

Changing the change

Design Visions, Proposals and Tools

An international conference on the role and potential of design research in the transition towards sustainability

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MACROCOMPONENTS

An alternative proposal for the production of home integrated systems.

Abstract

Recent European researches revealed that, during the last 15 years, the industrial production in the field of home appliances, has been dedicating special attention and investments to the reduction of consumption, conscious use of materials and performance improvement.

Unfortunately, these initiatives allowed a limited improvement of the environmental fallout: in fact, the continuous technological evolutions cannot ensure anymore an effective reduction in the consumption and in the emissions that commodities produce.

Due to the current crisis of the macroeconomic scenario, the production type approval of competing firms, but first of all the new environmental urgent needs, is rising the need of reconsider new production scenarios.

The methodological approach of the Design by components (Luigi Bistagnino, 2008), appears as one of the possible open paths to successfully face the on-going change; thanks to this approach, that critically analyses all the parts of a current industrial product, we can redesign new typology of products/production chains as well as the system they are introduced in.

This approach that also includes the realization of charming containers where components are often located by force, was abandoned in favour of the relations existing between the internal and external elements of the industrial object.

New products created thanks to this mental path represent the execution of relations and functions of the appliances.

This intervention strategy would require not only revising the planning approach to the product, but also rethinking about the whole production, retail and end-of-life cycle processes. This would inevitably generate a remarkable industrial metamorphosis, starting with the redefinition of the concept of components.

The Design by components methodology (that can be considered as real design tool) applied to the category of dishwashers and washing machines, through its phases (tearing down, matching between form and function, general scheme, perceptive analysis, sensorial analysis and study of the relations) (fig. 1), underlined the current redundancy in the production of components; in particular, the analysis of functioning underlines the main actions of home appliances, allowing to establish which could be considered as fundamental "macrocomponent" of the product: control, input, washing and output (fig. 2).

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Reinterpreting objects according to a macrocomponent logic, it is possible to create families of products diversified on the base of the user's needs and according to household transformations in the last years. Operating in this way, home appliances won't be only simple products, standardized inside of the plant, but also objects managed during their use phase (maintenance included), in close collaboration with the buyer that will buy the necessary components in order to create its own functional system.

A machine designed with this vision, in fact, opens the way for a totally innovative vision of the concept of "washing machine-product". This can lead to the creation of component families performing the same functions but with different features, and of a machine that is designed not so much as a unitary functional system, but as a product defined by individual specialized parts to perform the function of: dishwasher, washing machine and sink.

Taking into consideration this new logic, the research led to the creation of an integrable based system with some macrocomponents that can, eventually, perform the different functions of dish washing, laundry and grooming.

This kind of approach and new functional system, further than generate operative advantages, brings relevant environmental positive effects: components reduction (only the needed ones are produced, shared by different appliances), flexibility of the structure (by changing one of the macrocomponents you can change the general functions of the system) and technological updating easiness with the consequent life extension of the product (only one of the macrocomponents become old, not the entire product).

If we consider this latter instance we can see how maintenance would be favoured by quickly replacing the parts, whereas earlier in the process, planning specific markets may, in this way, focus not only on the machine as a whole, but on the individual modules that are part of it.

Besides, if we apply this logic of the macrocomponents starting from the very design phase, we can open the track to new industrial policies for the production of home integrated systems, respecting environmental sustainability.

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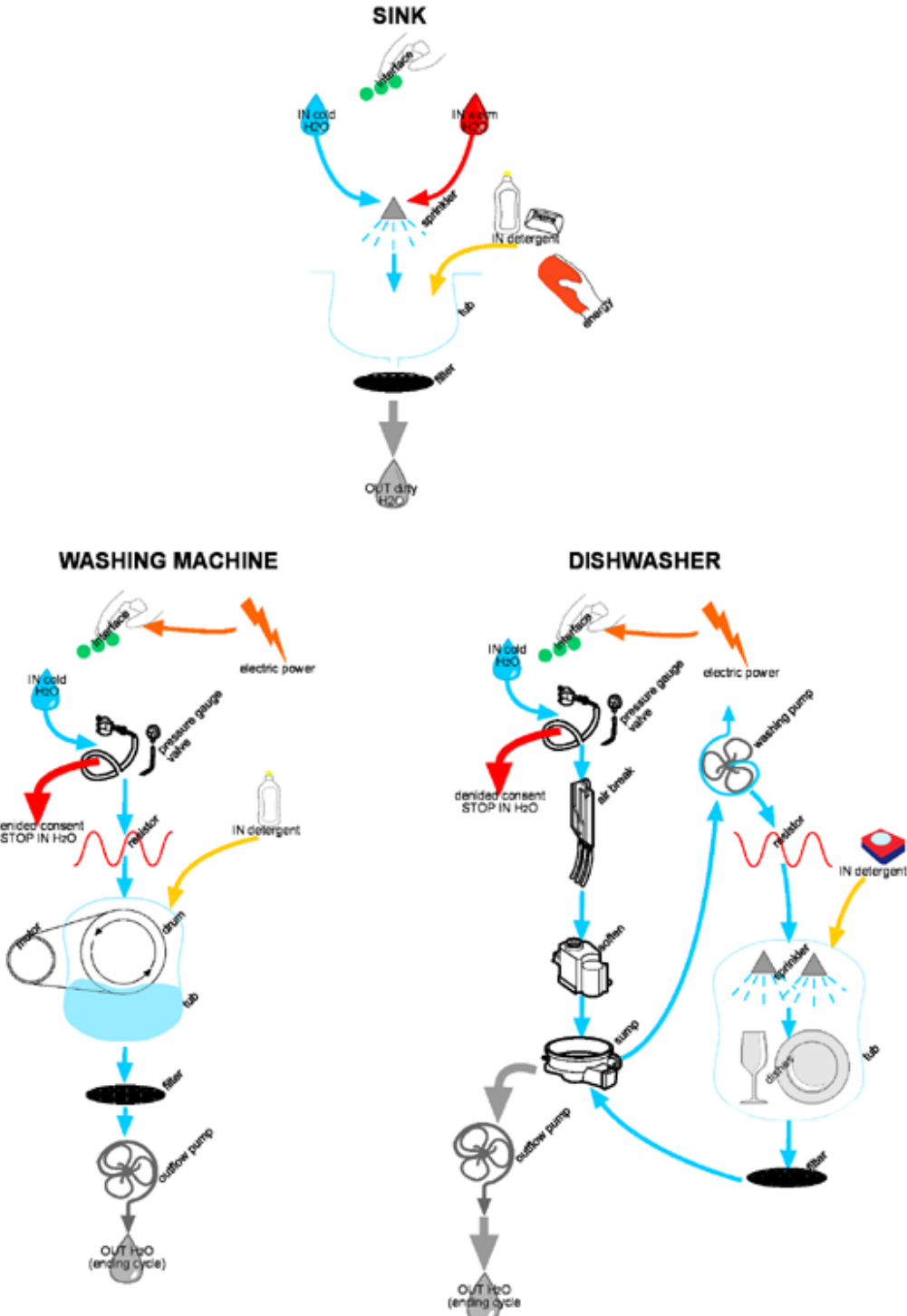


Fig.1: General schemes underline fundamental components of the three systems, showing the relation between elements and energy and matter flows.

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Fig 2: Comparing the three systems can be noticed the common elements, underlying the redundancy of the components of a washing systems.

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