

Larssen Ltd

GREENHOUSE ENGINEERING



OVE NIELSEN

Thomas Larssen of Larssen Ltd. and world leading pot rose producer Ove Nielsen have had a solid working relationship over the past 17 years. The relationship began in 1986 and has since seen Ove Nielsen grow into a world class nursery. During this period, Ove Nielsen has expanded from 6,000 m² to 100,000 m² of total greenhouse area which is divided up amongst 5 locations. Nielsen has maintained a very high standard of quality while working with one of the worlds' most sophisticated and automated greenhouse plants. Today, his production of pot roses exceeds 20 million annually.

Examples of high-end technical nursery components:

- Specially designed greenhouse construction
- Cutting and sticking process performed by robotics
- Fully automated mobile table flow within the nursery
- Fully combined flow, irrigation, and climate zones
- Automated spacing and grading performed by robotics
- Fully automated packing system that includes grading, bagging, placing in trays and placing trays into containers. All performed by robotics.
- Fully automated variety mixing system

Last completed project was a test nursery designed specifically to test new pot rose varieties in conjunction with rose breeder Poulsen Roser ApS. This project was completed in the fall of 2002.



“Thomas Larssen has played a very important role in the expansion of our greenhouses. He has been responsible for all drawings and schematics related to each project as well as all necessary dimensioning for all completed projects. Thomas’ eye for detail and his ability to create designs down to the most minute aspects are virtually unparalleled in this market. Not only is he knowledgeable in overall greenhouse design, but he also has the know-how to provide technical support in the field. Thomas’ personality, professionalism, and unequalled work ethic have made him a pleasure to work with.”



Nyvang Department Construction



Kildevang, Nyvang and Dania Department



Tiffany Breeds



Greenhouse Area . . . 100,000 m²
 Annual Production . . . 20 million pots
 Products 6 - 15 cm pot roses

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ALDRSHOT GREENHOUSES LTD.

Thomas Larssen of Larssen Ltd. and Aldershot Greenhouses Ltd. have been working in conjunction dating back to 1996. During this period Aldershot Greenhouses has become a high level pot rose producer. Projects have been completed using both local and foreign suppliers to accommodate high demands for leading edge technology as well as easily maintained and fully supported systems.

Major projects completed during this time period include:

- Redesigning production flow in both greenhouses and the warehouse facility
- Greenhouse expansion
- Curtain system implementation within the greenhouse structure
- Layout for cutting/sticking process containing a semi-automatic sticking line
- Layout for new packing facility including:
 - 100% utilization of robotics
 - Minimizing order of shipment time
 - Flexible system for sleeving/bagging
 - All features for variety mixing, tagging, bar coding and readying the plants for consumer retail
- Buffer tank installation to maximize the utilization of CO₂ from boilers for use in production areas



“Thomas was able to take our rough ideas and help us formulate them into working solutions. His ability to make us feel like we are his only client by always answering questions and keeping our business and meetings confidential from other parties has always been important to us. His production know-how and education allow him to generate quick and insightful ideas.”



Inside View - Finished Plants Area



Front view - Plant III



Plant III



Pot Roses



Greenhouse Area . . . 45,000 m² greenhouses
 Annual Production . . . 6 million pots
 Products 6 - 15 cm potted Roses
 and Chrysanthemums

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KNUD JEPSEN

World leading Kalanchoë grower and breeder, Knud Jepsen has worked with Thomas Larssen of Larssen Ltd. over the past 8 years while completing at least 1 major project per year. Known as much for supplying cuttings to other nurseries as for the production of potted Kalanchoës, Knud Jepsen has played an important role in the potted flowering plant industry with his Queen breeds.

Major projects completed over the past 8 years include:

- More than 25,000 m² expansion of growing area for finished plants
- 20,000 m² addition of greenhouse area along with a special table system for motherplants
- 2,000 m² addition of greenhouse area used for elite plants and laboratory
- 4 CoGen units running on natural gas
- 1,200 m² addition of insulated warehouse
- 900 m² addition of offices complete with restrooms and employee gathering rooms
- 4,000 m² addition of greenhouse area at department Birkehøj – recently completed
- Levelling 3,500,000 m³ of soil for proposed 60,000 m² greenhouse department – recently completed



“Thomas approaches every situation in designing or construction of greenhouses with a logical and conscientious way of thinking. When he is working on a project, it is understood that no small detail will be overlooked. Thomas has been a proficient advisor for both design and expenditures of our greenhouses. With him, we always get the right solution at the right price.”



New Office Facilities



Højvang, Korsholm and Narring Department



View of Højvang Department and Buffer Tanks



Kalanchoës



Knud Jepsen a/s

Greenhouse Area 95,000 m²
 Annual Production 13 million potted Kalanchoës
 and 14 million cuttings
 Products 6 - 15 cm potted Kalanchoës

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PKM

Thomas Larssen of Larssen Ltd. and PKM have worked together for over 17 years on various projects to enhance the efficiency and productivity of PKM. Expansion has been exceptionally heavy in the last 6 years bringing the total production area to 140,000 m² of greenhouses and 100,000 m² of outdoor area.

Major projects completed over the past 6 years include:

- 12,000 m² addition of greenhouses for normal production on tables including a vision system and robotics
- 2,000 m² addition for Elite plants
- 8,000 m² addition of retractable roofing system on wide span construction, partly equipped with a double layer of mobile tables
- 7,000 m² addition of greenhouse area for dressing miniature Christmas trees (Pinus) with an Ebb/flood system on floor for other seasons
- Fully air conditioned greenhouses
- All new centralized heating plant with a 12 MW (11,400 btu) capacity
- 7,000 m² addition of heated industrial buildings and offices



“Thomas is an open-minded individual who has been a part of our team for close to two decades. He is very trustworthy and is able to exemplify a great deal of loyalty to our company while always maintaining a large client base. He has worked with our maintenance department as well as our department for product development and has successfully completed projects in both areas. Thomas continuously presents himself and his work with great pride and professionalism.”

Kirstin Hoase



Ebb/Flood Floors Under Construction



Boiler Room - Outside and 3D Design



Greenhouses and Outside Areas



Campanula Production



Greenhouse Area . . . 140,000 m² greenhouse area,
100,000 m² outdoor area

Annual Production . . . 18 million pots

Products 6 - 15 cm potted Campanula,
Schlumbergera, Rhipsalidopsis,
Pinus, Ellwoodii, Lavendula

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ROSBORG

Rosborg's greenhouses are continuously expanding. At the present time, they are comprised of 160,000m² that span over 8 locations. Rosborg and Larssen Ltd. began working together in 1995 and have since completed a wide range of projects from traditional greenhouses to the very sophisticated growing systems.

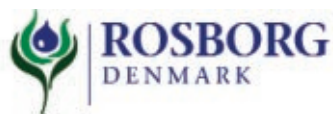
Some of the major projects completed during the coalition include:

- 4,500 m² addition of a newly designed greenhouse whose main structure is aluminium to enhance strength and agility
- Water treatment plant with a Grodan filter, a UV filter and a Coal filter for potted roses
- 16,000 m² addition of greenhouses for "state of the art" herb production
 - Specially designed stainless steel tables for propagation and germination
 - Automatic sewing line
 - Fully automated germination and propagation room
 - Automatic table to gutter transplanting system including the handling of tables and gutters using robotics
 - Plastic gutter growing system with automated spacing
 - 9,000,000 pot herbs grown with only 10 employees
- New office facilities
- Redesigned heating plant for 40,000 m² greenhouse



"Thomas Larssen has not only served as a designer but also as a cost efficient advisor for our company. He is a skilled negotiator and has been used in this capacity while dealing with foreign companies and suppliers. This has allowed our company to expand our base of suppliers without having to focus only in the local area.

Thomas was a part of the team that designed our herb nursery from the basic thoughts and ideas to the final concept where his knowledge and insight was an important factor."



Greenhouse Area: . . . 160,000 m²
 Annual Production: . . . 25 million potted flowers + 9 million potted herbs + 400 tons of tomatoes
 Products: 6 - 15 cm potted roses, Saint Paulia, Mums, Roses, Kalanchoës, Hedera, Herbs

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Larssen Ltd is a company of professional engineers specializing in technical consulting within the Greenhouse industry. We are capable and qualified to engineer and give direction in all aspects of greenhouse expansion and renovation. Larssen Ltd. has more than 17 years experience in constructing nurseries worldwide. Through this practice we have gained the necessary knowledge and skills to formulate the best solutions for your requirements and desires. Regardless of if you want to grow pot roses in Spain, Cucumbers in Siberia, or Herbs in California, Larssen Ltd. knows the best solution for you.

Usually, Larssen Ltd. sees a project from start to finish. We want to be involved from the moment that the first ideas are born and when the first decisions are made to the point where the project is complete and ready for use. Being involved from start to finish allows us to ensure that every detail, no matter how big or small, is carried out to your satisfaction and with complete professionalism. The extent of our work, however, is not necessarily required to be large scale but can also consist of the smaller aspects of greenhouse design and maintenance. Finding the most efficient production flow in your nursery or redesigning an existing heating plant are tasks that are also well within our range and we would be more than happy to assist you in these areas. Larssen Ltd. specializes in but is not limited to the following:

GENERAL TASKS:

- 5-10 year Expansion Plans
- Preliminary Projects
- Site Plans
- Education and Support
- Production Calculations
- Production Flow Design
- Financial Estimates
- Timing Schedules
- Materials Tendering
- Contract Bidding
- Contract Writing
- Building Control and Administration
- Handing Over Procedures
- Warranty Reviews

TECHNICAL CALCULATIONS and DESIGNS:

- Structural Calculation and Design
- Heating Plant Calculation and Design
 - Growing areas
 - Boiler Rooms
 - CoGen Plants
- Growing Systems for tables, floors, in gutters and other solutions
- Curtain Systems
- Irrigation Systems
- Plant Lights
- CO₂

Quality and trust are the key elements in every job where owner and designer are concerned. Larssen Ltd's. mission statement is to provide the right solution at the right price while remaining professional and always demonstrating the highest level of quality possible. Larssen Ltd is independent from suppliers.

Our list of references includes projects from 1,000 m² to 80,000 m² that have been built within one year and house a wide range of crops. Some of Larssen Ltd. clientele include the following growers:

POTTED FLOWERS

Ove Nielsen	Pot Roses	Denmark
Bay City Flower	Hydrangea	California
Knud Jepsen	Kalanchoë	Denmark
E.A.R.L. Sagt	Clematis	France
Aldershot Greenhouses	Pot Roses	Canada

VEGETABLES / HERBS

Sydtomater	Tomatoes	Sverige
Rosborg	Pot herbs	Denmark

MUSHROOM

Egehøj champignon Mushroom	Denmark
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