

The challenge of direct participation for new industrial relations at the time  
of digitalisation

## Team-working and industrial relations in the metalworking industry: some company cases

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# Participation and information (as a “premise”)

- "*Direct participation for new industrial relations*": presupposes the exercise of the right to information – problematic situation
- National Collective Agreement (Article 9) provides for a wide range of information rights:
  - substantial changes in the production system affecting the technologies adopted or the organisation of work: overall effect on employment and significant impact on working conditions
  - Impact of digitisation (Industry 4.0) ⇒ prior information
  - Instead Companies provides:
    - Information late, often as communication of decisions already taken;
    - Information given as mere bureaucratic-formal fulfilment; without going into the merits of innovations/changes;
    - No information (more generally: cycle times almost never communicated)
- ⇒ Lack of information does not allow for informed (conscious) participation: there is no participation without the possibility of negotiation;
- ⇒ "Participation" completely subordinate to the decisions of the company (ex-post legitimisation)

## Subject and goals of the research

- About 90 companies were involved: automotive, household appliances, agricultural machinery, iron and steel, TLC equipment, industrial machinery, energy systems - heating - cooling, etc.....
- Aim of the research: to understand how technological and organisational innovations are changing working conditions (from the workers' point of view: this is a worker survey)
- Participants: trade unionists, shop stewards, workers
- Technological innovations: Industry 4.0 - digitisation of production processes, application of ICT, sensors, RFID, software, CPS, new devices, etc.
- Organisational innovations: Lean Production models (and their evolution, such as WCM)

# Role of the Team and the Team Leader

- In the FCA publications there is great rhetoric; team is the most important organisational innovation, major change of managerial culture; it should:
  - overcome old hierarchies and create a horizontal system;
  - promote the coordination (and cooperation) of working practices;
  - enable more flexible management of workers (Job Rotation);
  - develop workers' skills and allow greater autonomy in work performance;
  - developing employee participation (including suggestions etc.)
- The team leader is responsible for:
  - support/coaching in the professional development of workers;
  - support and enhance the problem solving capacity of subordinates
  - supervising the work process (supplies, plant operation, certifications, etc.)

## Some results from the FCA Enquiry

- The WCM and the Team have increased collaboration: 59.4% not at all or little agreement
- The WCM and the Team helps solve problems: 54.8% not at all or little agreement
- Team leader encourages participation: 58.8% not at all or little agreement

Participation in team meetings: about 78% NO, because:

- there are no team meetings on my shift: 36.8%
- we are not invited: 34.2%
- they are not planned for my area of work/activity: 22.1%

Suggestions:

- Employees who have submitted proposals/suggestions for improvement: 45.5%.
- Workers who never received a response after submitting proposals: 46.3%; received a response only sometimes 42.7%

# Which organisational model does participation fit into?

- Core purpose of Lean Production models: to increase productivity, i.e. the profitability of the enterprise, by eliminating waste.
- Distinction between Value Added Activities and Not Value Added Activities (to be eliminated or compressed as much as possible)
- NVAA: all activities that do not create value (waits, desaturations, collateral activities, etc.).
- Imperative to increase production volumes using fewer resources, to be achieved through the compression of costs (i.e. cycle times) and the elimination of waste ⇒ greater saturation, elimination of downtime, greater intensity of work performance, increased rhythms and workloads
- NVAAs are in charge to the line workers + modification of the operational card by the team leader

# The WCM System

- Not only does it imply the concept of waste (overproduction: stock, waiting etc.), but also that of loss ⇒ failure to allocate resources optimally (neo-classical concept) ⇒ failure to create value
  - All operational and support activities must be oriented towards a value-added flow without waste and loss; i.e. maximum speed and minimum cost
  - Based on integration of certain methodologies:
    - Lean Manufacturing: production process as a sequence of interconnected and synchronised downstream to upstream operations (Just in Time, Just in Sequence) ⇒ TIGHT FLOW;
    - Value Stream Mapping: Representation of the entire process flow, for each activity and work station (starting from the supplier, up to the final customer);
    - Total Productive Maintenance (TPM): Shifting maintenance/cleaning activities to the line operators.
    - Total Quality Control (TQC): tools for statistical analysis, data collection etc. to immediately identify losses of time, materials, energy etc.
- ⇒ Quality is subordinate to maximum speed in the production flow

# Technological Aspects

- Mechanized assembly lines; the time available to each place to perform the assigned work is constant and equal to the "cadence": production volumes and times are fundamental;
- The machinery (welding robots, machines etc.), working on the basis of programs that define the cycle times of each operation (machine times);
- The "aids tools" (mechanical, electronic and digital elements) by "guiding the performance" of the operation and having the cycle times incorporated, can constrain the times and rhythms;
- The digitization and connection allows to record the start/end of operations in real time: powerful tool for controlling times and monitoring the progress of production;
- Computerization and digitalization also allows a faster reconfiguration of lines and machinery,
- Technological investments have led to personnel replacements: reductions in employment.

# The role of Industry 4.0 whithin Lean Production Model

- Digital technologies play a decisive role in compressing working times and therefore, in reducing expectation times = heavy intensification of work;
- Applied to machinery and plants, 4.0 technologies contribute to reducing reset times by increasing productivity = heavy intensification of work rhythms through the elimination of the porosity of work time;
- Starting from the general production planning tools (usually ERP) and its scheduling by times and workstations (usually through the MES), it is possible to extract the electronic kanbans in the form of orders that are sent to the monitors of the workstation;
- Once the requests of the electronic kanban have been answered, the recording systems, also via PC, allow immediate visibility of the process in order to allow the company's management to monitor it in real time and to intervene immediately in terms of synchronisation adjustments;
- A central element is the respect of the assigned times. In this sense, takt time is the time within which a unit of product must be created and which essentially defines the pace of production.
- Real-time control of takt time becomes possible thanks to devices that record production at any time and immediately upload them into the company's information systems and compared with the programming. In this way, the takt time sets working time in all lines and workstation, imposing rhythms and working systems to reach the standards.

# Poka Yoke System

- Ambivalent character: worker support or work intensification tool?
- Two examples: Fiat Power Train and Lamborghini
- Poka Yoke indicates on the monitor the exact sequence of operations to be carried out: elimination of NVAA, performance intensification
- Delation of any margin of autonomy (even within a procedure) for the worker experience, professionalism were the KNOW-HOW of the worker ⇒ was the basis of CONTROL BY WORKERS
- Torque wrench: control of tightening; but now they are connected (recording, and therefore, control of methods and times of performance)
- Quality control with devices: polyvalence VS NVAA are in charge (timed or not?) on the productive workers and control device

# Software Tools

- Software tools allowing:
  - ① production planning (generally on weekly basis);
  - ② operations scheduling (on daily or shorter basis);
  - ③ production orders delivery to departments, lines and workstations;
  - ④ real-time rescheduling of work orders;
  - ⑤ recording of concluded stages with times and possible problems
- "Technological Phase": technology replacing man in the management/processing of information.
- Real-time and direct communication between centralised systems and "periphery" ⇒ excludes operators

# Job Rotation?

- Implemented in case of need (e.g. workers' absences + maximum saturation) and not perceived as a practice to enlarge and develop the workers' competencies
- The rotation of workstations, aimed at reducing the operator's effort in the particularly heavy ones, is difficult for:
  - high number of workers with reduced working capacity achieved after years of work;
  - the workstations are not always adequate to perform a rotation aimed at improving working conditions;
  - because of the need for the company to provide operators with adequate training so that they are able to cover different workstations;
- So, versatility ⇒ maximum level of flexibility

## Quality Controls / Cerifications

- Workers are forced to carry out further operations (NVAA) in addition to the production ones
- These operations increase in the responsibilities and stress of the operators;
- Quality objectives are very often bent to the needs of production, in terms of quantity, and time compression;
- Reductions in employment and the worsening of rhythms, times and saturations often make it impossible to guarantee quality;
- The registration/certification systems also function as instruments for controlling work performance and its time/rhythms.

# Visualisation tools

- "Historical" request from the Trade Union: to have an information tool with the production schedule, results achieved in terms of volumes produced, workforce required, cycle times (Fiat agreement, 26 June 1969, article 2);
- Now, complete overturning ⇒ Andon, allows real-time display of production progress (delays, quantity produced compared to that planned, defects and breakdowns with an indication of the workstations where they occurred) ⇒ control tools available to hierarchies;
- In some companies, the Andon also has an acoustic alarm indicating that the "deadline" for each operation is approaching (time to be respected for each operation/task) ⇒ pressure tool
- On the one hand, the company hierarchy has all the tools for visualisation, control and information; on the other hand, the workers do not have an operational card (the only control tool available to them).

# Role of the Team Leader

- Politically: replaces, as a company figure, the previous trade union delegates of the Homogeneous Workers' Group (line, department, etc.).
- From the point of view of role: undefined and not homogeneous even within the same Groups
- Polarisation: older workers (professional, competent, recognised by workers etc.) vs TLs with no factory experience
- Centralisation of power:
  - TL only figure in charge of stopping the line in case of problems
  - TL only figure who can manage ICT tools
  - TL changes assignment of tasks/work assignments informally (discretion)