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Factories with Breathing Power

The Change in Working-Time Organisation in the European Automotive Industry

Abstract

The paper presents the findings of a survey on working-time organisation in the European automotive industry. It compares the duration of working time and operating hours and the organisation of shift systems, drawing on information from works councils or trade union branches in 39 bodywork and assembly plants in eleven countries for the reference year 1998. The survey carries on from an investigation on the same subject carried out by the IAT at the beginning of the 1990s and draws attention to a number of important changes, namely the trend towards weekend working and flexible shift systems. These trends are most marked in Germany, where the individual working hours are the shortest of all European automobile workers.

Structure

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Introduction

For decades, the large-scale industry used to be a favourite object of research in the social sciences. In Germany, though certainly not only there, the sociology of work was frequently understood – in the narrow sense of the word – in terms of "industry sociology". In this context, the automotive industry received special attention. And there were good reasons for it. It was motor car factories which, since the beginning of the 20th century, had practically applied and further developed the "scientific management" on a large scale. Again and again, from the 20ies up to the present time, the automotive factories have proved to be trendsetters of new production methods in mass production.

Even if the attention of social investigators (including the author of this paper) has recently shifted to service activities , and rightly so, the flagships of the industrial age continue to be of interest. The contrary moves of the two large sectors of the national economy are particularly fascinating to study. A kind of paradigm exchange or an oscillation of paradigms can be observed: The service industries such as, for example, the retail trade, are placing supreme effort into realising cost benefits by standardising bidding modes and activities, by exploiting economies of scale, and thus by means of measures derived from the principles of industrial mass production. Even in highly-specialised areas, for example, in the IT services, such possibilities of standardisation are being sought unceasingly. In contrast, industrial mass production is being increasingly submitted to the precept of "just-in-time" delivery, a paradigm which in turn springs from the realm of services. With some slight exaggeration, one might be inclined to talk about an industrialisation of services and a tertiarisation of industry. The prime necessity, however, is – to stick to the example of the large-scale industry – the endeavour to take advantage of the competitive prospects offered by the new element, without jeopardising the efficiency benefits of traditional practice: Service orientation is being intensified, with economies of scale remaining the cast-iron principle.

The flexibilisation of industrial mass production is of particular significance to the automotive industry. Despite still remarkable growth rates, the absorptive capacity of the market in world terms is restricted compared with the existing production capacity. The diminishing cohort of constantly growing automotive giants must therefore strive for obtaining and securing their

competitive edge both by a least-cost utilisation of their capacity and by enhancing their power for fast and punctual delivery.[1]

Time management obviously plays an important part in this context. However, time management is a hotly contested field. The duration, location and distribution of operating hours cannot be determined without taking into account the working times of employees. These working times have evolved historically from trade union movements. To this adds that the strongholds of industrial mass production, including particularly the automotive factories, are, by way of tradition, also strongholds of trade unionism. Therefore the topic of working time continues to count among the big negotiation issues of company managements and stakeholders representing employees' interest. in the automotive factories (provided that no attempt at squeezing such topics completely out of unionist influence is made, for instance by means of new "greenfield" establishments as they can be witnessed in Southern regions of the U.S.).

The dynamite which the topic of working-time organisation holds for the flexibilisation of mass production finds expression in the goal proclaimed by Volkswagen's member of the executive board in charge of personnel matter: This goal is the "breathing enterprise" (Hartz 1996). The image is catchy indeed. Its special appeal lies in two implicit prococations. First: It is exactly in the large body and assembly plants of the automotive industry of all plants, symbol and token of mass production of the industrial age, where, with the Wolfsburg mammoth business enterprise as a leader in the lead, production is to be adapted to market fluctuations by means of flexible working-time organisation. Second: It is not the soil of the U.S. or Great Britain, the Meccas or Medinas of deregulated labour markets, from where temporal flexibilisation of automotive production shall spring – on the contrary, the groundwork is done by Germany, a country which (at least within Germany) is deemed a stronghold of rigid industrialism, kept in leading-strings by both the State and by trade unions, and where working hours fixed under collective bargaining agreements count among the shortest by international standards.

This is reason enough to take stock of what has been accomplished so far. Which trends does working-time organisation in automotive plants follow in Europa? In how far have the duration and the flexibility of operating hours changed over the past decade? Which impact does

[1] This trend is closely linked with fundamental changes in the area of product development (shortening of time-to-market), of procurement and logistics (global sourcing etc.) and with the design of the product itself (platform strategy according to the construction kit principle), which cannot be topicalised here.

trade union influence have on working times, with the consequence of there possibly being different country profiles of working-time organisation in the automotive industry? The most important answers to these questions will be summarised in the following. The information provided by the paper in hand is based on a survey on the duration of working and operating hours and on the organisation of shift systems in the production areas of 39 body and assembly plants of eleven European countries, for the reference year 1998. The sample, in which all of the big car manufacturers are represented covers far more than half of the European body and assembly plants (cf. Table 1, Annex).[2]

1 The Change in Shift Systems

Decision-making processes relating to the organisation of working time in a body and assembly plant must take into account numerous parameters (for more details on the following expositions, including references for further reading, cf. Lehndorff/Bosch 1993). The determination of target or optimum operating hours in consideration of operational cost aspects is already a complex task in itself. Costing and calculation input here is not confined to the usual factors such as cost of real capital, additional labour costs incurred due to night- and week-end-work, additional maintenance expenses etc. What adds to it is the fact that an automotive factory consists of both capital-intensive and labour-intensive areas. From an economical point of view, it may be reasonable to operate a mere assembly plant on a one-shift system, whereas a highly automated engine factory runs on three shifts, which may even cover Saturday and parts of Sunday. However, under the roof of a large body and assembly plant, labour-intensive final assembly and capital-intensive body shop work are interlinked, and they cannot be decoupled from each other but to a very limited extent. Another parameter to be considered when determining optimum operating hours is the aspect of fluctuations in demand experienced in the course of economic or product cycles. Full utilisation of technical capacity

[2] The reference year for Belgium is 1999. Supplementary information is available from several engine- and gear-manufacturing plants. The survey was conducted in the shape of a written interview with works councils and-trade union organisations at plant level.
The survey carries on from another survey on the same topic which we had conducted at the beginning of the 1990s (Lehndorff/Bosch 1993). An analysis of the changes in plant-related working-time organisation at a European level thus becomes possible for the 1990 decade. 1990 and 1991, the reference years of the first surveys, had been boom years characterised by a high average plant utilisation rate, just like 1998, so that the comparison of plant-specific working-time organisation will not be distorted by influences of crisis. In contrast to our first survey, we now confined ourselves to a written exploration. This means that a more in-depth analysis of the ties between working time and working-time organisation has not been possible this time. The focus of the following expositions will therefore be the *description* of the change of plant-related working-time organisation in motor-car factories. Again in contrast to the former survey (which had evaluated the data of 26 motor-car factories in seven countries), the one in hand rests on a broader basis.

in “normal” times, during which demand matches the expectations on which capacity planning is based, may well hinder or even fully prevent speedy reaction to increases in demand. It is thus recommendable to make provisions for this eventuality by ensuring some scope for flexibility in the form of idle plant capacity, either in the factory concerned or at another plant of the company. At this point, the interplay of a company’s various manufacturing locations at a European or even global level enters the scene. Decisions on the organisation of working time in one place are less and less rarely being detached from decision on working-time organisation in other locations. However, this only refers to the *target* operating hours and working-time organisation. The *actual* course of matters will largely depend on market conditions. If, however, actual and target operating hours differ over longer periods of time, companies will search for possibilities of adaptation. – be it a redistribution of tasks within the corporate group, be it an extension of capacity at specific plants, or, in the opposite extreme, by a shutdown of locations.

Over decades, the two-shift system had been the classic shift system for body and assembly plants throughout Europe, organised on the basis of the 40-hour and 5-day week. This state of affairs mirrored in the first place that automation in automotive manufacturing used to be confined to only a few areas, and in the second place it reflected the flexibility interest of carmakers. Apart from only very few exceptions, approx. 80 operating hours per week were a well-established standard for a motor car factory. Since production used to be interrupted for three or four weeks over a year’s period, there were operating times ranging between 3.700 and 3.800 hours. At the end of the eighties, a dynamic process started to gain ground in the European motor car factories which was characterised by a decoupling of working and operating hours. The prime driving force behind this development was the leaping up of capital intensity in the context of motor car manufacturing. The starting point was the far-reaching automation thrust at the bodyshop plants (press shop, shell construction) which intensified the companies’ interest in longer machine times enormously, even though manual labour still prevailed in final car assembly. To this added, as a supporting factor, reductions in working time. With the eighties being rung in, working times had fallen below the former “taboo limit” of 40 hours per week in many European countries. In contrast to the sixties, where the industry had largely accomplished its transition from the 48- down to the 40-hour-week, further reductions in operating hours were often no longer considered acceptable by car manufacturers. Cnstantly aggravating international competition played a key role in this setting.

In the course of only a few years, i.e. in the time span between 1987 and 1992, working-time systems operated at the European body and assembly plants had become noticeably more

differantiated. The classic two-shift system was supplemented by three-shift systems and working-time systems with extended shifts. Although two-shift operation had on no account become obsolete or a mere phaseout model, every fifth car manufactured in the EU in 1992 left a factory operating on a new shift system.

In the interim, the European automotive industry has gone through a deep crisis and then again experienced a sound recovery, both of which involved far-reaching rationalisation and reorganisation processes. At the end of this turbulent decade: Which traceable mark has been left on the organisation of working time by the far-reaching changes in the automotive industry, by the aggravation of international competition, by concentration processes, by the sharp up- and downswings of economic cycles , by radical technical and organisational rationalisation?

1.1 The Decline in Importance of Shortened Working Hours as a Driving Force of Reorganisation

In contrast to the past decade, the European automotive industry did not witness any more major reductions in working time until the year 1998 – the sole exception being the last stages towards the 35-hour-week in Germany, and a few individual cases in other countries. If cutbacks were realised at all, they amounted, over an entire decade, to noticeably less than one hour a week or to minor holiday extensions. In some cases, working hours were even extended, for example by means of shortening paid breaks against a background of unchanged contractual working hours.

The introduction of the 35-hour-week as the statutory working time prescribed by law in France is currently giving a more complex shape to the panorama of working-time organisation. In 1999, the two French motor car manufacturers concluded collective agreements on the introduction of the 35-hour-week.[3] The divide between working times in the European automotive industry, which had further widened due to the introduction of the 35-hour-week in Germany in the first half of the nineties, remains all in all far open.

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[3] The current reductions in working time could not be taken account of in our survey with the reference year 1998. As matters stand, working times at Peugeot/Citroën and Renault continue to differ from one another, even after the introduction of the 35-hour-week in the French motor-car industry, and they are in part longer than in Germany. As it can be inferred from the pertinent Agreements, it is particularly at Peugeot where all breaks, including paid short breaks, are removed from the 35-hour-week by definition. Standard working times according to the definition set forth in the annex to this paper, therefore continue to exceed 35 hours per week at this carmaker's establishment (since 2000, the annual standard working hours at Peugeot and Renault have amounted to approx. 1.660 and 1.560 hours, resp., compared to 1.540 hours in the majority of German automobile plants). The practice of defining the 35-hour-week in terms of „actual working time" minus all breaks, is permissible

If working times are made fit for comparison by applying a standardised measurement concept based on annual hours – irrespective of the different national or even company-specific defintions – a wide range of working hours is revealed. “Standard working hours” range from 1.495 hours (BMW Regensburg) up to 1.824 hours at Ford Valencia and at a number of Portuguese plants, with ranges still increasing after deduction of all paid breaks (“net working time”): from 1.360 hours (again BMW Regensburg) up to 1.824 hours at Toyota in Portugal, where contractual working times do not include any breaks at all. Assembly workers in some South-European motor car factories partly work a total of 300 hours longer than their German colleagues, taking account of breaks as one element of computation even up to 450 hours longer (about the “ranking” of working times, please refer to Figure 1 in the Annex).

The noticeable slackening in the movement for shorter working hours – in which only France stands apart - signals that the momentum originally transmitted by the reduction in working hours to the reorganisation of working-time systems on the part of employers, is insignificant today. Initiative in working-time policy has largely passed over from the trade unions to the companies.

1.2 The Extension of Operating Hours

1.2.1 Three-Shift System

At the beginning of the nineties, when we conducted our first survey, there were 13 larger motor-car factories in Western Europe which were no longer operated on the traditional two-shift system. The production volume yielded by these plants accounted for approx. 20% of the total output of the European automotive industry. In the 1998 survey, round about half of the body and assembly plants surveyed were already being operated on three shifts (Table 2: Two-shift systems with extended shifts at 8 ½ up to 9 or 10 hours, as they are above all being practised at BMW, could not win out over the three-shift system throughout Europe).

Even if only somewhat more than half of the European body and assembly plants are represented in our survey, it may well be inferred from the high capacity level of these plants that the majority of European cars these days come from factories operated on a three-shift system. In some cases, this three-shift operation mode was agreed to be an option for the time being, or it was expressly provided with a time limit. For example, at the three French body

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according to the second „Aubry Law“ (Bloch-London 2000).- I will briefly revisit the topic of the development in France further below.

and assembly plants of Renault, the possibility of going over to three-shift operation if so required has been provided for some years now (Hancké 1998). Sometimes only the production lines for specific models are operated on a three-shift mode. By and large, all signs point to the fact that three-shift operation is more and more noticeably becoming a normal and well-established form of organisation at body and assembly plants, even though it is not being practised everywhere and at every time. The significance of the classic two-shift system as a standard is becoming relative in comparison, although the high work intensity of car assembly will enable it to remain a kind of pillar in motor car production.

1.2.2 Work on Weekends

In the wake of the increasing utilisation of production times from Monday to Friday, growing pressure is exerted on the work-free weekend.

Saturdays have traditionally played an important part in motor-car production because they offer scope for extra shifts (in the framework of morning shifts). Furthermore, weekends are used to carry out maintenance and repair work. In the course of the past decade, however, attempts were made at gradually integrating Saturdays – partly even Sundays – into regular production activities.

At three of the body and assembly plants surveyed (Fiat Melfi, BMW Regensburg, Daimler-Chrysler Rastatt), Saturdays are an integral part of the shift system. At the two German plants, this arrangement is limited to the morning shift, but it is a striking fact that – besides Fiat – it is two German motor-car manufacturers who are assuming a pioneering role in the incorporation of Saturdays into standard working time.

Another German motor-car manufacturer – Volkswagen – has recently advanced one further step by introducing a separate weekend shift at his Brussels plant. In addition to the three-shift operation run from Monday to Friday, two weekend teams do an average of 32 hours per week in turn. At Peugeot in Mulhouse, weekend teams have been deployed for some time now, too.

Whereas such stages of development still remain exceptions to the rule at body and assembly plants, the state of the art at upstream press and component plants, which are in part largely automated, has reached a substantially more advanced stage (Table 3).

Weekend work at press shops, engine and gear-manufacturing plants as well at further component plants is often confined to particularly capital-intensive areas of mechanical manufacturing, so that the number of employees doing regular weekend work will not necessarily be

legion. Regular weekend work in motor-car manufacturing establishments therefore continues to be an exception for the majority of employees. Nevertheless: The integration of weekends into standard working and operating time is progressing bit by bit, and step by step, in the form of a catfooted process of adaptation.

1.2.3 Operating Hours

The great significance of the three-shift operation in motor-car production also mirrors in the "ranking" of body and assembly plants with respect to their operating hours (Fig. 2).

The particularly long operating hours at Fiat Melfi and Volkswagen Brussels (since 1999) are in the former case due to the extension of three-shift operation to six days of the week, in the latter case they are attributable to the supplementing of three-shift operation by two separate weekend teams. Operating times of over 4.500 hours per year can only be achieved by means of three-shift systems. BMW Regensburg with its special 11-shift system yielding 4.500 operating hours per year is thus on the borderline towards plants running two-shift systems providing for up to almost 4.000 hours split into 8 hours per day.

Table 4 provides a survey of the changes in shift systems that have occurred since 1990/91 as well as on their impact on operating times. It is also revealed that the combination of different organisational features of shift systems and downtimes results in a wide spectrum of variants to the decoupling of working and operating hours. Some plants with above-average long working hours therefore have short operating hours, whereas operating hours at plants with relatively short working hours may be extremely long. This self-evident truth requires being committed to memory because it may occasionally seem as if short working times restricted the possibilities of utilising capital-intensive installations, with detrimental effect on unit cost and competition being the aftermath. But matters seem to be quite to the contrary: Short working times enhance a company's possibilities of adjusting operating times to capacity requirements with as much diversity as necessary. This impression is corroborated by the state of the art in the flexibilisation of working-time systems.

1.3 The Flexibilisation of Working-Time Systems

There are basically three ways of adapting operating hours in motor-car factories to fluctuations in customer demand:

(1) The classic shape of flexibility leaves the shift system unchanged. If required, the standard operating time is solely extended – e.g. by means of extra shifts – or it is temporarily re-

duced – e.g. in the case of short-time work. As before, surcharge-liable extra work is the most frequently used tool for varying working and operating hours. However, it is only in very few of the European motor-car factories that collective extra work exceeds a volume of 5% of standard working hours.

(2) An increasing number of motor-car factories go over to supplementing this simple flexibility variant by measures which, althouth they still leave the shift system intact, take advantage of design options, such as variations in the duration of works holidays or the temporary extension of late shifts. Variations in the number of annual operating days by transforming individual into collective non-working shifts (or vice versa) plays an important part in places where the working week falls below 40 hours (adherence to the 40-hour week, for example in Portugal, thus goes along with the retention of traditional, relatively rigid shift systems). Further flexibility potential is held by working through without breaks, which, however is only resorted to in bottleneck situations. And finally, an increasingly popular flexibility option in the framework of existing shift systems is the arrangement of collective non-working shifts requiring compensation by means of extra shifts at a later date – preferably in the course of the following years.

(3) The shift systems themselves can be rearranged, with the option of changing either the working and operating hours scheduled per day or the working and operating days per week being institutionalised (“working time corridor”), so that the contractually agreed amount of working time may be reached solely on an average over a defined, even longer period of time.

The three categories of flexibilisation tools presented in this paper are basically geared to different goals: Measures leaving the shift system unchanged - such as the variation of works holidays or work without breaks - are mainly intended to master and overcome short-term bottlenecks or to extend/vary annual operating hours. As soon as shift systems are themselves flexibilised in a further step, it is not only seasonal flexibility which is improved, but also flexibility over the entire product cycle.

Variable shift systems in the true sense of the word have only been introduced in Germany so far. However, it would not be a surprise if they made an entrance at French plants, too – in the wake of the current reduction in working hours.

In *Germany*, shift systems have been reorganised in several motor-car factories over the past few years. This was done in a way enabling working and operating hours to be periodically adapted to fluctuations in demand. All modifications of working and operating times are

subject to single-plant bargaining agreements and are each defined for periods of several months or for the time of one year. The characteristic feature of Volkswagen in this respect is, in contrast to the other manufacturers, that in the plants of this company, for which a separate in-company agreement is traditionally concluded, regular working hours may be periodically shortened or extended – without the necessity of providing compensation at a later date in order to reach the required 35 or 28.5 hours per week. The box below displays some particularly striking examples of variable shift systems as practised in German motor-car factories.

Volkswagen Wolfsburg

By means of a follow-up agrement, the probably most famous example of a plant-specific employment protection agreement based on a 28.8-hour-week has turned into a perfect model of plant-specific working-time flexibilisation (cf. Seifert/Trinczek 2000). Today, working-time duration at Volkswagen may vary between 28.8 and 38.8 hours per week. The duration of working time and the shift system are subject to periodic definition by means of works agreements. Further flexibility potential is held by the fact that extra work (Monday until Friday) is surcharge-free until the 35-hour-week is reached. In 1998, working times of 28.8 hours per week were agreed (four workdays at 7.2 hours each), which was, however, increased due to mandatory extra work on the fifth day. This resulted in 36 hours per week in the framework of a two-shift system with a permanent night shift (because of this special feature we indicated longer standard working times for Wolfsburg in our comparisons than for the other German motor-car factories). Since 1999, three-shift operation in a classic rotating-shift system has been practised. The "workdays to shift schedule" are Monday to Thursday. Since employees have one week off once in ten weeks, an average 28.8-hour-week is worked within a 10 weeks' period. For the three shifts on Friday "mandatory extra time" was agreed, so that the average working week continues to hold 36 hours over a 10-week-cycle. In the case of diminishing capacity requirements, it is these Friday shifts which have to be cancelled first.

Opel Rüsselsheim

According to capacity requirements, working time can amount to either four or five days per week ("working-time corridor"). Changes in working time must be announced two months in advance. Production workers thus have working times ranging from 31 to 48.75 hours. Within a year's time, deviations from the contractual working time amounting to 35 hours per week must be remedied. Should such compensation not be possible, e.g. for company-related reasons, compensation is required " at the next possible date".

DaimlerChrysler Rastatt

The late-shift system requires each of the three shift teams to run six early shifts (including Saturday), five late shifts and two night shifts (Thursday and Friday) on a regular basis. The number of night shifts can be increased to up to four within one week and up to 13 within one year. Employees' time credits accumulating in this way are compensated within a period of two years, by means of non-working shifts at night and on Saturdays. This can be done either collectively or individually. Once per quarter, the shift schedule is agreed between the management and the works council.

BMW Regensburg

Due to the design of the shift system (cf. Table 2), employees are bound to incur time debits, because the collectively agreed working time amount to 35 hours per week, whereas an average of only 33 hours is definitely worked according to the shift schedule in the framework of the three-week shift cycle. Of this difference, one hour on principle is evaluated to be a bonus for Saturday work (therefore we based our calculations concerning BMW Regensburg on a standard working week of 34 hours). The remaining hour sums up to the agreed 45 hours per year, which are remedied by means of five compensatory shifts. Two of these additional shifts serve further education, to which there is an individual entitlement. Two further shifts can be scheduled surcharge-free for Saturdays. The location of the remaining compensatory shift is individually agreed with the respective superior.

BMW München

In the framework of this two-shift system with a shift duration of 8h 35' (plus unpaid meal break) and an individual four-day-week, employees working to the shift schedule also work less than 35 hours per week. This systematically

wins the plant a time credit of half an hour per week, which is removed by the employees by means of interspersed compensatory shifts . These shifts can partly be scheduled (four times in three years) surcharge-free on Saturdays. They can also be accumulated over a period of years in order to meet increased personnel requirements in kick-off periods.

In *France,* the in-company agreements concluded in 1999 by the two large motor-car manufacturers reveal that although individual working hours are being flexibilised by means of annual working times and individual non-working shifts, the mode of operation of the shift systems themselves will nevertheless not be generally modified for the time being. Agreements concluded at PSA and Renault, however, provide for the option of arranging new, more flexible shift systems at plant level if required. For instance, seasonally fluctuating operating times can be introduced by means of single-plant bargaining agreements. At Peugeot, the standard working time may be extended to six weekdays (with work on Saturdys being liable to a 2% surcharge on the rotating-shift wage).

In both companies, working time is squared up on an annual basis; differences between hours worked and contractual hours are passed to a working-time account. Different sets of rules are applicable to individual and collective working-time accounts. The volume of collective time credits is limited (at Peugeot, however, these limits are less narrow than at Renault), whereas individual possibilities of time accumulation go very far in both companies.[4]

By and large, it can be said that the entire complex of working-time organisation in France is going through a phase of radical change: Working hours are being shortened, the operating times of some plants are being extended according to trends in demand (e.g. in the Peugeot works manufacturing the 206 Model), and agreed flexibility scopes have been extended considerably.

However, the introduction of variable working-time systems will not remain confined to countries or companies, resp., with short working hours. This becomes clear by referring to the example of *Great Britain*, which could not be included in our survey. In a country where there are hardly any area-covering collective bargaining agreements left, not even in the automotive industry, extremely different trends can be detected from plant to plant. On the one hand, there is a company like Rover, which had witnessed a barter-trade policy of “longer operating hours for shorter working hours” even before the BMW episode took place, and

[4] The Peugeot Agreement (Fédération Confédérée F.O. de la métallurgie 1999), which was not signed by all trade union branches, establishes sets of rules pertaining to individual and practically „open-sky“ long-term accounts, which may be paid off „in exceptional cases“. Interestingly enough, the purchase of a „brand new“ car counts among such exceptional cases.

where, following this tradition and in the wake of more flexible working times being introduced, contractual working hours in motor-car production were cut back in 1999 from 37 to 35 hours per week. On the other hand, there are the examples of Peugeot and Vauxhall (GM), where variable annual working hours are being introduced at the same time, however without shortening contractual hours (Labour Research 1999). The above-mentioned example from *Italy* also deservers another mention: The "greenfield" Fiat plant Melfi is the only European car assembly plant to date which is being operated on three shifts from Monday to Saturday, without working times having been shortened in comparison with working hours done at the other Fiat plants.

The changes in shift systems described in this Chapter entail both more flexible and longer operating hours for the automotive industry. Many factories now can, to stick to the image quoted at the outset, not only breathe faster, but also breathe in and breathe out more deeply, and, what is more, they can hold their breath for quite some time longer. Or, in more precise terms, in order to step out of the image and set aside the desubjectivisation conveyed by it: *Management* will now be able to *pump air into their factories* - in and for longer intervals – according to the demands made on this breath in terms of market fluctuations, product cycles and sales planning.

2 Company Strategies and Nation-Specific Profiles of Decoupled Working and Operating Hours

Behind a seemingly bewildering variety of decoupled working and operating times, typical patterns are gradually emerging. As it was to be expected, company-specific strategies and current demand situations play an important part in this context. This can be shown exemplarily by referring to the three business enterprises Volkswagen, General Motors and Ford (Figures 3 – 5):

- At *Volkswagen,* the majority of cars built in 1998 left plants operated on a three-shift regime. Differences in operating times have obviously nothing to do with differences in the duration of working time. All in all, Volkswagen presents the picture of a motor car manufacturer working largely to capacity.
- The *Opel* profile, in contrast, clearly mirrors that operating times depend on the state of demand for a given plant product. Due to the permanent surplus capacities in the manufacture of certain automotive categories, a small-sized location in Great Britain has only recently been more or less shut down.

- This consequence of long-term overcapacities can be demonstrated by referring to the example of *Ford.* In 1998, Ford did not need additional operating time in order to meet demands; most of its plants were run on a two-shift system. The Belgian plant in Genk (sole location for the production of Mondeo) was originally intended to be operated on a three-shift system; however, a long phase of short-time work forced annual operating hours down to the level of a two-shift regime. With the introduction of new models, a change of course is coming in sight. Some time ago, three-shift operation was introduced at the German plant of Saarlouis, which is the manufacturing location for Focus. At the Spanish Ford plant of Valencia the possibility of creating a third shift had already been agreed in 1998 (EIRR 1999a). But at the same time, the British manufacturing locations of Ford were shut down (closure of Dagenham near London, integration of Halewood into Jaguar). Production is thus being concentrated on less locations, whose operating times will be extended.

Two-shift operation as a permanent condition in the majority of large plants – such state of the art is no longer accepted by managements, at Ford to no lesser degree than at the other big carmakers.

Company-specific situations and approaches give a view over country-specific profiles linked to them. These are largely attributable to labour-market regulation and industrial relations. *Belgium* may serve as a particularly impressive example (Figure 6). Three of the four body and assembly plants in this country are being operated on a three-shift system. This is due to the labour-market legislation in this country, which offers the companies easy access to short-time work, whereas it is mandatory to compensate extra work with leisure time, plus a paid overtime surcharge (Arrêté Royal 1983). Works agreements, which restricted an extensive resort to short-time work or at least increased its price, were in fact concluded in motorcar factories. However, this did not change the basic setting, in which car manufacturers tend to schedule longer regular operating hours at their Belgian plants in case of doubt which can be easily reduced by means of short-time work when capacity overshoots occur. In 1998, Ford availed themselves abundantly of this option (EIRR 1999b).

The example of Belgium – especially of the VW plant in Brussels – also illustrates in which way short working times can go along with long operating hours. Still more differentiated insights into the decoupling of working time and operating hours can be gained by comparing the profiles of Germany and Spain (Figures 7 and 8):

- One striking feature about the profile of *Spain* is, first, the differences in working time at the various plants. This is due to the fact that many large-scale enterprises have developed a deeply rooted and strong tradition of plant negotiations on working time and other conditions of work, which often lead to clearly more favourable conditions for employees than industry-specific bargaining agreements. Second, it becomes obvious that the high degree of diversification in operating times depends in no way on working times – plants with relatively short working hours rather occupy the upper range of operating times. Third, operating times are – apart from one small, single-shift off-roader factory of Nissan – concentrated on two clusters of motorcar factories operated on a two- or three-shift regime, resp. This provides evidence that operating times depend almost exclusively on the shift system, and that the manifold further options of working-time design and differentiation are not yet being fully exploited by the companies.

- Let us now compare the above setting with the corresponding profile of decoupled working and operating times in *Germany*: What springs to the eye is the amount of annual working hours, which falls below the Spanish figure by approx. 200 hours. With the exception of Volkswagen Wolfsburg and BMW Regensburg (for reasons, please refer to the box above), the duration of standard working time corresponds to the collectively agreed 35-hour-week. In contrast to the state of affairs in Spain, the weight of in-house interest representation in the German motor-car factories does not refer to the duration, but to the organisation of working time. Taking account of the short duration and uniform shape of working time, the diversification and differentiation of operating times is all the more remarkable. The comparison with Spain shows: The duration of operating hours is no longer linked with the duration of working time. Operating times depend exclusively on actual working-time organisation. However, this working-time organisation in German motorcar factories is obviously much more differentiated than at the Spanish plants. This can be inferred from the fact that the clusters of operating time which are typical of the Spanish profile are not found in Germany. At their German plants, car manufacturers obviously avail themselves of a wide variety of design and differentiation possibilities with respect to working-time organisation, and to a stronger degree than in any other European country.

The duration of working time has obviously no impact on the *duration* of operating time. However, the *differentiation* and – in the same context – the *flexible organisation* of operating times are noticeably further advance in Germany as the country with the shortest collectively agreed working hours and the highest wage level throughout the European automotive indus-

try than in Spain and in other countries. Relatively strong collective agreements and influential works councils thus have the effect of a productivity whip prompting motorcar manufacturers noticeably to search for ways of increasing efficiency – also in the organisation of working time.

3 Concluding Reflections

Working-time organisation in the European motorcar factories has undergone a noticeable change in the course of the past decade. The majority of cars today leave body and assembly plants operated on a three-shift regime. Highly mechanised installations, which only keep a minority of employees busy, are increasingly running also on weekends. Operating times are not only becoming longer, but also more flexible. For this purpose, several companies are testing and trying flexible shift systems, whose constructive feature is periodic fluctuations in working time – especially throughout product cycles – that do fall into the category of surcharge-liable overtime. In Germany as the country with the shortest working times within the European automotive industry, such working-time systems are preferably implemented. These findings prompt some concluding reflections.

First, the preponderance which three-shift operation has meanwhile gained signals an implicit re-definition of the term “capacity” in body and assembly plants. Despite the still only partially automated car assembly, the average capital intensity of motocar production in Germany has risen to a degree which makes it seem operationally rational to consider a motor-car factory as running to capacity not before it is running on a three-shift system. Permanent operation of several plants manufacturing in parallel under a two-shift system is obviously regarded by car manufacturers as economically insufficient. The trend seems to be that two-shift systems will only be accepted in periods of weak demands. The risk of location shutdowns in the case of slack demand thus becomes stronger.

Against this background, the explosiveness about plant shutdowns by Renault in Belgium as well as by Ford and General Motors in Great Britain becomes obvious. Carmakers who temporarily experience strong overcapacities in Europe tend to concentrate production in fewer locations. This in turn increases the probability of extended operating times in part of the remaining locations as soon as the demand for certain models is recovering. The lower the number of locations, the heavier the flexibility burden to be borne by each of them.

Second: The trend towards a flexibilisation of working time in the automotive industry should not be interpreted as a token of increasing deregulation. Flexible working-time arrangements,

from the classic extra shifts to the novel, variable shift systems, are co-determined to a considerable degree by in-house bodies of interest representation. This is the case from Sweden to Spain, from the Czech Republic to Great Britain. The prevailing influence of companies on the flexibilisation of working time is of course not called into question; however, there may be only few countries in Europe where flexible working times are regulated and co-determined to such a great extent as at the large body and assembly plants of the automotive industry. It must also be borne in mind that it is especially in the mass production of motor vehicles where the complexity of working-time organisation increases with each and every further flexibilisation measure. Production planning and handling of personnel placement are gradually becoming more difficult and demanding. Consequently, companies also have to pay a price for flexibilisation.

Even if the above-described changes in the organisation of working-time in automotive manufacturing areas capture the attention of the media, of researchers and, as a matter of course, of the trade unions – working-time changes in areas where the force and effectiveness of conventional forms of regulation declines may be much more intricate. If highly qualified employees work substantially longer on an average than the bulk of dependent employees at medium qualification levels (Wagner 2000), this trend will not keep well clear of the automotive industry. It is only that the less densely regulated working times in areas such as development departments are more difficult to explore – but who dares tell us that it is not exactly these field from which the most important (and problematic) impulses for future working-time organisation will emanate?[5]

Third: There is obviously a complex interrelation between the reduction and flexibilisation of working time. In most of the European car factories, flexibility continues to be predominantly being achieved by well-established instruments such as extra shifts or variations in the duration of works holidays, which leave the shift system in itself untouched. However, if, like in Germany and currently also in France, working time is noticeably reduced, companies will develop utmost efforts in order to differentiate their shift systems and to extend and flexibilise operating times by incorporating flexible design elements into the shift systems themselves. However, this observation should not lead to believe that without reductions in working time flexibilisation would spare the trade unions. Although especially in Germany reductions in working time have given the first impetus to a creation of *possibilities* of flexible working-

[5] We are working on this topic in a current project.

time organisation (for more details, please refer to the paper by Dorothea Voss-Dahm at this conference). However, *actual* flexibilisation has meanwhile become detached from this political cause and is being accelerated even in places that have not seen any reduction in working hours for quite some time.[6] This applies to Germany – across the trades, but it applies increasingly to the automotive industry across country borders. The flexibilisation of working time has meanwhile gained a momentum of its own and has become a significant factor in competition.

Trade unions now tend to keep away from a political orientation towards further reductions in working time – for fear of flexibilisation (and also for fear of wage cuts and of a complete loss of their influence on standards of performance). However, the flexibilisation caravan will progress step by step – be it in the face of reductions in working time or not. The spirit has long left ist magic lantern! Therefore it should not vanish into oblivion that – and it is the motor-car factories which furnish the most impressive examples in this respect – the flexibilisation of working time could be made a bargaining chip of in-plant *negotiation processes* (instead of unilateral resolutions of the companies, as it was often the case in Great Britain), where it was a result of a barter deal: "Flexibilisation for Working-Time Reduction". In order to boil it down to a short-cut essence: The more fervently trade unions and interest representation bodies have tried to achieve reductions in working time so far, the more they have been induced or even forced to develop "working-time know-how" - which they will increasingly need anyway in order to bring their influence to bear on plant working-time policy.

The above observations underline the significance of a European-wide trade-union agreement on a common minimum standard for working-time organisation on the one hand, and the importance of practical efforts towards adherence to these standards. The observations also show that transparency on the impact of multi-local competition is a reasonable goal. Trade unions in countries like Germany or France where working times have been or are being substantially reduced, see themselves forced, due to aggravating pressure of competition which is being shifted into the locations, to make in part far-reaching concessions regarding working-time flexibilisation. Yet this will reverberate on countries where there have been hardly any or even no reductions in working time at all for a long time. Multi-local competi-

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[6] In a survey of Deutscher Industrie- und Handelstag conducted among 19.000 German companies from all branches of the economy, two third of those interviewed stated that they were practising some form of flexible working-time organisation. Another two third of these had introduced these changes in the course of the two preceding years (DIHT 2000). In some of these industries the latest reductions in working time dated back more than ten years!

tion spreads its effects into all directions under the sun: from north to south, from west to east. Companies such as Daimler Chrysler or Volkswagen will apply the experience gathered primarily in Germany today in Spain tomorrow if required. Trade unions and plant interest representation bodies of the entire European automotive industry will be well advised to develop their own “working-time know-how”.

Annex

A) Measurement of Working and Operating Times (Definitions)

In order to make plant data on working and operating times comparable with each other, standard criteria for data collection and calculation had to be applied. The data collected in the framework of this survey were the number of operating hours in the areas “shell assembly” and “car assembly” as well as the number of working hours done by production workers employed in this field. The calculations were made using standard definitions of working and operating times on the basis of hours per year.

Standard Working Time is defined as paid attendance time, including all paid breaks. The calculation of annual hours takes account of holiday entitlements as well as of all public holidays. The Standard Working Times computed in this way differ in some cases from the collectively agreed working times according to the respective country-specific definitions.

Net Working Time is the Standard Working Time minus the amount of paid breaks. By reducing paid breaks, Net Working Time can be extended even if the Standard Working Time (and contractual working time) remains unchanged. *Actual Working Time* is an approximation of the average of working time actually done in 1998. Included in this figure are especially collectively done extra work (particularly in the form of extra shifts), as far as such work has not been compensated by means of later non-working shifts or bridge days. Included are also short-time work as well as the location of movable public holidays. Not included were average absence times (for example due to illness), which are usually taken account of in the computation of Actual Working Time at a macroeconomic level.

Standard Operating Time is calculated based on daily Standard Working Time, minus all plant-specific and scheduled production holdups. Even in the case of identical Standard Working Times, Standard Operating Times may differ from onother. In order to determine annual Standard Operating Time, the number of shifts per day and week as well as plant shutdowns in the course of the year were taken account of. *Actual Operating Time* is calculated on this basis, analogous to Actual Working Time.

B) Tables and Figures

Table 1: Automobile plants included in the sample (no. of plants operated by individual manufacturers or marques in each country)

	B	CZ	SF	F	D	I	NL	P	SP	S
Volkswagen	1				1			1***	1	
Seat									1	
Skoda		1								
Audi					1					
Opel	1				1			1	1	
Saab			1*							1
Ford	1				1			1	1	
Volvo	1						1**			1
DaimlerChrysler					2				1	
PSA				2				1	2	
Renault				1				1	1	
Nissan									1	
Fiat						1			1	
BMW					2					
Toyota								1		
Daewoo		1								

*Production to order for Saab and Porsche
**Volvo/Mitsubishi joint venture
*** VW/Ford joint venture until 1999

Table 2 : Automobile plants (final assembly) with new shift systems at the end of the 1990s

Shift system		Plants
Three-shift system(alternating shifts) Monday to Friday	B	VW Brussels*
	CZ	Skoda (Model A4)
	D	VW Wolfsburg (1999)
	NL	NedCar
	P	Renault Aveiro
		Opel Azambuga
	SP	Seat Martorell
		Opel Saragossa Citroen
		DaimlerChrysler Vitoria
		VW Pamplona
Three-shift system (permanent night shift) Monday to Friday	B	Opel Antwerp
		Ford Genk
	D	Opel Bochum
		Opel Rüsselsheim**
		Audi Ingolstadt
	SP	Renault Fasa (at times)
Three-shift system (alternating shifts) Monday to Saturday	I	Fiat Melfi
Variable shift system with six early, five late and and two night shifts per week (incl. early shift on Saturday)	D	DaimlerChrysler Rastatt
Two-shift system with extended shifts (8.6 hours) Monday to Friday**	D	BMW Munich
Two-shift system with extended shfits (9 hours) Monday to Friday and 11th shift on Saturday	D	BMW Regensburg

*Since 1999, the three-shift system has been supplemented by weekend crews
** For four months in 1998 on the Vectra line
**Two of the five plants that were using two-shift systems with extended shifts at the beginning of the 1990s (Opel Antwerp and Nedcar) have gone over in the meantime to three-shift operation. Peugeot Poissy reverted some years ago to a two-shift system.

Source: IAT survey European automotive industry

Table 3: Component plants with weekend shifts

Country/plant		S/GE/B*	Weekend shifts
A	BMW Steyr	GM	Production in 11, 15 and 17-shift systems; Saturday included in 11 and 17-shift system**
F	Renault Cléon	GM	Three-shift operation supplemented at time by weekend crew (24 or 29 hrs/week on fixed-term contracts)
D	BMW Landshut	K	Production in 15, 17 and 20 shift-systems***; Saturday included in 17-shift system
	BMW Berlin	K****	17-shift system
	DaimlerChrysler Untertürkheim	GM	Foundry with weekend shift Fri 8hrs / Sat 10hrs / Sun- Mon 10 hrs (35 hrs paid)
	DaimlerChrysler Berlin	GM	Weekend shift Fri 8hrs / Sat 10hrs / Sun-Mon 10hrs (35 hrs paid)
	DaimlerChrysler Hamburg	K	Occasional part-time weekend shift
P	Renault Aveiro		Automated production in body and assembly plant („*ligne car-teres*“) with 2x12 hrs weekend shifts
SP	Seat Martorell	P	18-shift system
	Opel Zaragoza	P	17-shift system
	Citroën	P	Weekend partially incorporated into shift system
	Renault Vehiculos Industriales		Automated production in body and assembly plant with four-shift operation incl. Saturdays
	Renault Fasa		Automatic production in body and assembly plant with additional weekend shift (28 hrs)

* Press shop/ Gearbox or engine plant / Plant for other components
**Working time in the 11-shift system 37 hrs, in the 15-shift system 36 hrs, in the 17 shift-system 34.5 hrs
***20- shift system, 6 hours each shift, individual working time 30 hrs/week
****Motor bicycle assembly with separate shift system (15 or 18 shifts per week depending on season)

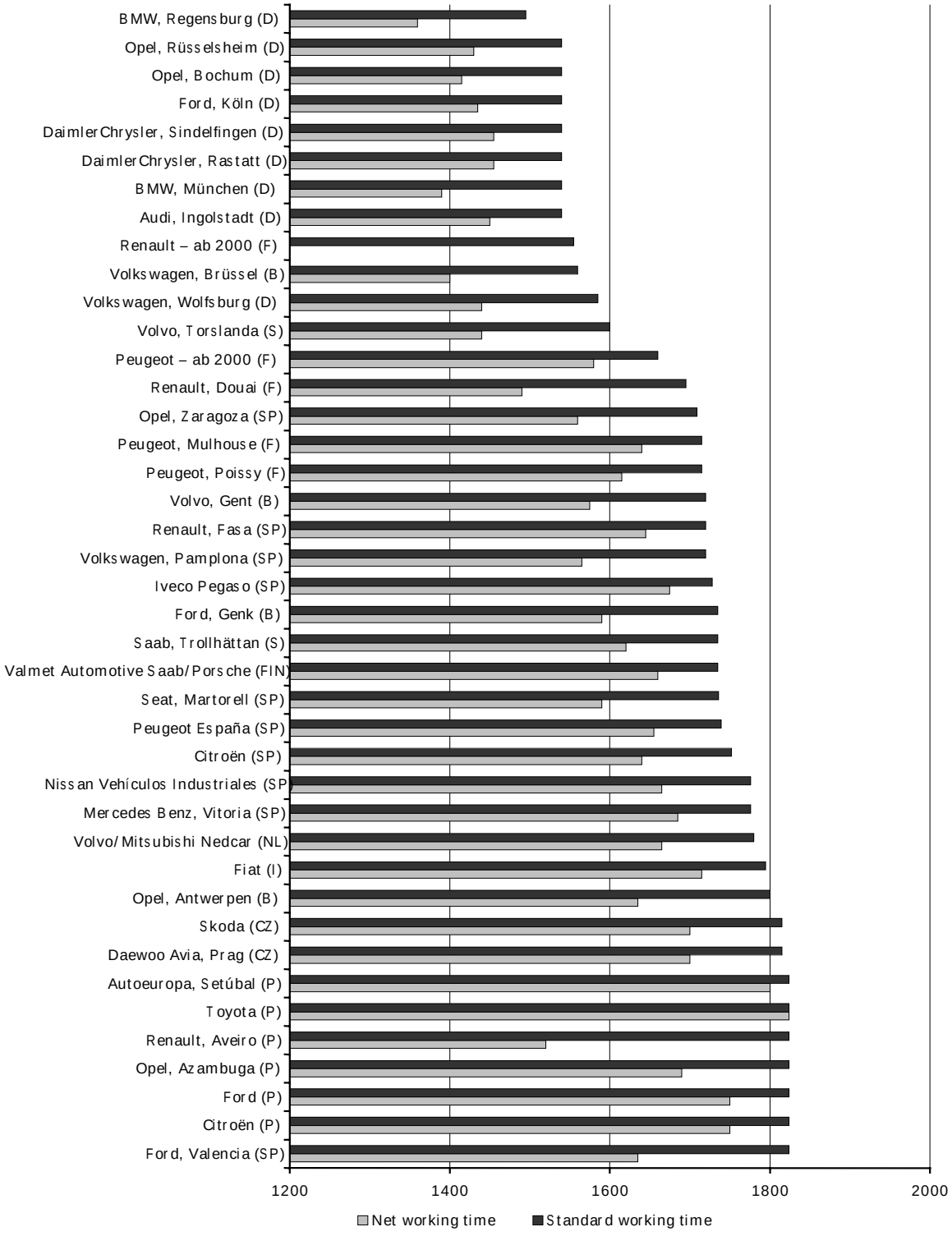
Source: IAT survey on working time and operating hours in the European automotive industry

Table 4: Standard operating hours 1990 and 1998, hours per year

Country	Company/Plant	1990	1998	Difference	Causes
D	Volkswagen Wolfsburg	3380	5300	1920	Changeover from two to three-shift operation; shortening of annual shutdown
SP	Volkswagen Pamplona	3500~	5290	1800 ~	1990 two-shift operation, then period of three-shift operation, then return to two-shift operation, now three-shift operation again
NL	Volvo / Mitshubishi Nedcar	3755	5155	1400	Changeover from two-shift operation with extended shifts to three-shift operation
B	Ford Genk	3620	5010	1390	Three-shift system since 1993
SP	Seat Martorell	3480	4860	1380	Old plant in Zona Franca with two-shift operation, new plant in Martorell with three-shift operation
B	Volkswagen Brussels (from 1999)	5265	6000+	750 +	Supplementation of three-shift operation with weekend shifts
D	Opel Rüsselsheim Vectra line	3170	3800	630	Third shift for four months
D	BMW Munich	3885	4165	280	Abolition of annual shutdown
D	Ford Cologne	3150	3290	140	Shortening of annual shutdown
D	Opel Rüsselsheim	3170	3150	(<100)	Shift system unchanged
B	Volkswagen Brussels	5265	5290	(<100)	Shift system unchanged
D	DaimlerChrysler Sindelfingen	3650	3705	(<100)	Shift system unchanged
D	Opel Bochum	4890	4855	(<100)	Shift system unchanged
D	BMW Regensburg	4610	4525	(<100)	Shift system unchanged
F	Peugeot Mulhouse	3350	3315	(<100)	Shift system unchanged until 1999t
SP	Ford Valencia	3300	3305	(<100)	Shift system unchanged
SP	Opel Zaragoza	5120	4875	-245	Continuous production during breaks abolished
B	Opel Antwerp	5140	4770	-370	Changeover from two-shift operation with long shifts to three-shift operation, but abolition of Saturday shift
F	Peugeot Poissy	4015	3275	-740	Reversion from two-shift operation with long shifts to standard two-shift system

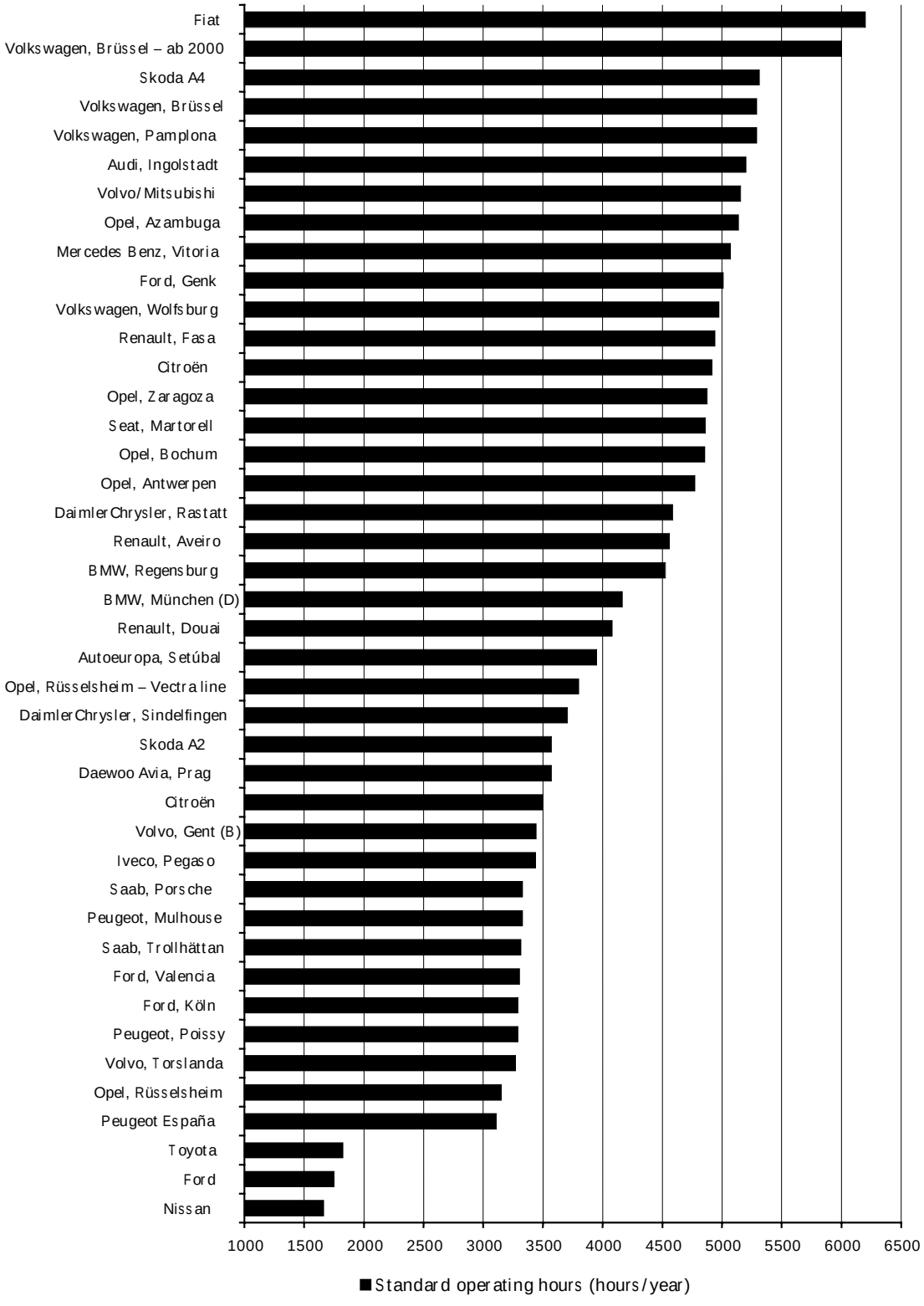
Sources: IAT survey on working times and operating hours in the European automotive industry; Lehhndorff, Steffen / Bosch, Gerhard (1993): Autos bauen zu jeder Zeit? Arbeits- und Betriebszeiten in der europäischen und japanischen Automobilindustrie. Berlin

Figure 1: Working times in European car assembly plants, 1998 (hours per year)



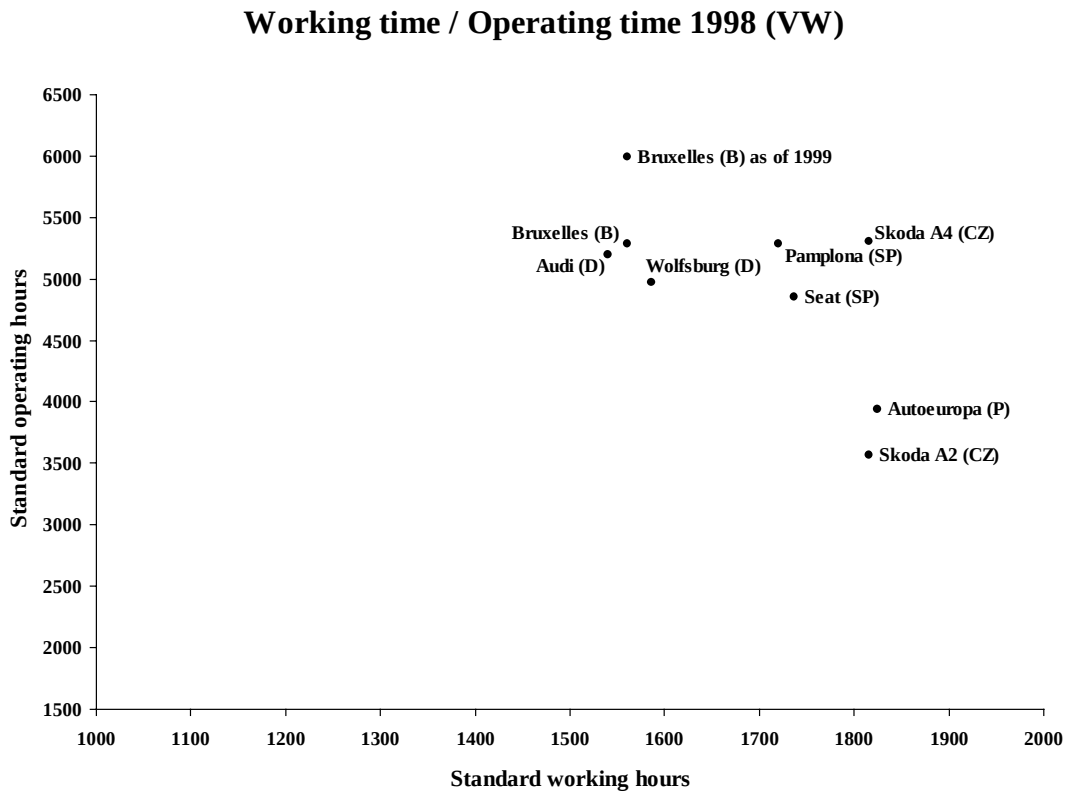
Source: IAT survey European automotive industry

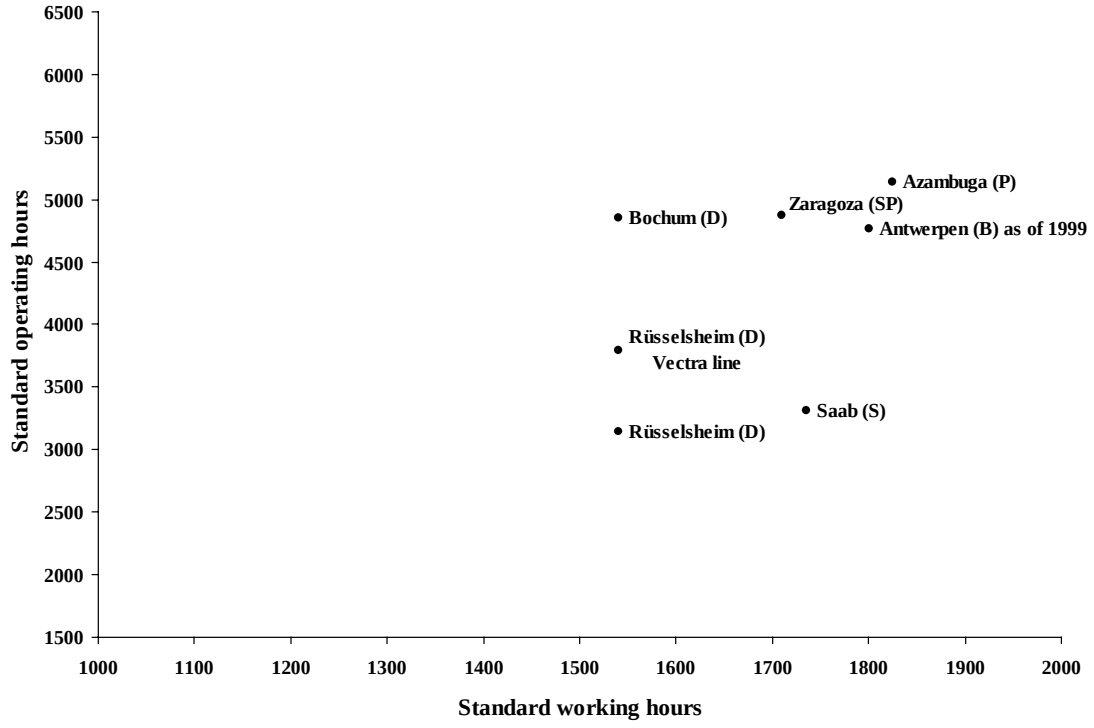
Figure 2 : Standard operating hours in European car plants, 1998

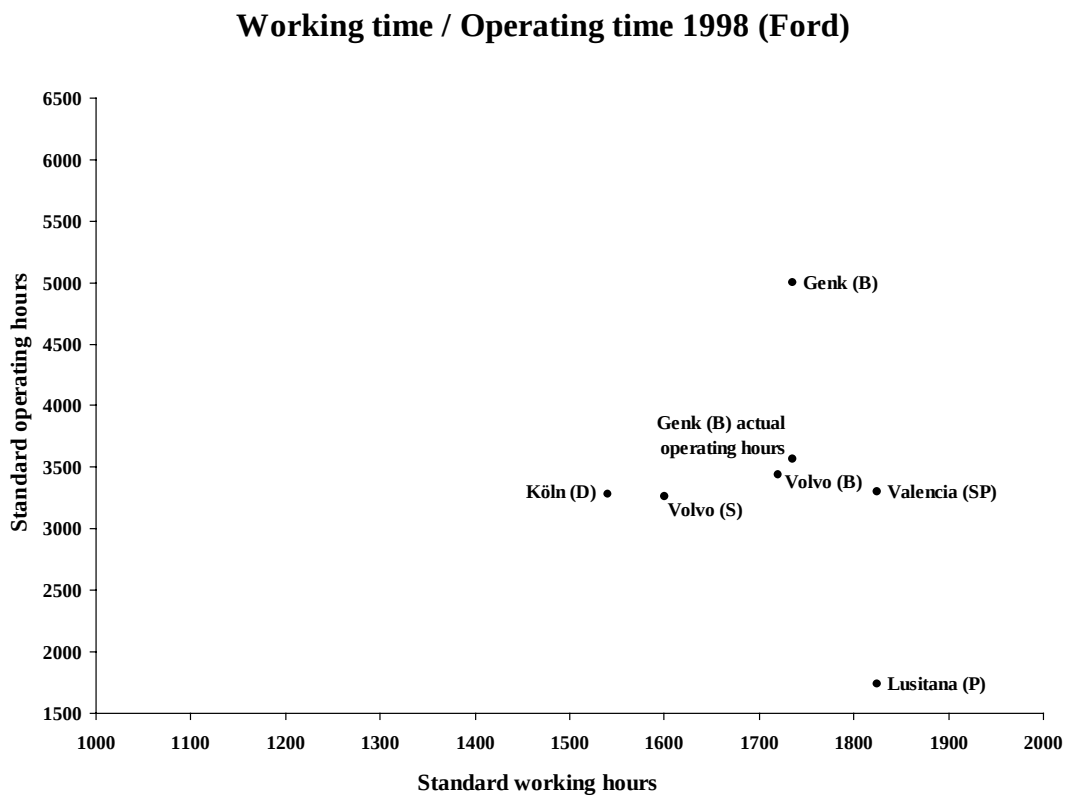


Source: IAT survey European automotive industry

Figures 3-5: The decoupling of working time and operating hours: Volkswagen, General Motors, Ford

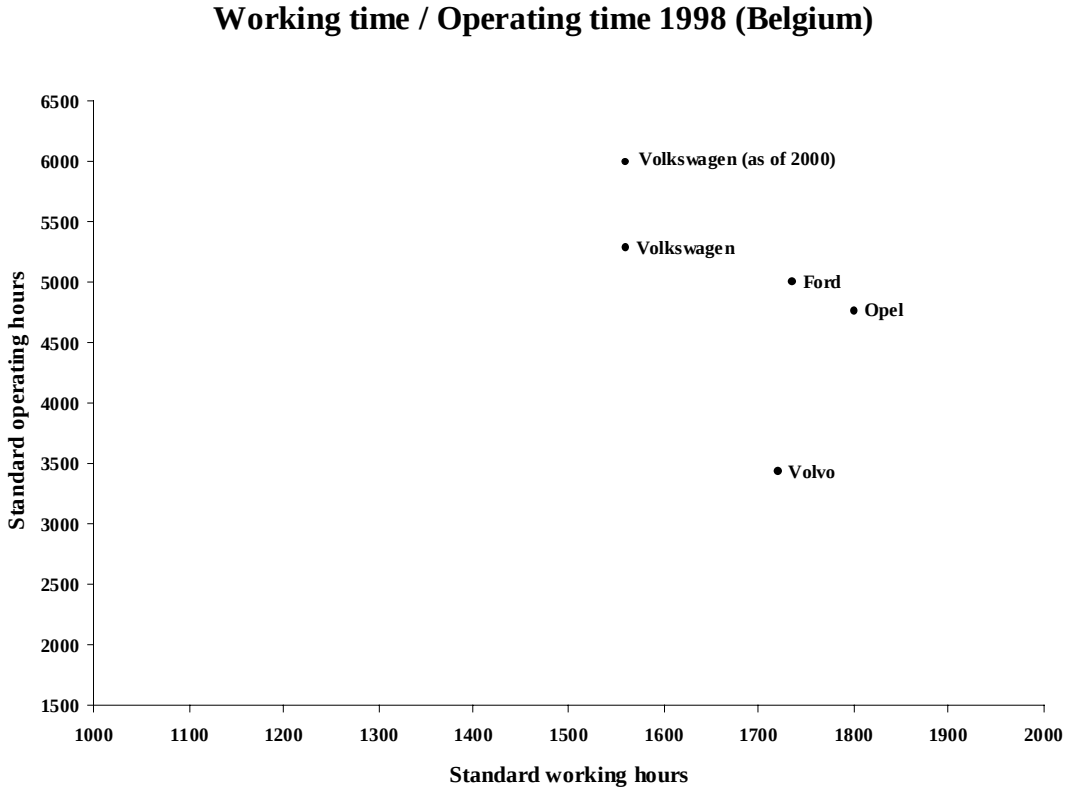




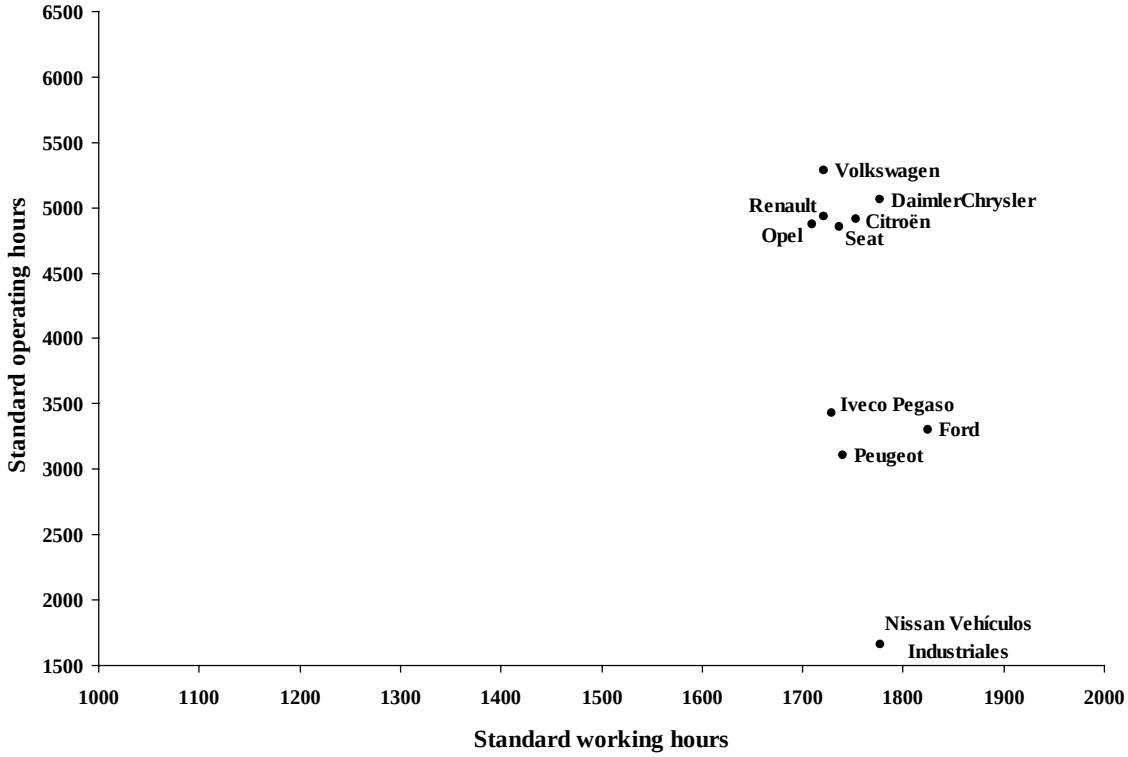


Source: IAT Survey

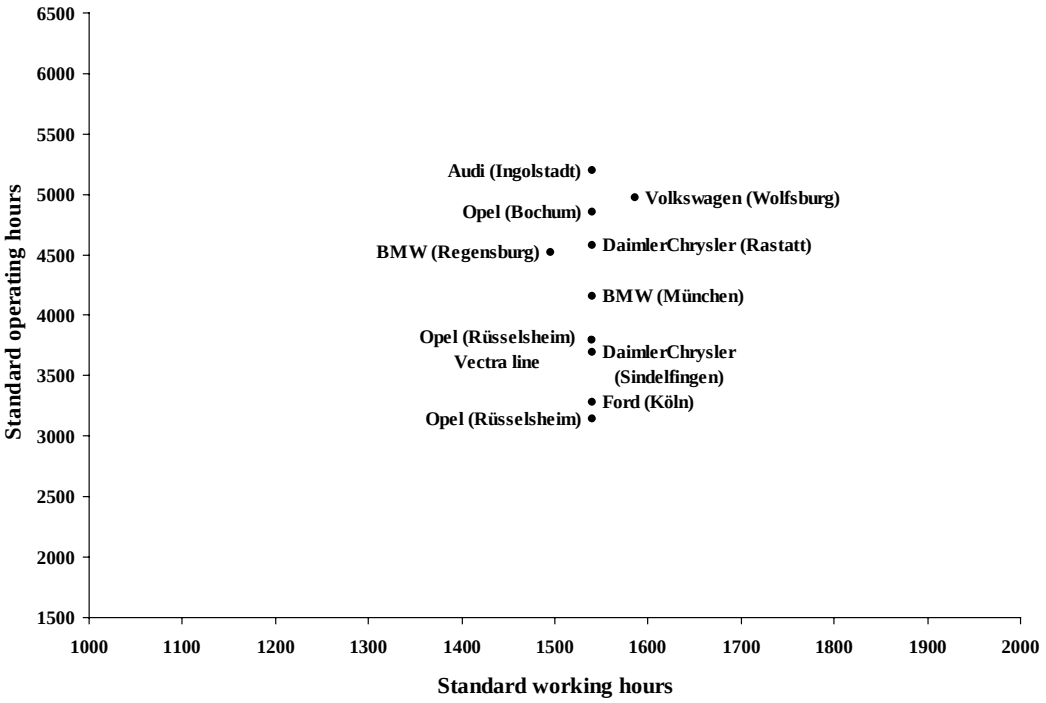
Figures 6 – 8: The decoupling of working time and operating hours: Belgium, Spain, Germany



Working time / Operating time 1998 (Spain)



Working time / Operating time 1998 (Germany)



Source: IAT Survey

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