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ORGANISATION OF THE TECHNICAL INSPECTION OF MOTOR
VEHICLES IN THE COUNTRIES IN PROCESS OF RAPID MOTORISATION

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It is well known that, today, in order to be accepted in traffic, a vehicle must meet a number of requirements, namely :

- have good intrinsic safety characteristics (active and passive)
- respect the quality of the environment (polluting emissions and noise)
- make the best possible use of fuel so as to save energy.

This is why, in all countries with a high automobile density, motor vehicles have to meet numerous technical specifications before they are registered and authorized to circulate.

However, the requirements mentioned above do not concern only the prototypes or the vehicles fresh from production, but they must be met by all vehicles in service. Therefore, once a vehicle has been admitted to traffic (either through the homologation procedure per type, or through the acceptance procedure), another important problem arises : the technical inspection of vehicles in service.

The technical inspection which, we should not forget it, protects the human beings and the environment, is an indispensable service in a modern society. As a matter of fact, it is the only system able to guarantee that the required initial characteristics are being maintained (or are at least still satisfactory) in the vehicles in service.

In order to understand the philosophy of this problem and to look for solutions, one must not forget that the technical inspection presents a number of practical difficulties. As a matter of fact, in the course of the homologation procedure, the complicated and severe tests made are being facilitated owing to the fact that they are carried out in well equipped laboratories and by a specialized personnel with plenty of time at disposal. On the contrary, for periodical or unexpected inspections, only a short (20 to 30 minutes) time is at disposal which should be sufficient to check almost all characteristics of vehicle and equipment. When multiplying this time and the operations by the number of vehicles, one gets astronomic figures. It is therefore necessary to use simple and rapid methods and easy to employ apparatuses by a qualified personnel which, however, has not the same proficiency as laboratory technicians.

In reality, nothing is more complicated than making simple things !

It is indeed impossible to check during the technical inspection of a vehicle in service whether all characteristics and performances of this vehicle are the same as they were originally or whether they, at least, answer the officials regulations. A determined reference characteristic should therefore be chosen, with a test made at the time of homologation and later repeated during the inspection; comparison of the results of these two tests would provide an " idea " or a measure of an acceptable conformity or, on the contrary, of an unacceptable wear and tear (due to a lack of maintenance, wrong settings, etc.)

In a paper presented at the " International Conference on Road Safety " of 1983 in Brussels, we suggested a number of methods to solve these problems by means of reference trials; however, we must give up these methods for those countries where motorization is not yet much developed, because adoption of the proposed measures would involve complications and the necessity of equipments incompatible with the economy and general possibilities of these countries.

In the countries where the motorization rate is far behind the one of the industrialised countries, but where it is developing, we are of the opinion that the technical inspections should be limited to the usual checks carried out at the present time in most European countries (and which have been considered insufficient with regard to the progress of the automobile technology mainly in the last few years).

This does not mean that inspections are of secondary importance in these developing countries. Quite the contrary, it is in these countries that a great part of road traffic accidents happen due to the poor mechanical conditions of vehicles resulting from a lack of maintenance and checking knowledge; in addition to that, wear is more rapid owing to the climatic conditions and the poor state of the roads.

It has been found in certain developing countries that, when periodical inspections were initiated, the rate of the turned down vehicles amounted to 50 % whilst it fell down to 15 % after 5 years of checking activity, which shows that inspection has prompted motorists to have essential repairs carried out.

The resulting improvement in the traffic conditions can be illustrated by the fact that the number of traffic fatalities, after 8 years of inspection activity, remained roughly the same as it was before, in spite of the fact that the number of vehicles increased 3,6 times during that period.

After these first considerations, we shall now examine what are the
ing
country.

Implementation cost

This cost must be low enough because the entire operation must be profit-earning without penalizing the motorists for that. However, a low cost shall not be reached for example through a reduction of the system performances, a purchase of low quality equipment or a careless training of the personnel.

An effective means to reduce the implementation cost is, first of all, to work rapidly, then to shorten the duration of the stay of the European specialists on the place. How to reach these aims ? By the use of standardized modular elements (modules), pre-mounted in Europe inside big packages or containers. These elements are, for example : director's office, reception desk with cash register, administrative office, technical shop, sanitation, lavatory, etc.

The local enterprise only builds the foundations and the masonry of the test lanes and insures the supply of electricity, water, telephone and the organisation of the clearing system and sewage. Once these works are completed, the installation of the control station is made in a few weeks with the help of European specialists.

The assembled standardized modular elements form the carrying frame of the roof; they can be multiplied depending on the importance of the station.

Organisation of the system

The whole system may be a private, semi-private (with a warranty) or state-owned enterprise and, in any case, it must have qualified personnel.

A card-index system seems to be preferable to an informatized system.

Besides, periodical convocation of single users should be avoided and it would be more suitable to indicate on the driving document a deadline date after which, to be authorized to circulate, a vehicle must undergo a new inspection. Such a system requires, at all events, close collaboration with the Police.

The control tests

The control tests could be restricted to following operations :

- external inspection and inspection on the pit (rust, tyres, glass-work, leaks, signalisation lights, exhaust, etc.)
- control of the headlights (with a regloscope)
- summary check of the geometry (toe-in of front wheels)
- control of the wheel train (play in the direction and the front wheels)
- control of the brakes on a roller "brake-O-Meter" (with the special equipment for 4-wheel drive vehicles which are many in developing countries)
- checking of the polluting emissions (at the beginning, restricted to CO with the engine idling)
- if there is a test lane available (even a small one), a short drive can be useful to check the general behaviour of the vehicle).

Either two control lanes - one for the light vehicles and one for the heavy ones, or one lane only with double purpose apparatuses should be planned.

With regard to the checking instruments, only fully reliable apparatuses with simple characteristics should be chosen in view of the severe atmospheric conditions (dampness, dust, temperature); their maintenance and repair should be easy and not expensive.

Furthermore, it should be compulsory to have in stock a set of spare parts selected among those which are subject to wear and tear.

Electronic instruments should not be used, even if they show some progress in comparison with purely mechanical devices.

Training and education of the personnel

Concerning the personnel who will carry out the routine work for the various checks, it seems convenient to have their training and education made in the country by European instructors. As for the managerial staff, their education should be made in Europe during a period of instruction with experienced organisations.

This way of doing would reduce by 1/2 to 2/3 the cost of education of the entire personnel in Europe.

The economic problems of management

One should not ignore the fact that the installation of an inspection station takes time and is costly. At the beginning, the assistance of European engineers is a necessity; this entails economic difficulties, more especially because the price for each inspection cannot exceed a reasonable amount (comparable to the other expenses which have to be born when using a motor vehicle).

Some help could come from a collaboration with the insurance companies and State offices interested in understanding the changes in the accident causes and their cost to the community.

This possibility could be sustained through organizing a statistical system suitable for judging the influence and effects of inspection, assessed in human and material gains and also in relative saving in paid indemnities.

If the inspection administration were also entrusted with the distribution and sale of the number plates, this would mean a welcome additional income.

Implementation place

The determinative criteria to be considered are :

- the area
- the impact on traffic
- the cost of improving the access roads
- the quality of the ground and subsoil
- nearness of the main roads (especially for the heavy vehicles)
- the cost of the fittings (water, electricity, telephone, sewer, etc.)

It is obvious that, when planning and constructing a control station, it is necessary to take into consideration the futur foreseeable development of motorisation, specially with regard to the dimensions of the premises and the space still available for test lanes. There is therefore an additional expense for the ground space, which is higher than that which would seem necessary at the beginning to satisfy the first requirements. The modular system with standardized elements described above makes it possible to enlarge the station.

It will also be necessary to ensure that, in the vicinity (or at least in the town where the station is), there are repair workshops; otherwise, the inspection would be limited to the finding of a vehicle defects, but the latter could not be repaired to get back its previous characteristics.

A most interesting solution for the developing countries is a " mobile station ". Such a mobile station is composed of a trailer (preferably a semi-trailer) fitted out with the necessary measuring instruments to carry out the essential tests (specially those related to traffic safety).

A mobile station can serve a vast territory, sparing the automobilists the trouble of travelling a long way to the station and thus encouraging them to make sure that their vehicle is in good driving conditions.

Furthermore, one single mobile station is able to do the work of several standing stations, whose implementation and administration expenses would be much higher; it can also help a standing station to cope with its many tasks in the case of overwork caused by an abnormal number of customers.

The reverse side of the medal is that a mobile station is, first of all, intended for light vehicles, and that it is relatively expensive; moreover, it may deteriorate rapidly, which means an important and regular maintenance.

A good solution seems therefore to have a standing station in a town and mobile stations for the open country; the mobile stations would always have to come back to the standing station for maintenance, calibration of the instruments, etc.

A complete description of mobile stations formed the subject of a paper presented by Mr. G. A. Leschot at the " International Conference on Traffic Safety " in November 1983 in Brussels.

In view of the fact that the technical inspection cannot have a great influence on traffic safety without the availability of repair shops, one should examine the possibility of organizing mobile repair shops for the more frequent repairs which could accompany or follow the mobile inspection stations.

When talking of technical inspection in the developing countries, it appears useful to explain the scope and action programme of UNATAC in this field.

The Union of Technical Assistance for Motor Vehicles and Road Traffic (UNATAC) is a non-profit making association, with seat in Geneva, formed in 1978 in accordance with articles 60 and followings of the Swiss Civil Code. It is on the roster of the Economic and Social Council of UNITED NATIONS as consultative agency.

The basic scope of UNATAC is to give technical assistance, mainly to the countries where motorisation is developing rapidly; this comprises all problems related to the construction characteristics, the use, the maintenance and the inspection of road motor vehicles, and also the carrying out of any other task in relation to this scope.

The UNATAC activities are well within the framework of the efforts made by the developing countries where road traffic and transport, though still in their initial stage, are beginning to present problems with regard to traffic safety as well as to technical efficiency.

A concrete form of this activity is putting at the disposal of these countries the results of research and the knowledge existing in the countries with a high degree of motorization; this includes, more particularly, the experience gained in Europe, and also the errors made and which had to be corrected later at great cost.

With respect to the technical inspection of vehicles in service which is a special part of its activity, UNATAC is in a position to carry out all related services, that is to say from the first study up to the completion of the station, including the education and training of the personnel and the organisation of the administrative section.

UNATAC has already studied and devised complete projects for setting up an inspection service in certain African countries, but these projects remained unfortunately without practical results owing to a lack of funds. One should not forget that, in developing countries, the economic difficulties are the main obstacle, even in those where the Authorities have shown their interest and good will to increase vehicle safety.

UNATAC has already constructed mobile control stations.

Before closing this paper, we deem it useful to stress that almost the totality of vehicles fabricated today (4-wheel land vehicles excepted) seems to be too complicated and too perfected for use in the developing countries.

They require a specialised maintenance and particular control instruments and cannot be inspected rapidly; in addition to that, their construction characteristics do not make them well suited for the climatic and road (poor roadways, tracks and mountainous grounds) conditions prevailing in the developing countries. Furthermore, it should be taken into consideration the fact that local labour cannot yet reach the same degree of specialization as in the industrialised countries.

It is also very necessary to give one's full attention to the repair problem. As a matter of fact, it often happens that a simple and easy repair can take a lot of time and be very costly : a lot of time, because replacement of a very simple part may require a lot of work to dismantle an equipment followed by a still more difficult re-mounting work, sometimes with the special tools for the particular type of vehicle; costly owing to the price of the specialized labour, and also due to the fact that a small part with the value of only a few francs is not supplied by the car manufacturer, which obliges one to purchase a complete equipment at a much higher price.

The consequences resulting from such a situation can be very serious for the safety of use of a vehicle, because it often happens that an automobilist, unable to remain without his transport or working means for a long time, or not in a position or not willing to bear an exorbitant expense, puts off " sine die " a repair which, on the contrary, should be done urgently.

The entire philosophy is therefore to be re-examined if one wants motorization to increase in the developing countries and all requirements for a minimum safety to be met.

UNATAC

Union of Technical Assistance for
Motor Vehicles and Road Traffic

Association founded in accordance with the Swiss Civil Law, having its headquarters in Geneva, and appearing on the Roster of Non-Governmental Organizations having an advisory statute by the Economic and Social Council of the United Nations

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The prime aim of UNATAC is to render technical assistance regarding the construction characteristics, use, maintenance and inspection of road vehicles to those countries where motorization is developing rapidly and also to carry out all tasks connected with this object.

And, of course, we deal with the various aspects of road safety.

In addition to that, we investigate also the problems set by the environment protection (air pollution, noise) as well as by the economy in energy consumption.

Experts in the various fields mentioned above and members of national and international bodies specializing in these same fields are among the members of our Association.

Owing to its international nature, UNATAC is cooperating with various Commissions of the United Nations. Several members participate actively in the work of the Group of Experts on the Construction of Vehicles (WP29) and of the Group of Experts on Traffic Safety (GE20) of the Economic Commission for Europe of United Nations.

UNATAC's activities come within the framework of the organizing efforts undertaken in developing countries where road traffic and transport, though still in the initial phase, begin to create problems concerning safety and technical efficiency.

Such an assistance results concretely in putting at the disposal of these countries the outcome of research and the knowledge existing in countries with an already well developed motorization, particularly the experience gained in Europe where a number of errors have been made and which had to be corrected later on at sometimes great cost.

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We have made a number of studies regarding certain existing problems and have perfected programmes to initiate a system of driving school as also a scheme for technical vehicle inspection for an African country.

We have also set up an Information Service relative to the international regulations covering all requirements of vehicles (SIRIV).

With regard to the technical inspection of vehicles in operation, which is the main part of our activity, we are in a position to assume the organization of all connected services, that is to say from the initial study up to the completion of the entire installation, comprising also the training of the personnel and the administrative part.

We have also constructed mobile stations for the technical inspection of vehicles for those districts where it is advisable to avoid that users have to travel for to get their vehicle checked up.

We are also able to provide a "Road Traffic Code" which could be used as a guide in developing countries eager to adopt rules and regulations covering road transport. To our mind, this "Rule of the Road" should be somewhat "simplified" in comparison with the European Codes - often overweighted with too many regulations, signs, etc. which go into a whole lot of details with the risk of hiding, or making users forget the vital rules.

The regulations laid down in this "Rule of the Road" should, however, be in accordance with those existing internationally (Vienna Conventions of 1968 on Road Traffic and on Road Signs, Regulations of the ECE/UNECE and ... and vehicles.

For the elaboration of such a Rule, we can have the collaboration of highly qualified experts, with a great experience in the work of the national and international bodies specialized in road transport.

The following communication represents one of the studies prepared by UNATAC.

Geneva, April 1989

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