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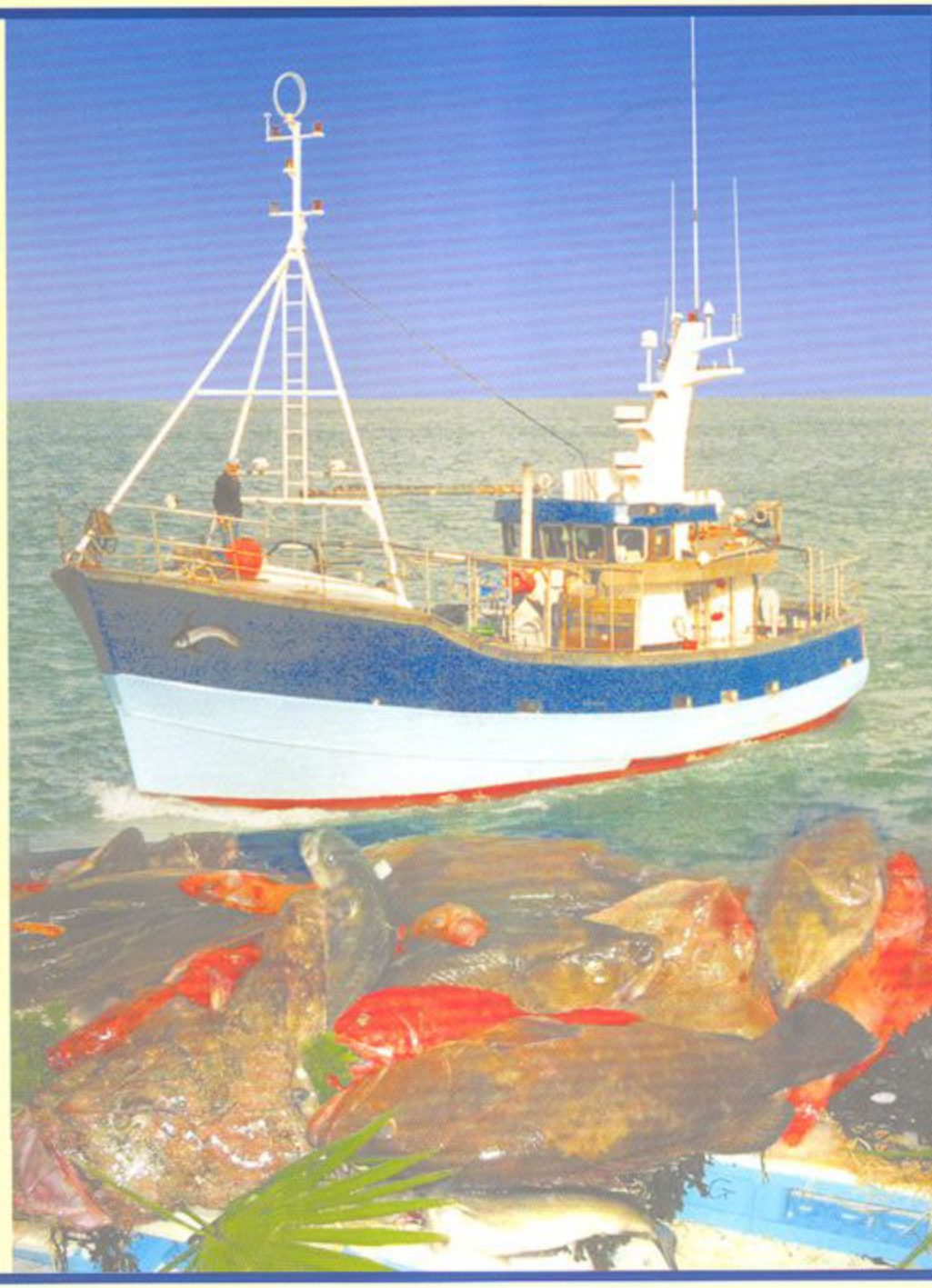

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New Multipurpose Seafood Processing Lines in Vietnam

By Mr. Johnny Haupt Larsen
LarEll Associated Consultants - Denmark

The senior consultant Mr Johnny Haupt Larsen from the Danish consulting company LarEll Associated Consultants has since spring 2002 been working as project manager and designer on a large project for the Danish Development Agency DANIDA and the Vietnamese Ministry of Fisheries. The project is as a part of the Seafood Export and Quality Programme SEAQIP with the purpose of improving the quality, efficiency and the workers environment within the seafood processing sector in Vietnam.

LarEll Associated Consultants was founded in 2000 by the International Fisheries Consultant Mr Johnny Haupt Larsen and the International Business Advisor Mr Jens Ellegaard who both are specialists with more than 20 years experience in assisting the fishing industry. Professor Piotr Bykowski with more than 40 years experience within fish processing joined the company as partner from January 2004.

LarEll offers comprehensive consulting services covering the areas: Sector planning, feasibility studies, layouts, design of processes and processing equipment, technology for exploitation of new species, construction and installation of machinery, starting-up production, staff training programmes for managers and operators, rationalisation and economy and quality control systems, international sales and marketing of consumer goods all and exclusively related to the fishery sector.

One of the expected outputs of the SEAQIP project is technical assistance provided to seafood processing enterprises to introduce Cleaner Production in order to reduce its environmental impact and install wastewater treatment plants.

With the aim of improving the working conditions for the production workers and reducing the environmental impact the manual operations of the production workers have been studied. A first design of an improved workstation was made and a pilot workstation subsequently constructed.

The pilot workstation was tested in a number of the pilot enterprises and comments were received mainly from technical staff as to possible improvements. The pilot workstation aimed at reducing use of water and collecting the waste without water; and simultaneously improve the occupational health conditions for the workers by designing their workstation to cope with the existing variations in their anatomy (height, reaching distance) and reducing the problem of standing for many hours on a concrete floor.

During the tests it became evident that the industry would like to test a full-scale model in order to ensure that the benefits and difficulties encountered could be clearly known before investing in such equipment from own funds. It was clear that the industry rather would see a full scale production-line in the new design proposed. However, it is also a fact that the possibilities in the pilot workstation were not fully exploited during phase one, as no comparative studies

Trimming of fish fillets at the first pilot workstation.

were made of the existing working tables and the pilot workstation.

Comparative studies were carried out in phase two during which the table was operated parallel with other existing tables and physical outputs (production, yield etc.) were assessed and compared. Hygienic conditions and Occupational Health and Safety (OHS) related considerations were included in the studies as well.

It was decided on basis of the achieved experiences to re-design the full-scale pilot line to have a final full-scale production line suitable for the Vietnamese seafood processing industry.

Testing the full-scale pilot workline

The design of the MSP lines was done by use of computerised 3-D models making it possible for the users to study all details and to give their comments to the draft designs. The final design and a complete set of detailed design and manufacturing drawings were prepared on basis of the comments and proposed changes.

The final processing line, now known as the Multipurpose Seafood Processing line (MSP line) was manufactured by a local Vietnamese company experienced within production of stainless steel equipment. Totally, equipment was provided for a whole processing department with 4 individual lines of 32 operators on each and with special designed feeding stations for raw material and registration stations for the output from the lines.

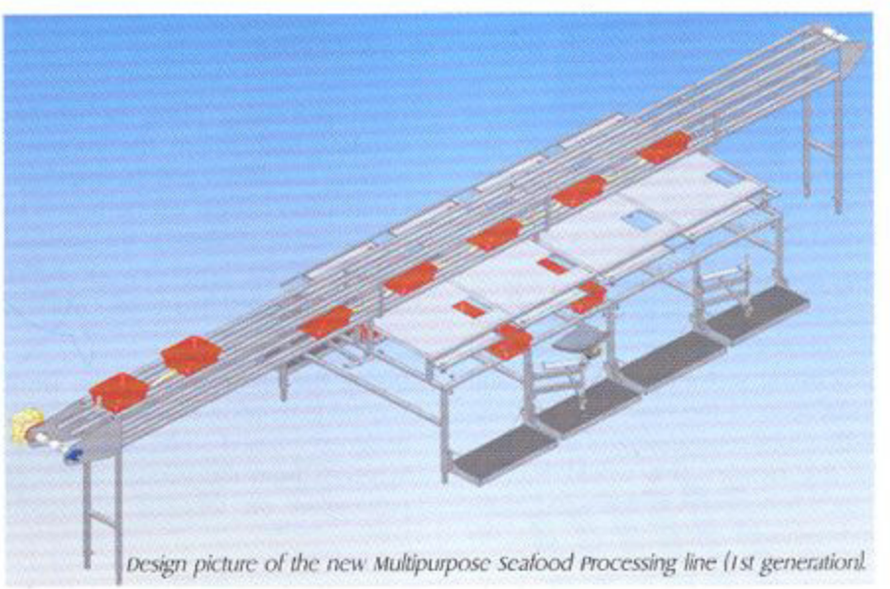
The total setup was - after implementation of the lines and training of the workers - tested and compared with simultaneous production on traditional existing processing tables for 3-4 months under normal production conditions.

The results obtained from the processing on the new MSP lines were:

- Improved quality, due to fast throughput, first in – first out principle, less crossing of products, smaller portions in different coloured baskets, use of potable water directly from spray guns and reduced water consumption.
- Increased yield – up to 3% – 4% higher yield on the MSP lines
- Increased productivity and efficiency – from 10% to 164% higher productivity with an expected level in increase of 100%.
- Reduced water consumption – reductions from 4% - 95%, but with a normal level of savings in the order of 70 – 80%.
- Reduced ice consumption - reduction varies from 13% – 67%, but with a tendency towards reductions in the order of 40 - 50%.
- Reduced environmental impact, due to saving of water, reduced amount of wastewater, energy saving from ice production and improved collection of offal.
- Reduced time/temperature load on products.

The results from the analyses of the workers health and the working conditions showed overall improvements for the workers on the new MSP lines compared with the existing work tables – and with improved productivity obtained at the same time.

The additional investment for implementing the new MSP Department



Design picture of the new Multipurpose Seafood Processing line (1st generation).

Overview of the MSP department with 3 out of 4 lines in operation

Working positions – sitting and standing

compared with existing worktables is paid back within 5 months with the results obtained. If additional improvement is obtained the investment could be paid back within 3 months.

The new MSP lines have been a great success and very large benefits could be obtained for the entire seafood processing sector by investing in and installation of the new lines together with a total reorganising of the layout of the facilities This would lead to much better product flows and more industrialised, efficient and easy to clean processing plants of western standard. Furthermore, the improved working conditions and the improved contribution margin will be beneficial for the many workers in the seafood industry giving possibility for better wages and better overall working environment.

During the summer 2004 the latest second generation MSP line has been designed based on the results achieved from the many months of production on the first generation lines.

In order to bring the production fully up to date a new computerised Production Control System for the MSP lines has been developed in order to continuously monitor and register the individual workers production capacity and production yields. This new management tool is very important for the production foremen and management in order to continuously follow the production capacity and yields and in case of major differences among the workers to go in and correct the failures before to big losses have been realised. The Production Control System and scales will be delivered by the Icelandic company Marel in autumn 2004.

LarEll Associated Consultants is also - besides development of new efficient, environmental and tailor-made processing equipment - engaged with many other projects and tasks such as developing and implementing HACCP systems, Environmental Management Systems, marketing studies, total technical draft projects with investment budgets and layouts or even complete business plan developed for the individual needs.

LarEll is at the moment involved in a feasibility study for the modernisation of a large fish processing plant in Abu Simbel, Egypt. The processing plant is designed for a production of 20 tons Nile Perch, Tilapia and Catfish per 8 hours. The study includes also planning of the fisheries operation and aquaculture of Tilapia and Catfish.

For more information about LarEll Associated Consultants and contact details please visit our website www.larell.dk. We are always ready to offer our assistance.

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