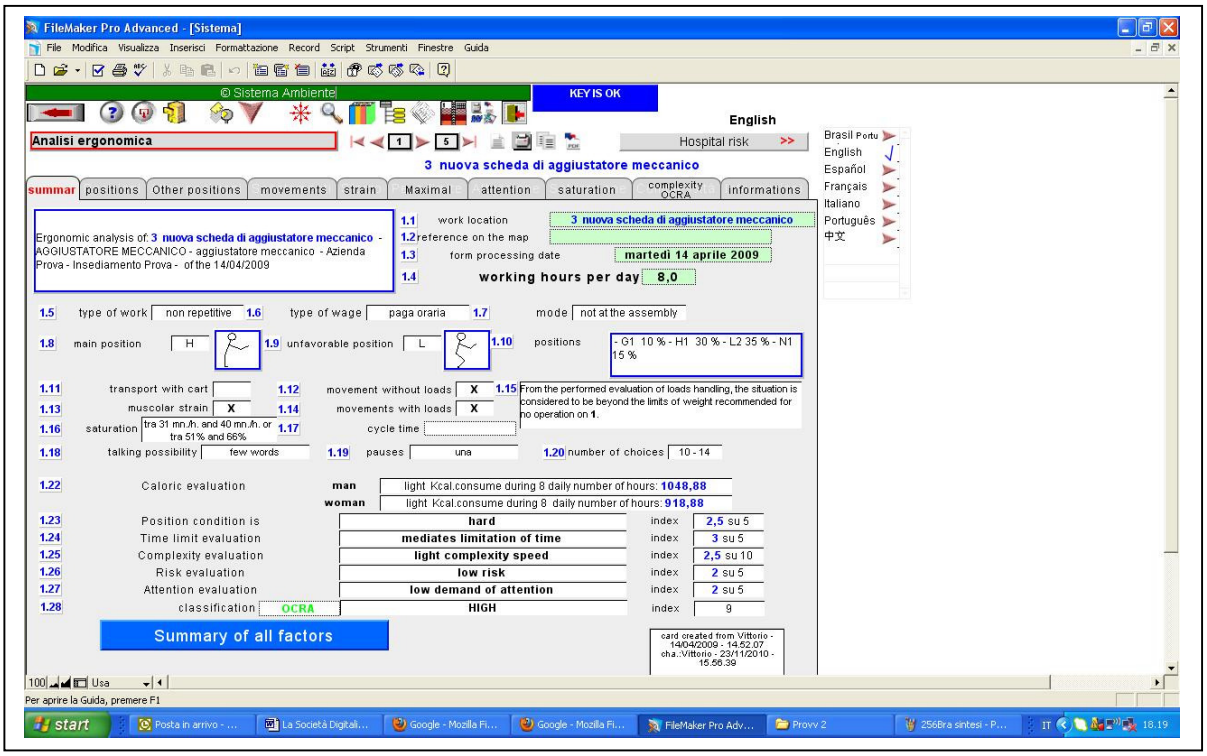
SISTEMA AMBIENTE

DIGITALIS S.r.l.

Working on work organization

"Sistema Ambiente" has a module for dealing with specifically ergonomic conditions.
This method allows the definition of objective parameters measurement for each job in a defined, homogeneous, and if used in a test plan, shows the human capacity to interact with the technical means and organization of existing work.
For the various aspects of verification have identified quantifiable elements, which is assigned a value that takes account of psycho-physical state of a person in good health, young adulthood and optimal environmental conditions.
Since we have defined value of each parameter in uniform, some indexes are processed in the interaction between variables of different parameters, to better identify the actual operating condition and its repercussions on the balance psycho-physical.
The measurement also does not offer an immediate evaluation, as this is possible only on the basis of the verification of the general health of the person by the occupational physician and the actual environmental conditions with the active participation of the workers concerned.
values (weights) of measurement allow us to better understand the quantitative level of risk (higher or lower) depending on the change in the operating condition and the qualitative characteristics of the risk..



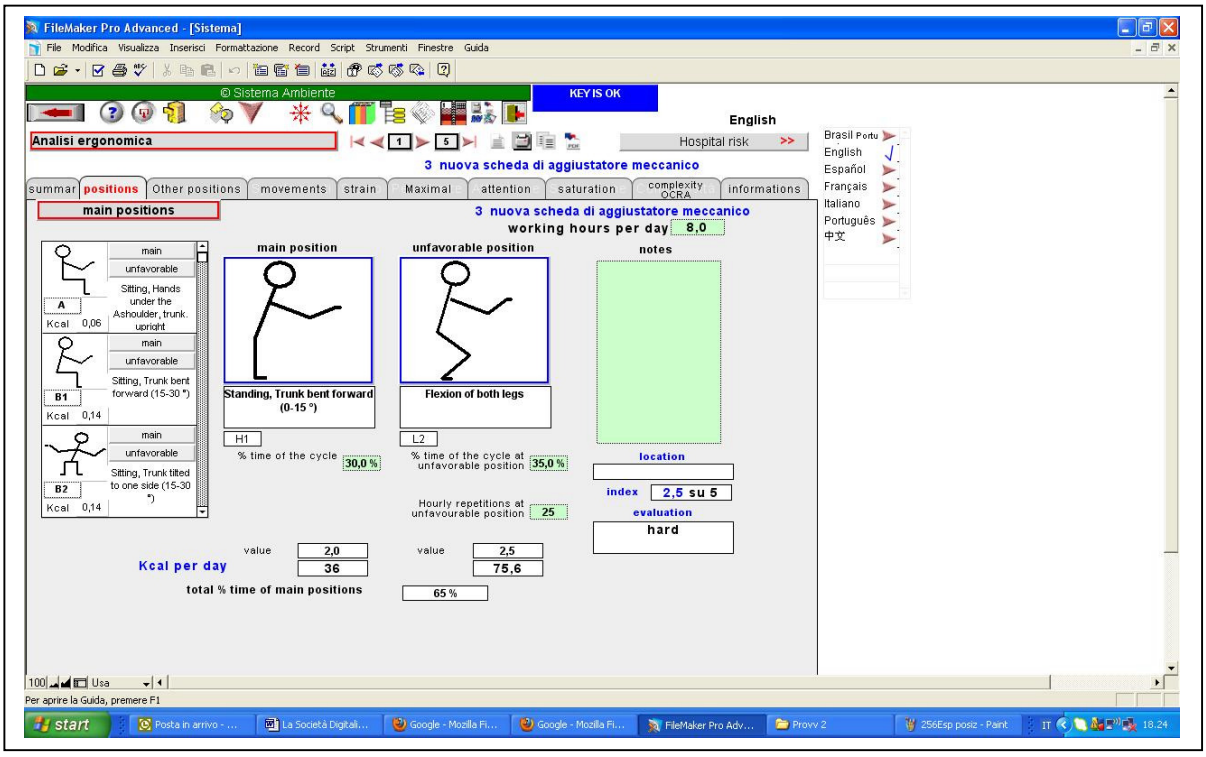
The parameters considered are:

a) **The labor of the musculo-skeletal** derived from various and worst positions and movements at the place of work.
b) **The physical labor** by calculating calorie expenditure that the assets involved;
c) **The risk of back injury** due to manual handling of loads (NIOSH method)
d) **The mental fatigue** due to the need for attention and concentration, in complex operations (especially in a repetitive work).
e) **The stress** derived from the limited time of operation and from the restrictions in communication.
f) The assessment of **risk of disease to the muscoskeletal system** for repetitive movements of upper limbs

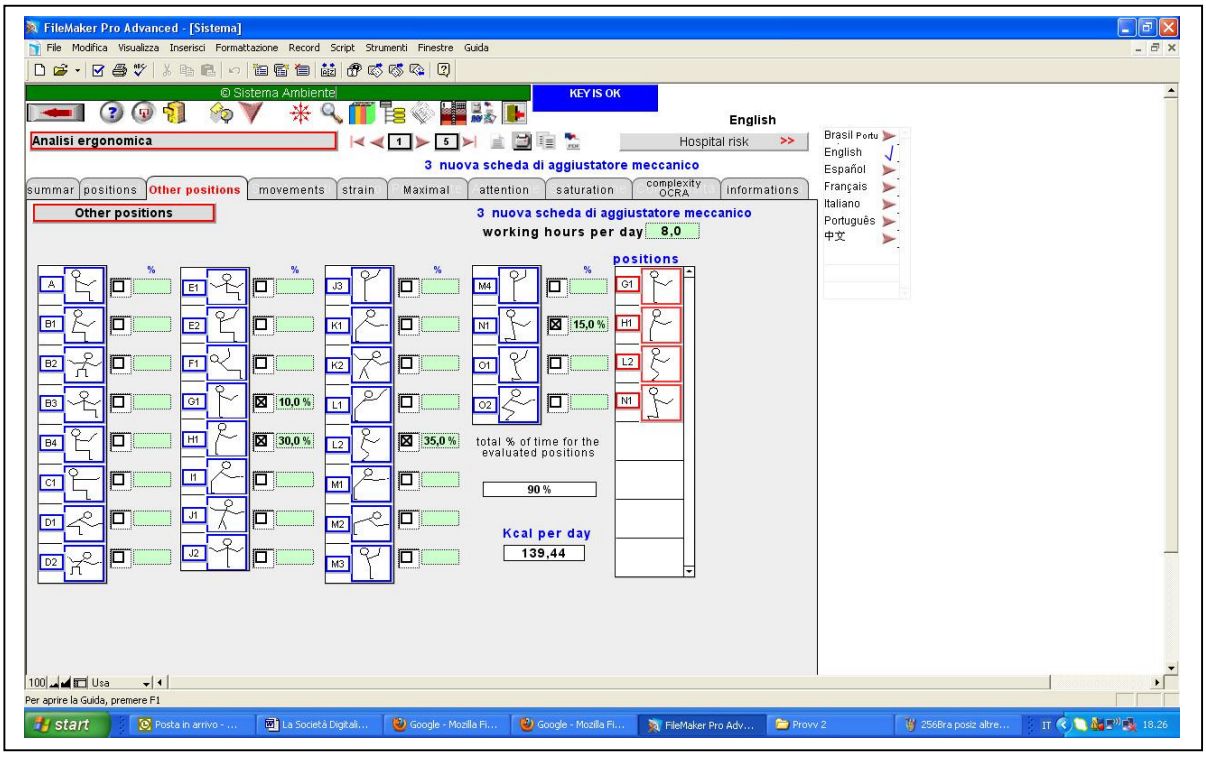
The **environmental conditions** that may exacerbate the potential risks of these parameters.

These factors are interrelated to each other: in fact, for example, the limitation of time in the execution of operations does not only determines the nervous and mental stress factors (the greater the repeatability and / or complexity), but a further risk of physical injury and if the operations involve the handling of loads.
The same factors are interdependent with environmental factors, such as the temperature is too high or too low, too humid microclimate,abnormal noise level etc.. It's obvious that both the physical and mental fatigue are exacerbated if the operations are conducted in a non-optimal condition.In these cases the values and indices must be corrected. (according to medical assessment only)
It's obvious that a person who has (by age, illness or special psycho-physical) difficulties in the execution of a potentially stressful or strenuous work, must consider the values and indices of the proper parameters on the rise: what cannot be tiring for a man of 20 years in good health and in good physical condition, it can be for a man of 50 years or in weak physical condition..

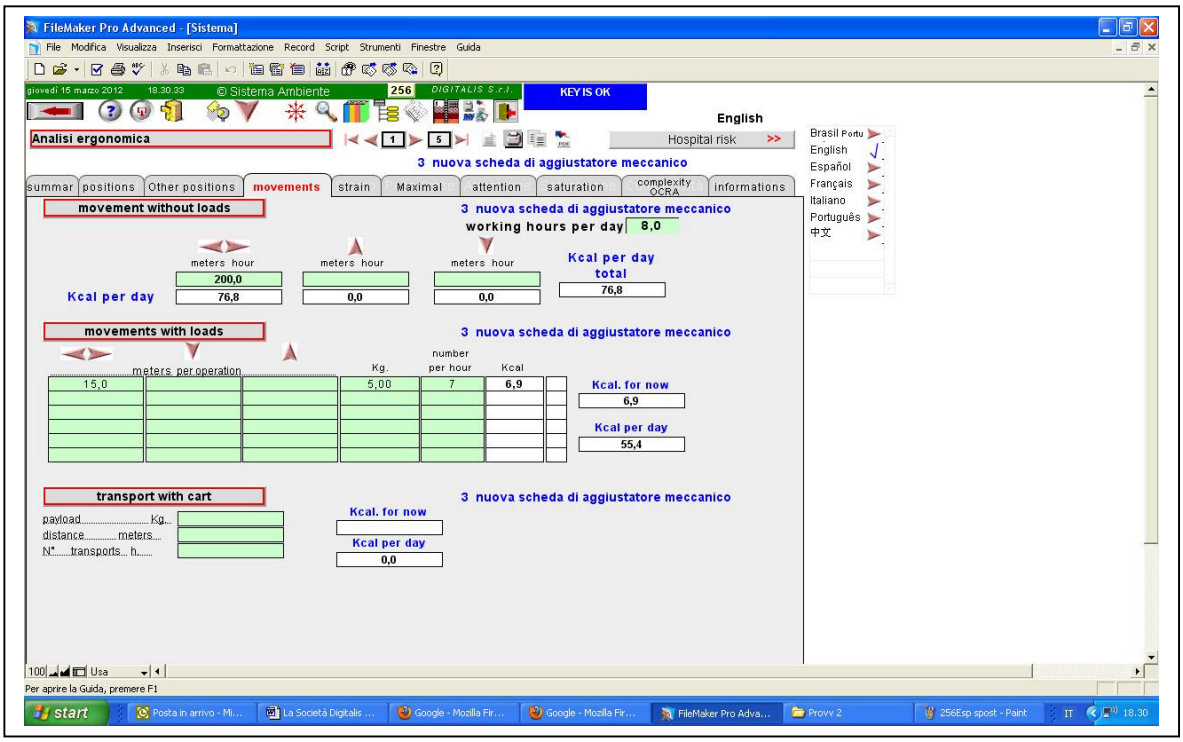
1)**The fatigue of the musculo-skeletal syetem** derived from various and bad positions of movements at the place of work.;



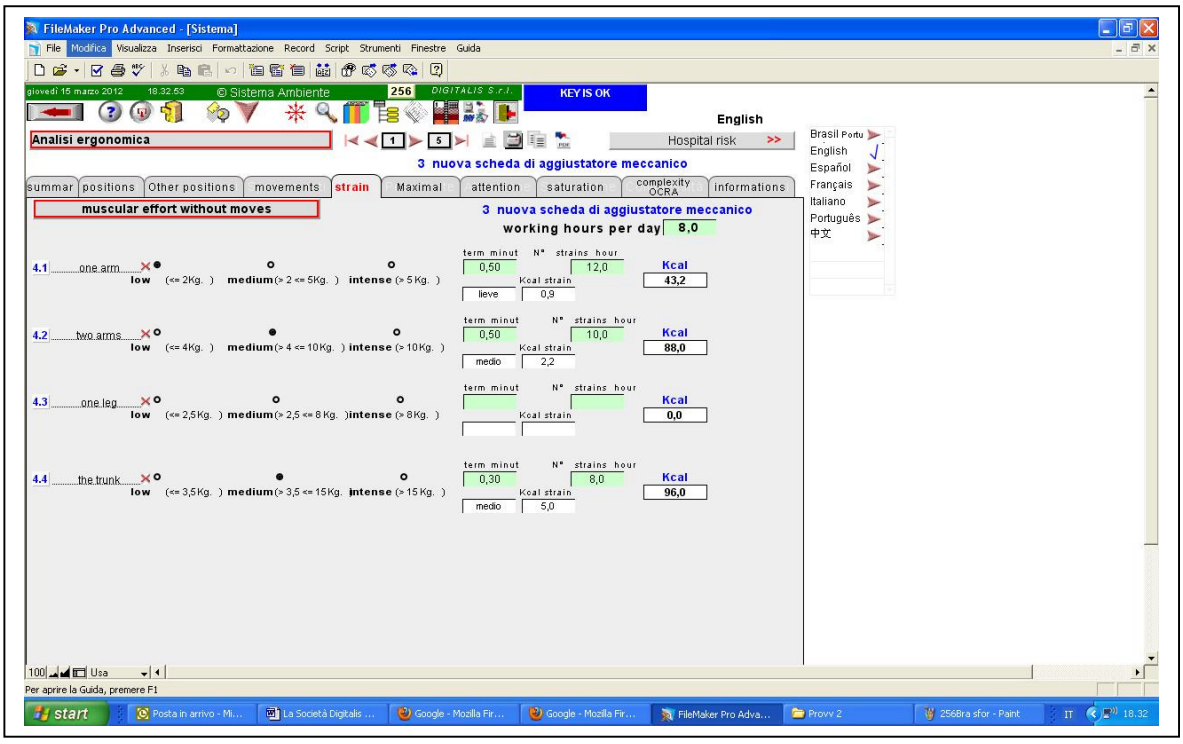
2) **The physical labor** by calculating the amount of calorie expenditure that is involved;



a) maintaining positions

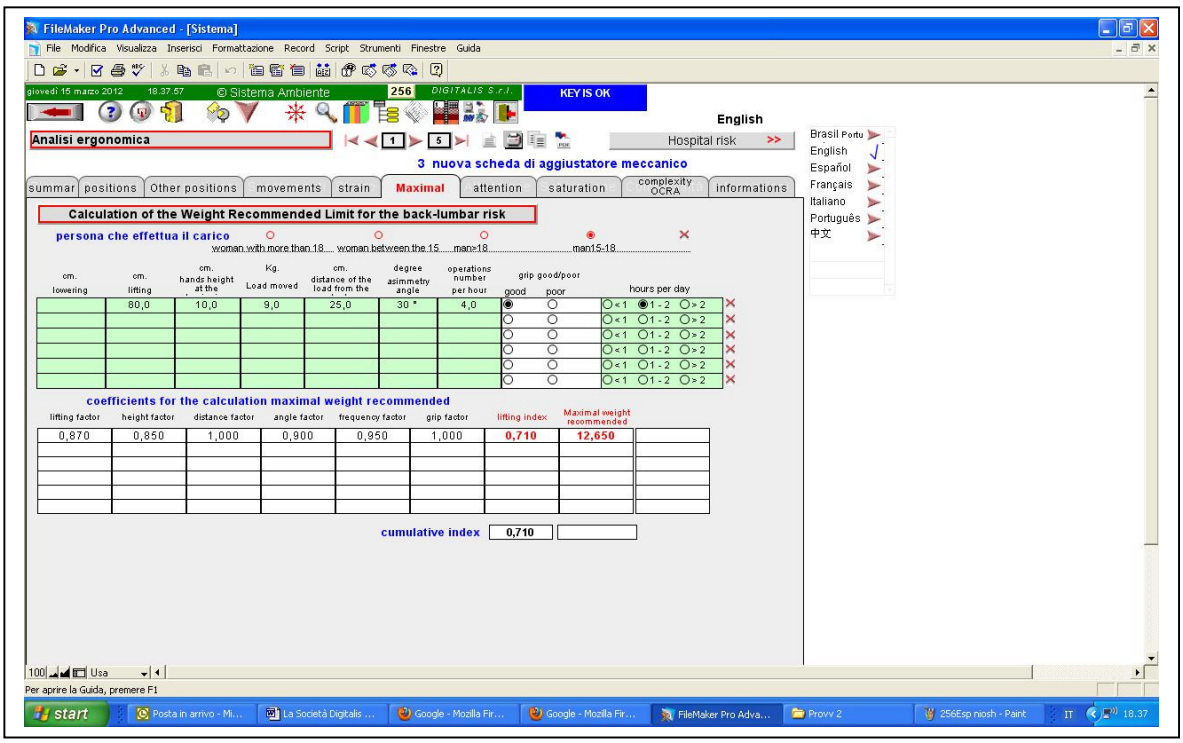


b) movements with and without loads

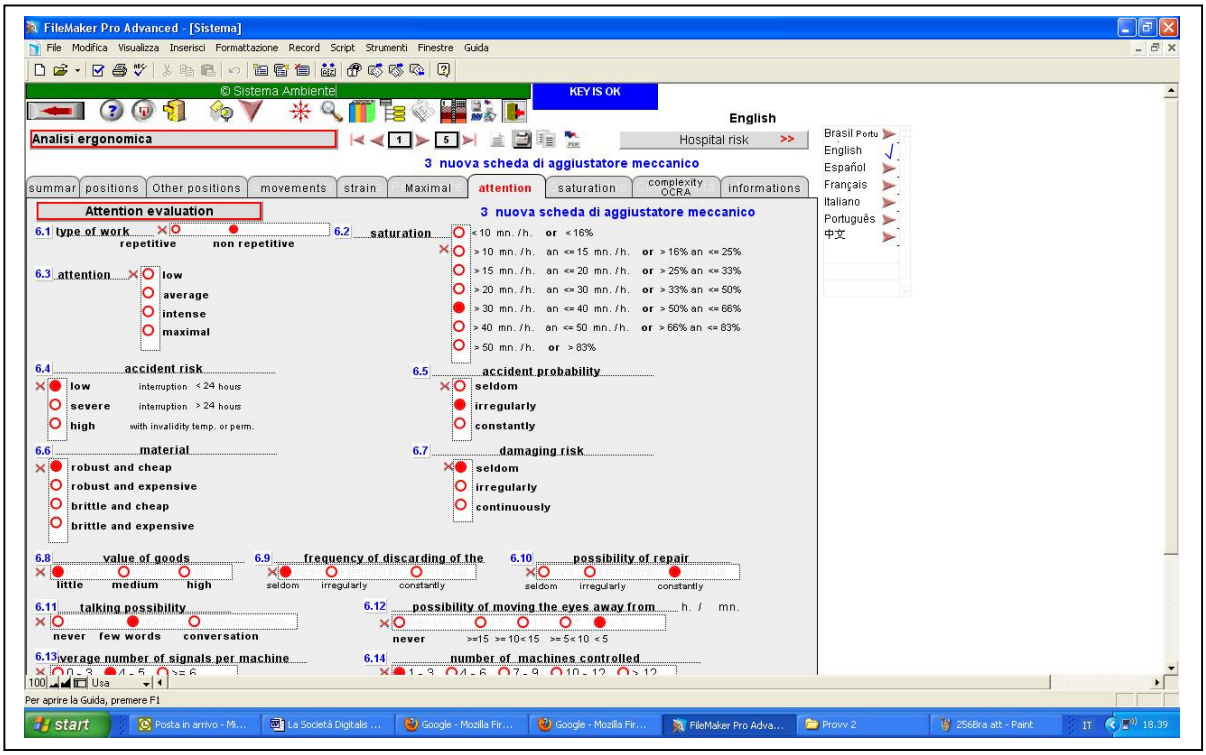


c) efforts to stop

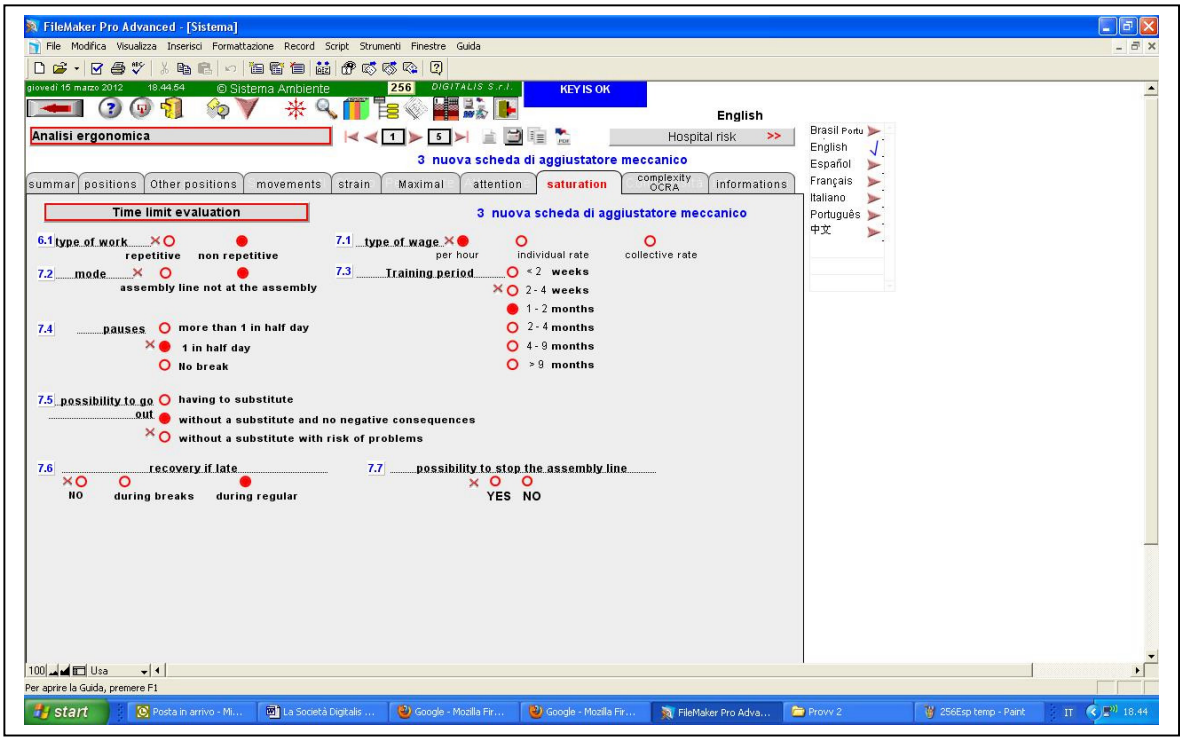
3) **The risk of back injury** due to manual handling of loads (NIOSH method))



4) The **mental fatigue** due to the need for attention and concentration,in complex operations (especially in a repetitive work).



5) **The stress** derived from the limited time of the execution of operations,and from communication restrictions



The psycho-physical balance of which now has calibrated values and the indices are in fact very rare and not particularly stable over time.A person in good health and in young adulthood was used as a reference point, only to later homogenize the measurement values of the different parameters.
Also the person whose type is referred to, however, possesses a biological rhythm which varies during the day,and is modified with increasing working hours, undergoes alterations, also significant flow rates from a large quantity of variables of life (more or less serious diseases , social life, difficulty and material considerations).
The standard theory that is used cannot be maintained for 8 hours a day, 365 days a year.
This leads us to infer that it will be the testing we do, using the indicators available, allowing us to adjust our assessment in a balanced and functional,two directional ways which:

- does not expose a worker to a condition that can be harmful for him and can not be for others (unsuitability individual)
- does not organize working conditions that are potentially harmful in itself for a significant number of workers who may be involved (unsuitability of the features of the work place)

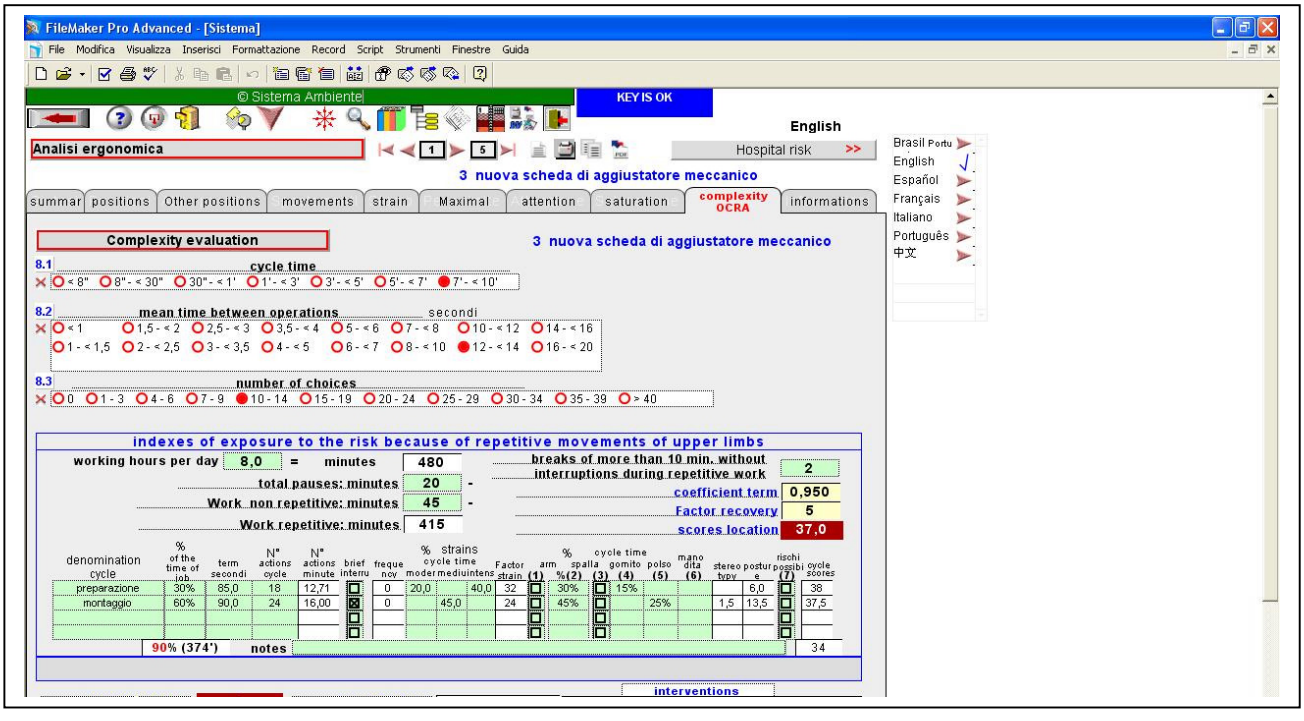
For an assessment of the value of several parameters must therefore:

- consider them in their complexity and interrelatedness (eg. physical effort and mental fatigue)
- consider them valid in their essence for people of good health that operate under normal environmental conditions (emissions - lighting - airing) and microclimatic (15 ° - 22 °)
- validate them with the workers concerned, taking and considering other factors that emerge from the audit.

The definition of parameters with reference-measures is therefore relative, from the qualitative point of view, the human capacity, environmental conditions , security, technology, organization and procedures.
This analysis and measurement enables the achievement of three fundamental objectives:

- identify the elements of the analytical way of working to modify to improve the performance of the work;
- occur during any medical unfitness psycho-physical individual workers may have for their disabilities or medical conditions in certain stages of execution of work;
- - predict, at design of work organization, the optimal conditions for carrying out tasks, considering the progressive wear of the psychophysical condition..

6) The assessment of disease risk for **muscoskeletal** for repetitive movements of upper limbs



With the inclusion of the Ocra method,tools analysis and mapping of ergonomic risks of repetitive work has been completed.
For "repetitive" are those jobs with tasks that involve the cyclical repetition of individual or groups of actions, repetition can be bound to a predetermined pace (machine, chain, firm controls, etc..), With margins of elasticity (lungs) or with a rhythm that can be freely determined by the worker.

If the repetitive work involves the execution of the same movement (or short set of movements) of the upper limbs every few seconds, or the repetition of a cycle of movements for more than 2 times per minute for at least 2 hours in total in the work shift,
there is a high risk of musculoskeletal disorders and is therefore best to carry out a test anaylsis using the Ocra method.
It is also advisable to check when working with repeated use (at least once every every 5 minutes) the strength of the hands for at least 2 hours in total per work shift (grasping with a power or precision hand tools, on hand to act forcefully, levers, buttons), and also in the case of working postures involving hands above your head and / or positions of the arm raised to shoulder height or apparent deviations of the wrist.
This method involves the analysis of the cycle, identification of technical actions and their frequency, estimating the chances of recovery and major biological risk factors (posture, stereo, use of force, any additional factors, such as vibrating tools, use of keyboards or other).
The Ocra checklist is simple,with less analytical detail, and is intended for simple estimation of risk during the first screening of repetitive manual work stations.
The Ocra index used as an international standard instrument is more complex, with more detailed analysis, where it is necessary to use a more complete assessment of repetitive tasks that already exist or where it is to be use to design and establish new workplace handbook, in accordance with ergonomic principles..
The estimation of indicators of 'exposure to risk due to repetitive movements of upper limbs is obtained by the method of analysis proposed by OCRA checklist: Begin by assigning scores pre-established, more for each of the 4 major risk factors (lack of recovery periods, frequency, force, awkward postures and movements), complementary. The sum of the partial values obtained in this way (weighted by the net time of duration of the task) produces a representation (through score) of the estimate of the real level of risk of the workstation..

Once evaluated,the basic elements of Ocra,which must agree (contract) with the company control instruments,ensuring the preservation of plans,breaks and other rate forecast.Without proper engineering controls,work planning and work organization which was arrived at using Ocra analysis,would be unenforceable.

Too often,wrong planning of the operational phase(after the fact) creates demages that led to inbalances that will cause a productive worker to malfunction and the corporate hierarchy is often not prepared and unable correct.
The design which cannot only be the sum of homework well done,but it must be clear about the centrality of the protection of health and safety of the worker..