer who is happiest in the field. His French odyssey started with a spell at SNPR Île-Saint-Denis (Colas Île-de-France/Normandie), where he worked on some road maintenance contracts. Two years ago, he joined Picheta to help start up the rock-crushing business. "The public works professions are tough but fascinating," he explains. "The equipment and the techniques are constantly changing. There is no routine, and I’m genuinely proud to work for a Group like Colas, which is known all around the world." Viktor also likes working with people and enjoys the contact he has with his team. He quickly became one of them — an excellent example of successful integration, “thanks to the people I am close to, both in my private life and at work.”

"At the heart of a profit center"

SANDRINE LAUDIN
OPERATIONS SECRETARY
FRANCE

"At the heart of a profit center..."
CHRISTOPHE PRIEZ
LABORATORY MANAGER
FRANCE

Christophe Priez started out as a laboratory technician when he joined Colas in 1990 after earning a junior college degree in physical measurements. Fifteen years down the line, and he is in charge of two Colas Nord-Picardie laboratory units, one located in Villeneuve-d’Ascq and the other in Lens. A successful career story. “I was hired to set up the North lab unit,” he recalls, “but before taking on the challenge, I worked on a number of contracts to get to know the profession.” Christophe worked on the Saint-Omer bypass, the Pechiney plant, and the Douai-Valenciennes road link. They were all major contracts and he learned a lot from them. “We actually are responsible for monitoring sites at a technical level, from the design stage to execution,” he explains. At every stage of the contract, teams design high-performance technical solutions, take measurements and carry out tests. Their task begins during the bidding stage, as the aim is to offer customers value-for-money products while striving to promote the most innovative techniques possible. Christophe is highly committed to his job, and hopes to move rapidly up the career ladder in his company.

“I want to share my enthusiasm with my teams”

SANDRA LAIGNEAU
PROFIT CENTER MANAGER
FRANCE

The only woman in Colas to run a profit center, Sandra Laigneau is frequently asked about the benefits and drawbacks of this unusual position. “You need diversity in a team,” she says by way of explanation. “By that I mean a diversity of personalities. It doesn’t matter if you are a man or a woman. What actually counts is being fair in your decision-making, listening to others, setting clear targets and making sure you deliver the means to achieve them.” An energetic and enthusiastic woman, she runs a team of four project managers and five or six foremen. She also prospects customers. “We work throughout the entire suburban area of Seine-Saint-Denis,” she explains. “The contracts are very varied and there are many challenges involved, which makes it a fascinating job.” A graduate of the Polytechnique engineering school in Orleans, Sandra completed her studies with a year in Quebec and an internship in Sintra, a Colas subsidiary in Quebec. Back in France, she joined Screg in 1999 and began her apprenticeship. In August 2005, she was promoted to head the Screg IDF/N profit center in Seine-Saint-Denis, in the Paris suburbs. “It’s a tough and very demanding job, but I love every moment of it. I hope the people I work with feel the same way.”

“A key role in monitoring sites”
“On the same track since we were at school!”"Gérald Dubœuf
and Mathieu Janin
Sales Managers
France

You don’t often come across two people who went to the same school and work in the same company in identical jobs. This, however, is the story of two young sales managers at Sacer Sud-Est, Gérald Dubœuf and Mathieu Janin. “We have been together since we met at business school in Saint-Etienne,” explains Gérald. When they finished their course, which alternated with internships at Sacer Sud-Est, they were hired on permanent contracts. “We were both given the job of developing the private-sector market. Our jobs were created when we were hired. The company wanted to diversify its customer typology,” explains Mathieu, who is in charge of the Rhône, Ain and Loire sales territory while Gérald takes care of Isère, Savoy, Drôme and Ardèche. “We have adjoining territories and are in constant contact,” says Gérald. “We call each other up three or four times a day!” The two friends have known how to build up a strong network of business contacts to get results. “In this job, you have to be patient, pugnacious and persevering. Motivation is everything,” they chorus together. Clearly, Gérald and Mathieu form a strong team!

“In a few years, I’ll be a foreman”Emilie Cochet
Road Worker
France

At age 22, Emilie Cochet knows just what she wants to do: get promoted. Her ambition is to become a foreman and she is determined to make it possible. She came to public works more or less by chance, even though she always liked the idea of outdoor manual work. “My neighbor, who was a loader driver, was about to retire,” she tells us. “I already had an equipment operating license and I was looking for work. My friend took me to meet his boss, and that was all there was to it!” In September 2005, Emilie joined Screg Est as a road worker. “I am currently on a training program,” she adds. “By following alternate periods of classroom work and internships I should be able to make team leader, who knows, perhaps in a few years even foreman!” Emilie is looking to the future. “The foreman follows work from beginning to end – they have an overall view.

Seeing things globally makes the job interesting.” Does she think that this heavily masculine, almost macho universe may impede her career progress? “No,” she replies smiling. “The team I work in is great. You just have to assert yourself and show that you can’t be bossed around!” Emilie seems to have no problem doing so.

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CHRISTINE DENEUVILLERS
LABORATORY MANAGER
FRANCE

On December 13, Christine Deneuvillers received the Engineer of the Year award in the Sustainable Development category. Organized by the French business magazines L’Usine Nouvelle and Industrie et Technologies and the French national council of engineers and scientists (CBISF), the contest is under the patronage of François Loos, the French Minister for Industry. Awards are presented to engineers in seven different categories. On the advice of Group Research and Development manager, Michel Chappat, Christine was encouraged to file an entry in June. What was the theme of her entry? “A range of road bio-products, intended to replace products of fossil origin. These products make it possible to consume less energy and also reduce greenhouse gases.” Time went by, and Christine thought no more about the competition. “When I received a phone call from the managing editor of L’Usine Nouvelle to tell me I had won, I was tremendously proud!” she recalls. Having joined the Group with a first qualification in chemistry, Christine gained her engineering diploma by following evening courses run by the CNAM engineering school. As far as she’s concerned, the award is not hers alone: “I can’t accept being the sole winner of a prize for work performed by an entire team over almost three years.”

FRANÇOIS ALLARD
SITE SUPERVISOR
FRANCE

No one could accuse 25 year-old François Allard, site supervisor at the Smac Strasbourg agency, of being idle. Out on the job every day, on sites having meetings with architects followed by more site and administrative work, he deserves some well-earned rest in the evening. But this is not to be. A year ago, he signed up as a volunteer firefighter, an initiative that the Group fully supports and is hoping to develop throughout its profit centers. As soon as he returns home in the evening he is on standby for all emergency calls. “I have a pager that sends me an alert from the Sélestat fire station whenever I am needed,” he explains. “Most call-outs are to personal emergencies. We also have to fight fires and deal with different types of problems, like trees that have fallen on the road”. François partly owes his commitment to doing things for others to his wife, who has been a volunteer firefighter for the last eight years. “She would talk to me about her love of what she did, I wanted to do the same.” It is not enough to don a helmet to become a firefighter. François has had training in first aid, firefighting and lifesaving in hazardous conditions. He now knows a lot about his job, even though he cannot help feeling apprehensive when the pager beeps. “You sometimes find yourself in a tough situation. Then you need to have steady nerves and not get scared easily,” he admits.

“I have always wanted to help others.”

“My award honors the entire team...”
I have a fascinating job

RICKY NUGENT
ASPHALT CONTRACT MANAGER
UNITED STATES

Before he accepted the job of quality manager for Sloan Construction Company, at the end of 2002, this Scot originally from Glasgow had never heard of the company. Or even of the state of South Carolina! “But of course,” he explains, “I knew all about Colas, and I felt fully confident taking up this career opportunity.” Ricky does not regret his decision. “Sloan looks after its people very well. Teamwork is strongly encouraged and I have an excellent relationship with my colleagues.” Now asphalt contract manager, he loves his job. “It’s up to me to see that the organization remains efficient, that we remain within budget and are on schedule. That means many hours of work, often late into the evening and during the weekend, but it’s worth it. I have a fascinating job.” When he first arrived, Ricky suffered from culture shock. “It may be difficult to believe, but this is a very different place from Scotland! For example, I had difficulty getting used to the weights and measures system. And on top of that there were terrible language and accent problems. I tell everyone that they speak too slowly and they tell me that I speak too fast!” Having settled in, Ricky now spends his free time with his family or playing golf. “To think that I had to come to the United States to start playing golf, when we have some of the finest golf courses in the world in Scotland!”

“Join Colas? Why not?”

AUDREY DOUET
ADVANCED MATH STUDENT
FRANCE

Audrey has lost no time. After graduating from high school in Argentan, northwestern France, she is already at age 18 in the second year of advanced math classes at Cherbourg to prepare for competitive entry exams to the Grandes Ecoles, highly-valued schools in the French higher education system. To help with a demanding program, Audrey has a “sponsor” in the form of Dany Damoville, manager of the Lasnon profit center (Colas IDF/N) in Cherbourg. “In my senior year of high school” explains Audrey, “I applied to the Bouygues Foundation for a scholarship. I was assigned to me as a sponsor.” Dany’s task is to help her through her study program, advise her and encourage her when necessary. “Fortunately enough, he took the same advanced math classes as me, and even had some of the same teachers! His experience as an alumnus is very valuable to me. He has helped me see the bigger picture.” Last year the pair met up again at the Christmas party organized by Bouygues. “It gave us a chance to catch up and get to know each other a bit better,” says Audrey. In a few months, Audrey will take the competitive entry exams to the Grandes Ecoles. She is hoping to get into one of the top engineering schools. As for her future career, she rules nothing out. “I’d like to begin as a general engineer and specialize later. Join Colas? Why not?”

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very day, Group employees use an impressive array of equipment that is highly diversified and fulfills many different uses: bulldozers, graders, backhoes, loaders, finishers, compacters, cranes, compressors, semitrailers, trucks, light utility vehicles, road marking machines, tunnel boring machines, tamping machines, locomotives, barges, bitumen tankers: the list seems endless. Added to that is all the equipment and machinery used in crushing plants, recycling installations, emulsion plants, bituminous membrane plants, mobile asphalt plants, asphalt plants, concrete plants, prefabrication plants, road paint plants, and so on. The almost 56,000 units of the Group equipment fleet and plant are divided into construction equipment (28,000 units), transport equipment (26,000 units) and industrial production equipment (1,200 units). Some 5,000 people work in the Equipment department managing all of it, half of them outside France.

From acquisition to maintenance
Most of the equipment used regularly is owned by the Group; machines are rented for highly specific or occasional use. The cost of the equipment fleet is divided roughly half-and-half into fixed costs (amortization or rental, interest, insurance, taxes, etc.) and variable costs (maintenance, fuel, labor, replacement parts, accessories, etc.). “Apart from acquisition costs, maintenance is obviously one of the major items in the equipment budget. It is also the thing which concerns us most,” explains Philippe Brissonneau, Group Equipment Manager. “The aim is to make fully operational, reliable and high-performance equipment available to the contracting division. We also want to offer economic solutions, ensure equipment is compliant and prevent accidents. Our job is to do everything we possibly can so that work can be performed under the best conditions.” To achieve this, depending on the type of equipment and its use, four types of maintenance are specified: preventive, corrective, predictive, and condition-based.
Increasingly complex, but higher performance

“The current trend for site equipment and machinery in general is clearly towards performance, ease of use, and compliance with environmental standards,” explains Philippe Brissonneau. “During the last Intermat trade fair in Paris, attended by public works and construction industry equipment professionals from all over the world, we saw how manufacturers are now offering highly specialized machines, with powerful mechanisms and cutting-edge hydraulic systems, and increasingly controlled by on-board computer systems.”

Like the cars of today, new site vehicles now have clean technology power units, catalytic converters, particulate filters and high-pressure injection systems. As a result of the inclusion of all these new technologies, prices have shot up (a finisher with accessories costs €300,000), manufacturers are having to merge to cope with increasingly sophisticated mass production processes, and there is a constant decline in the number of manufacturers of mechanical, hydraulic and electronic sub-assemblies.

“Maintenance personnel as well as users and operators now have to be fully conversant with all technical ranges and be familiar with all the makes and all aspects of equipment,” Philippe Brissonneau continues. “This quest for excellence, in terms of diagnostics, maintenance and organization, is to a large...”
Behind the purchase of a machine there is also a network, an after-sales service and a replacement parts sales service. Just as with cars, today’s site equipment has become a matter for the experts.”

Each family of machines is different

Each family of machines presents its own set of problems. For example, maintenance of mobile equipment including light utility vehicles and heavy trucks is usually subcontracted, as it requires round-the-clock availability. Explains Philippe Brissonneau: “We are talking about urgent situations where repair work has to be carried out immediately.” Site machines involve a huge number of different makes (more than 500). However, in the last few years, out of this number some 300 have merged or gone out of business, which has in turn given rise to a number of problems. Out of all site equipment, finishers are the “experts only” machines – very high performance machines for which the opinion of the operating team counts as least as much as the price in the purchase decision.

For the choice of machines, accessories, on-board electronics, adjustments, etc., users are consulted. In the case of equipment such as loaders, backhoes, graders, compacters, etc., they are acquired directly from major equipment manufacturing groups. The aim is to reduce the number of after sales service contacts as much as possible and realize economies of scale for sales terms and conditions and maintenance techniques. The market is highly competitive not only in terms of price and performance of machines, but also in terms of factors that contribute to environmental protection, lower energy consumption and better ergonomics (reduction of vibrations, noise, etc.). “In every case,” emphasizes Philippe Brissonneau, “we try to have a long-term vision with the aim of achieving the best possible value and performance for money.” As for production plant (asphalt plants, emulsion plants, crushing plants, etc.), they are run on the same basis as production plants, and their managers have close and sustained contact with the equipment department.

Development of the “e-machine”

“To deal with increasingly complex and increasingly technological machines,” explains Philippe Brissonneau, “we need to be able to interpret incidents faster and more accurately. Equipment manufacturers are dealing with this problem by developing remote diagnostics and maintenance tools. In the same way as the manufacturers, but as owners and users of the fleet, we are also working on an ‘e-machine’, a development that will mean that each machine is fitted with a black box that transmits details of its status to a remote station. Remote monitoring is a valuable tool for predictive maintenance. It speeds up diagnostics and makes them more accurate; because it functions upstream, it helps reduce costs by establishing immediate priorities. It is a future path that will help us improve our organization, track maintenance operations and experience fewer emergencies.”

People before machines

“The more complex machines and equipment become, the more the role of the men who operate and maintain them is primordial,” says Philippe Brissonneau. “This is why we have stepped up training in all areas: maintenance, diagnostics, specific training in tires, lubricants and on-board hydraulics.” Another line of development for the equipment division is reinforced pooling of Group equipment resources, specifically between French domestic subsidiaries. “This is now working well,” Philippe Brissonneau notes, “even if it is not always straightforward at the logistics and commercial level. We have to be aware that technology is continuing to evolve and that we must constantly look for ways to optimize our equipment. But tomorrow, even more than today, it will be people and the organization with which we surround equipment that will ensure the success of our contracts, and of course the success of the Group.”
Intranet portal dedicated entirely to innovation has just gone on line. Rollout of e-nov was timed to coincide with the launch of the fourth Group innovation competition, which is open to all employees. “The portal aims to make it easier to take part in the competition and make sure there is broader and more systematic circulation of the innovations to every Group entity,” explains Philippe Brissonneau, Equipment Manager.

The e-nov site is a one-stop formality for the competition, offering registration, final submission and publication. It will also be possible to consult an archive of the previous years’ entries. E-nov is regularly updated and provides a dynamic resource of ideas available to all employees.

Another new initiative is the nomination of an “innovation officer” in each of the French entities and in every country where the Group operates. These people will be in charge of ID and password management for each company, assisting participants with the writing up of their ideas, ensuring the project is correctly translated and more generally, promoting the competition itself. You can sign up for the competition now, whether as a team or an individual entry, so don’t delay – visit the site today (www.e-nov.colas.com)!

E-nov, a dedicated innovation portal

Thanks to the e-nov intranet portal (www.e-nov.colas.com), it is now easier than ever to enter the Group innovation competition. Jean Lalo (right), technical and purchasing manager of Somaro, is handed the Pierre Potier award by Armand Lattes (center), chairman of the judges, and Yves Chauvin (left), the 2005 Nobel Prize winner in Chemistry.

The Pierre Potier award: a medal for Prosign

On June 29, Prosign (a subsidiary of Somaro) was proud to be one of nine companies honored by the Pierre Potier award for chemical innovations that aid the environment. The subsidiary, which is specialized in road markings, presented Thermo Vert, a process that uses components of natural origin in the manufacture of products. “This is a good way of making sure that white lines are green!” joked Professor Armand Lattes, chairman of the French Chemical Society, who co-founded the Pierre Potier awards in 2005 along with the French Minister for Industry, François Loos.

 Normally, products used for white lines on roads are petroleum resin-based and heated before their application on the road in liquid form. Thermo Vert ingredients come from renewable resources and emulsify at lower temperatures. This delivers energy savings (a minimum of 30%), a lowering of VOC emissions and reduced costs. The process makes it possible to replace calcium carbonate extracted from quarries with crushed oyster shells (the Ostréa product line).
One thousand emulsion experts from around 70 countries gathered at the Lyon Conference Center in October for the fourth World Congress on Emulsion, sponsored by Colas among other major industry players. The World Emulsion Producers’ Day was held the day before the congress opened.

Before the congress
Organized by the IBEF (International Bitumen Emulsion Federation), the World Emulsion Producers’ Day brought together 250 participants from fifty countries. The aim was to garner as much information as possible prior to the congress itself on the economic environment of emulsion, its uses and its field of application. It was a major industry event.

Thirty-six presentations
Among the many presentations delivered during the congress, the first, given by Nobel prize-winning chemist Jean-Marie Lehn, described the impact that work in supramolecular chemistry is having on research into emulsions, in all fields of application. Another distinguished presentation was given by Andrew Griffith, director of the chemical biology laboratory in Strasbourg. The speaker showed the importance of mastery of the emulsion process in the area of genetics; manipulation of proteins within droplets makes it possible to better understand certain mutations of the genome and in time may make it possible to devise new methods of treatment for some types of disease. Some of the other presentations focused on links between emulsions and life sciences.

Sustainable development
In addition to the numerous topics dealing with the technical and production aspects of emulsions, a number of workshops were held on the theme of sustainable development, emphasizing the importance of this issue. Specifically for road construction companies, a symposium dedicated to generating and recycling road surfaces using bitumen emulsion was attended by 150 people. There were also two workshops to discuss the latest developments in bitumen emulsion technology.

A notable success
The congress provided an opportunity to gain a comprehensive, worldwide picture of the economic, technical and scientific aspects of emulsion today. Because of the many opportunities for discussion, the presentations and the high-quality organization, the convention can be considered to have been an unqualified success. All participants are eagerly awaiting the next one!
The drive to reduce energy consumption aims to reduce CO₂ emissions from Group sites and equipment, to reduce our energy bill and, more generally, to persuade our employees to adopt a pro-environmental attitude, explains Philippe Brissonneau, Colas’ Equipment Manager. The Equipment and Environment departments are working hand in hand to achieve this.

Three stages

“The first stage is knowing exactly how much we consume and just how we consume it,” says Philippe Brissonneau. “This is not so easy to determine for a Group located in forty or so countries with energy consumption that is both multi-product and multi-usage.” The Group’s energy bill (purchase of fuel, natural gas and electricity) amounts to more than €400 million yearly, half of it for France.

The second stage consists in evaluating and adapting the energy consumption analysis of the situation according to type of profit center, mobile equipment fleet and stationary plants. “For the plant and machinery, we need to have traceability tools and monitor energy consumption better,” states Brissonneau. “Energy saving has now become a decisive criterion in equipment purchasing decisions. However, the real driver is operator behavior. This requires specific training, improvement of work organization and the optimization of all aspects of energy use.” €1 million has already been saved on natural gas and electricity consumption. Fuel consumption can be brought down between 10% and 15% by working more closely with equipment and vehicle manufacturers at the same time as encouraging equipment operators to adopt a more sensible driving style for their machines.

The final stage of the initiative involves the production phase. A global policy to promote equipment and process improvement will be introduced. “This is very much a field-oriented initiative,” says Brissonneau, “which calls for an improvement of internal reporting of our machinery and processes.”

Actions at all levels

Alongside this concerted initiative, numerous one-off actions are also taking place. Eight task forces are working on highly-targeted topics, aiming to put specific corrective actions into place (vehicles, property, excavation equipment, asphalt units, crushing, etc.). In addition, teams are working on the development of new processes (warm asphalt, for instance) that make it possible to save energy. “Little by little, behavior is changing,” concludes Philippe Brissonneau. “This is an issue that involves every one of us. We need to follow the example of other subsidiaries and other countries, like those in Scandinavia, which are at the cutting edge of these issues.”
In 2006, Colas continued its policy of growth by acquisition, both in France and in the international arena, investing in a number of companies and industrial production sites.

In France...

Several quarry operating companies joined the Group: Carrières de Sancy (central France) and Casonato (southwestern France) along with Balayssac and EMTP/Gravières de Queyrac (both southwestern France), which also carry out road construction works. Added to these is the Group’s 50% stake in Rossetto (southeastern France). Other purchases include Damiani (road construction and site waste recycling) in southeastern France, Berland (roads, networks and pipeworks) in central France, CTPA (roads, networks and pipeworks) and Boulard (civil engineering, plant maintenance, drainage), both in western France, and Pradier Béton (ready-mix concrete) in southeastern France.

In the deconstruction business, Colas now owns Brunel Démolition, a company in the Paris region… … and Ferrari, a company in eastern France. The Group has strengthened its expertise in this field.

The Group is growing and growing…

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The Group acquired the rail sector contractor Vecchietti has enabled Seco-Rail to expand its business into southeastern France. Meanwhile, Smac has absorbed AMS Industries (central France), specialized manufacturers of roof structures and smoke evacuation systems.

in central Europe...

The Group acquired the YSM quarry in Romania, which possesses a diabase seam with 60 million metric tons of reserves, the T-Road road construction company in Hungary, and Cermak, a pipeworks specialist, in the Czech Republic.

in North America...

The American road contracting companies Mega Contractors (Virginia), Apac Richmond (Virginia), Apac Augusta (Georgia and South Carolina), which all have asphalt plants, and Terry Asphalt Materials (Ohio), which operates two binder plants and two asphalt depots, have joined the Group. Colaska has acquired University Ready-Mix Concrete Products, which owns four quarries, five concrete plants and two asphalt plants. Canada’s Compagnie Asphalte Ltée, which owns two quarries and three asphalt plants, has also now become a Group company.

... and in the French Caribbean and French Guiana...

Finally, the Group took over a French Guianese company, Béton Contrôlé du Littoral, which operates five concrete plants.
Creating links and keeping up good contacts

So that new graduates can get to know the Group better and to encourage them to apply for jobs, Colas has a dynamic policy of recruitment and contacts with engineering schools. It has set up a number of partnerships with both schools of engineering studies and technical schools. Colas is also active within institutions: around one hundred members of staff serve on the boards of schools, on study committees or are members of admission boards. Every year, the Group takes part in over fifty student fairs, gives presentations in many high schools and organizes a large number of site visits for students.

All these activities provide excellent opportunities to talk to students and to offer them internships. In 2006, the Group had an intake of 2,000 interns in France. To emphasize the strength of its Human Resources policy (integration of recent graduates, internal training, fast-track responsibility, empowerment, career opportunities), Colas favors initiatives that are locally-based, tailor-made and long-term.

Colas Cup: a friendly rugby tournament

To strengthen the corporate image of Colas with targeted schools and bring them together to celebrate strong values (team spirit, surpassing oneself, friendship, etc.), Colas organized the first Colas Cup tournament last October. Over 100 students from prestigious engineering schools Ecole Centrale de Paris, Ecole Nationale des Ponts et Chaussées, Ecole Spéciale des Travaux Publics and the Ecole Supérieure d’Ingénieurs des Travaux de la Construction (ESITC) were invited to take part in a rugby football tournament. The presentation of the trophy to the winning Ecole Centrale Paris team was followed by an informal post-match get-together in which players and Group personnel had a chance to meet.

Sponsoring the ESITC engineering school

Another locally-based initiative is the sponsoring of the orientation weekend of the ESITC engineering school by the three Paris-area subsidiaries, Colas Ile-de-France/Normandie, Sacer Paris-Nord-Est and Screg Ile-de-France/Normandie. A large number of employees worked to ensure the success of the event.

Students were given a chance to board a car on the new Paris southern tramway, not yet in service, and then visited a major paving and network construction site in Normandy. The day ended with an evening in Cabourg, a resort on the Normandy coast, during which ESITC alumni talked about having joined the Group. The enthusiasm shown by the students underscored the importance of this type of initiative and the need for it to be rolled out on all Group sites.
MEUNIER IS A HUNDRED YEARS YOUNG!!
The Meunier agency of Colas Centre-Ouest, based at Nogent-sur-Vernisson in central France, celebrated its one hundredth anniversary in June. The festivities, greatly enjoyed by employees past and present, were also attended by residents of Nogent invited to watch a grand parade of site machines.

COLAS SCIENTIFIC CONFERENCE
The Campus for Science and Techniques at Magny-les-Hameaux hosted an event in September on the topic of “The Physics of Piles of Sand, or the Dynamic of Dunes.” It was attended by Stéphane Douady, Research Director at the French National Center of Scientific Research (CNRS), Jean Favennec, an engineer at the French National Forestry Office, and Jean-Michel Ghidaglia (Scientific Director of the magazine La Recherche).

COLAS FOUNDATION INAUGURATION PARTY
The annual Colas Foundation inauguration party was held at the Group Head Office on September 12. Thirteen new paintings acquired by the Foundation were viewed by almost 500 people.

A REWARD FOR ARAM RESOURCES LTD
Ben Murray, John Hudson, Brodie Taylor and Rod De Figueiredo (pictured left to right) were presented with a Quarry Products Association trophy in London in October during the Health & Safety Best Practice Awards ceremony. Aram Resources Ltd, a subsidiary of Colas Ltd, won first prize in the “Safer Delivery and Storage of Bitumen” category.
ROUTES No. 20 – January 2007

COLAS IS A MEMBER OF THE REIMS TRAMWAY CONSORTIUM
On October 10, the metropolitan authority of the city of Reims, in northeast France, and a consortium of which Colas is a member signed a commitment to build the city’s future tramway system.

COLAS AT THE POLLUTEC FAIR
The Group exhibited at the recent Pollutec trade show, held in Lyon, demonstrating its know-how in environmental management. The emphasis was placed on solutions favored by Colas to meet the energy challenge.

FRENCH MAYORS’ CONGRESS
The Group was awarded the “Innovation Prize” at the French Mayors’ Congress for its Vegeroute product line. It was also nominated for Greenflex and Ostréa. Front (left to right): Vincent Galéra, Michel Chegadi, and Jacqueline Gourault, chair of the Selection Committee; and Jacques Bay, Christian de Piris, Catherine Sachréber, Thierry Genestar, Xavier Lepercq, Jean-Jacques Labruyere, Jean-Max Gillet and Christophe Mitridati.

AN AWARD FOR VEGECOL
At the Interroute trade fair, Michel Ballié, Technical Manager of Colas France, and Thierry Delcroix, Project Manager for Vegecol, were awarded the first prize for 2006 in the Sustainable Development category by the French Committee of the PIANC for Vegecol. The award was presented by Patrick Parisé, France’s Director General for Roads. Pictured (left to right): Michel Ballié, Yves Robichon (PIANC), Patrick Parisé (Road Directorate) and Thierry Delcroix.
NEW NORD-PICARDIE HEAD OFFICE
A new L’Échangeur head office in Villeneuve-d’Ascq, designed by architect Paul Chemetov, will open during the first quarter of 2007. It will accommodate teams from Colas Nord-Picardie and Screg Nord-Picardie.

CENTRAL EUROPE CONVENTION
More than 130 managers and young engineers from central Europe met in Budapest in October. The main purpose was a presentation of development priorities for 2010.

VEGECOL POSTER CAMPAIGN
Vegecol is making itself better known. It even features in a poster campaign on the Paris beltway.

NEW HEAD OFFICE IN NANTES
In September, head office teams from Colas Centre-Ouest, Sacoir Atlantique and Screg Ouest moved into a new L’Échangeur building designed by architect Bruno Huere.
French athlete Assia El Hannouni, who has been sponsored by Colas since 2005, has piled victory on top of victory. She sets an outstanding example of perseverance and the will to succeed, values that are fully shared by the Group’s employees.

How did you first become interested in athletics?
Assia El Hannouni: My disability brought me to athletics. When I started to lose my sight, at the age of 16, I completely turned in on myself. My world crumbled and I was alone. It was really just by chance that I took part in an athletics event – it was a sport that I had enjoyed at school but not done a great deal of – and I won! A representative from the French Disabled Sport Federation encouraged me to persevere with it. In the beginning I would often skip training and practice because I was convinced that natural talent was good enough. I got a big surprise at the European Championships in 2001 in Poland! I finished last in every single race. I had completely underestimated the level of disabled sport competitions. It took me a while to get over it. One day I finally realized that the Earth was not going to stop turning simply because I was gradually losing my sight.

At that point I decided that if I was going to take up athletics seriously, there would be no question of doing it just to “take part”!

So was that when you decided to turn professional?
Assia El Hannouni: Yes. I joined a regular athletics club and really began training seriously. It started to pay off. In the 2002 World Championships I came away the bronze medal in the 200 meters and the silver medal for the 400 meters. I was pleased but not entirely satisfied – I wanted to do better still! So I took the decision to leave my home town of Dijon and signed on with the University of Paris athletics club, while studying communications and journalism. This is where I came under the wing of Patrice Gergès, a former champion athlete himself, who became my trainer. Since then there has been no looking back. With him I have learned how to trust, how to talk and how to listen. My results at the Athens 2004 Paralympic Games followed by the 2006 World Championships in the Netherlands show that we have got it right.

What is your next target on the track?
Assia El Hannouni: Currently, over 200 meters and 400 meters I run with a guide who I am attached to by a cord on my glove. The guide helps me locate myself on the track and make sure that I stay in my lane, by remaining beside me. What I would like to do now is measure myself against able-bodied athletes. I know that I can do it and I am learning gradually to run alone, to get over my fear of leaving my lane, to position myself in terms of the other competitors without being able to see them. So the next target I have set myself is the 2007 Elite French Championships for able-bodied athletes.

What did you do to reach this level of performance?
Assia El Hannouni: Natural ability alone is not enough. Talent has to be backed up by massive determination. Once you have decided to go for it, you have to stop asking yourself questions. You have to give it everything you’ve got and follow a single rule: work! I stepped up my training program from five to nine sessions per week, and my university schedule was arranged around my training schedule. The main thing is to go for what you want and for what you are worth. As I said earlier, my current ambition is to qualify for the Elite French Championships for able-bodied athletes, but then after that, we will see what happens. Of course there are the 2008 Beijing Olympics on the horizon…

How did you first come into contact with the Colas Group?
Assia El Hannouni: Through a friend who works with the Group. Colas contacted me and invited me to take part in a convention. They wanted me to talk to the participants about my athletics career. At first I wasn’t at all at ease speaking in public. But, just like I do on the track, I threw myself at it and it worked! Gradually we got to know each other better and one day Colas offered to sponsor both my sporting career and my studies. This gave my confidence an enormous boost. Through my talks I’ve also discovered the world of business and I try to convey my passion and my values. With Colas I have the feeling that I’m part of the family, that we share the same discipline, the same ambition, work and the will to succeed.

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Born in Dijon in 1981, Assia El Hannouni is visually impaired and has a progressive condition which she has suffered from since age 16. Naturally gifted for athletics, she took part in her first disabled athletics event when she was 18. She currently has four gold medals (100 meters, 200 meters, 400 meters and 800 meters) from the Athens 2004 Paralympic Games to her credit. She won two world titles (400 meters and 800 meters) at Assen, in the Netherlands, in August 2006, and also holds several other French and European records. For the past year she has been sponsored by the Colas Group – her “other family” – with whom she shares the same values, based on ambition, work and the will to succeed.
André Liautaud: a portrait of the artist

Former Colas employee André Liautaud has been painting on copper for a number of years. His work is becoming increasingly well known.

You have been working as a full-time artist for almost twenty years now but you were painting long before that...

Even as a child, I was attracted to art. At school I was the top student in drawing and math. But my interest really dates from the day when the artist Bernard Buffet gave me a pair of sable brushes. That was in 1951. From then on I was passionate about painting, and continued to paint during all the years that I worked for Colas.

There is a story that you once managed to win a bid because of your artistic talents. Well, indeed, my enthusiasm for painting often came in very useful in my job! I used to submit drawings with bids, and this made it possible to win more than one contract abroad. I particularly remember a major contract in Gabon, I painted a four-meter long watercolor to explain the nature of the project. The president of the country, Omar Bongo, liked it and decided to award Colas the contract for a 10-kilometer stretch of highway along the coast. This turned out to be a decisive step in establishing Colas in the country!

Among the techniques in which you excel, painting in oils on copper has made your reputation. What exactly is this technique?

There are only two of us in France who paint on copper in the tradition of the 17th-century Flemish masters. I discovered this technique in Florence, and, after much perseverance, I managed to master it. It requires immense accuracy, a lot of patience, but the end result lends so much realism to the subject and gives so much light. The surface of leaves or drops of dew literally "explode" in the picture.

Why do you have a preference for still life?

The area of France where I grew up, the Reillanne plain, and my vegetable garden in Villemus are very strong sources of inspiration. I like to paint fruit, vegetables and flowers – but not only. I also do portraits. In fact I painted a portrait of Alain Dupont. The painting joined the Colas Foundation in 2006.

Your artistic reputation took off after a Colas seminar. Tell us about it.

I had decided to hold an auction of a number of my paintings during a Colas seminar with the entire proceeds going to cancer research. It was this event that really gave the impetus to my painting career.

Today, my paintings are listed in the Drouot sale-room catalogues!

How has the success of your work changed you?

I try to keep a cool head; painting must still be a pleasure to do. After every exhibition I always take a few weeks' rest. Then I slowly make my way back to the studio where I give free rein to my inspiration.

PAST AND FUTURE

EXHIBITIONS

1988 First exhibition in Reillanne
1992 Herbes Museum, Manosque
1994 Art gallery, Place Beaufour, Paris
1995 French Artists' Salon, Paris, and art gallery in Genolier-sur-Nyon, Switzerland
1996 Painting presented to the Elysée Palace
1997 Award from the Champagne de Castellane Foundation
1998 Exhibitions in Evian, Toulouse, Honfleur, etc.
2002 Ex-voto given to the church of Notre-Dame-de-la-Garde (Marseille) for the bicentenary of the Légion d’Honneur
2004 Earth and Time Museum, Sisteron
2006 Château de Sauvan, Mane
2007 Exhibitions planned in New York and Tokyo
2008 Retrospective planned at the Carzou Foundation in Manosque

PAINTING

Corsican mandarins – oil on canvas 33 x 41 and Basket of glasses – oil on copper 38 x 46.
Raphaël Renaud: “Roads and streets, the central nervous system of complete urbanization”

You have painted a picture for the Colas Foundation. Were you familiar with the world of roads previously?

It so happens that the road is one of my favorite subjects and I’m delighted to think that the Colas Foundation collection travels all over the world. I love movement, the idea that every road is part of a central nervous system that leads to somewhere else – in my pictures, a vanishing point that leads to the unknown. My visit to the Colas Campus for Science and Techniques really fascinated me. Surrounded by mixes of oil and water, we inhabit the same universe, more craftsmanlike for the painter and more technological for the researcher.

Your latest pictures are of urban landscapes, “city snapshots”…

I’m fascinated by cities: so many minuscule dots – dwellings, vehicles, people, streets, crossroads – which, once they are all together on the canvas, form a coherent whole. Each element is part of an ensemble, vital to the final composition, just like a biological circuit. Roads and streets join up the dots, the central nervous system of complete urbanization. Light itself becomes a shape, which becomes part of the life of the town.

What is the source of your inspiration?

Although I was born in the country, I am resolutely urban. Moscow, Tokyo, Paris of course, Athens and the big American cities – I like to travel a lot with my camera ready to shoot. In this way I store up impressions. I work more with light than with color. I also like to get up high, observe and photograph cities from above, guided by the landmarks constituted by roads and streets.

Born in Blois, central France, in 1974, Raphaël Renaud discovered his love of drawing and painting young. After studying to be a graphic artist in advertising, he attended the School of Fine Arts, first in Montpellier, then in Paris. In 2003, he won the Paris Academy of Fine Arts prize for Drawing. Raphaël Renaud has a deep admiration for contemporary German artists such as Gerhard Richter, who works a lot with photography, Matthias Weischer, and also the photographer-architect-aviator Alex McLean. Raphaël Renaud has exhibited in many art exhibitions in France and other countries.
acknowledgements

Alberta: the province where the road is king

En route