

# From an idea to a new robotics product

## Collaboration yields quick results with rapid prototyping

### PMA

How a long-standing partnership developed the right cable solution for the robotics industry

When it comes to product development, many international companies are looking to the Danish market because, with a population of just 6 million, there's no great distance between businesses and their customers. At the same time, the country has become an innovative 'hub' for robotics solutions and is at the forefront of developments in new technologies.

Denmark is also home to Bagger-Nielsen ApS, a close partner of the ABB PMA cable protection team for more than 40 years. Bagger-Nielsen is one of the leading developers in the field of robotics and close



Quick results in just  
**8 weeks**  
from an idea to the first prototype





Over the entire project period  
**20 prototypes**  
 were developed, repeatedly tested and improved

The new product was discussed, developed and tested during many online meetings between Denmark and Switzerland.

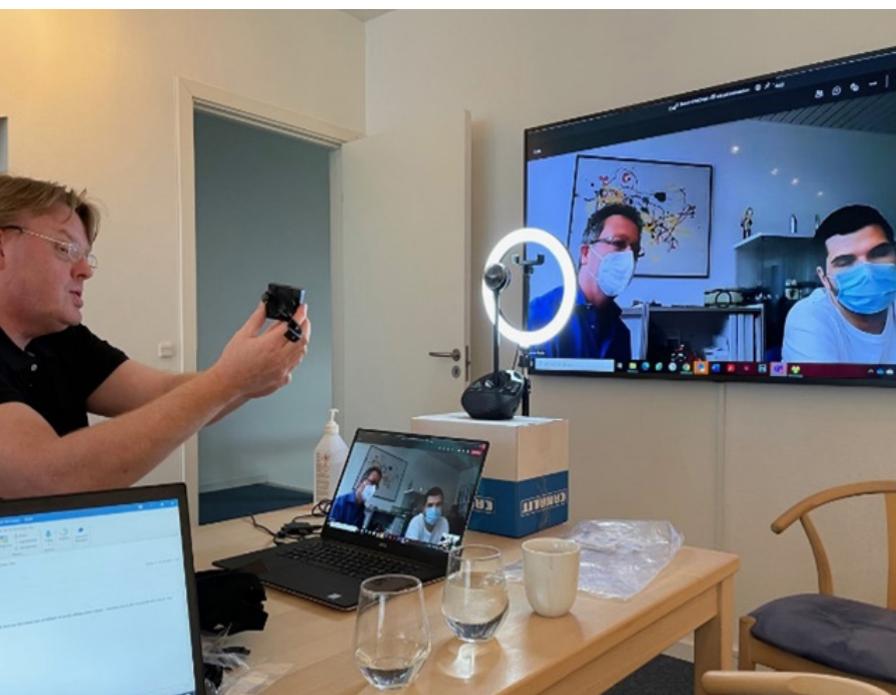
to their customers in the robotics sector. As a result of this close working relationship, Bagger-Nielsen realized that there was a substantial demand for ready-made dresspack solutions, capable of being employed in a variety of ways in collaborative robots (cobots). Cobots are becoming increasingly important and are being widely used, particularly in the automation industry.

Consequently, Bagger-Nielsen contacted ABB PMA team to discuss the options for developing a universally employable cobot dresspack, rather than one tailored to the needs of a specific cobot manufacturer. What they were looking for was an all-round cable protection kit, consisting of a conduit, a fixing means and a strain relief, which could be used for a wide range of cobot applications.

### Successful collaboration by a team from two countries

ABB PMA's installation products team welcomed the idea: "Many years of working in this sector have made Bagger-Nielsen one of the most knowledgeable advisers in the cable protection market. So, of course, when there's some feedback from the market, we listen very intently", said Volker Mühlstein, PMA's Managing Director.

PMA established a development team which worked closely on the project with Bagger-Nielsen in Denmark. The teams in Denmark and Switzerland, conducted online meetings via computer offered a





The new PMA® flexible cable protection solution

## PMA CobotProtect™

provides a dresspack solution suitable for multiple cobot models

— The PMA CobotProtect™ cobot kit consists of 3 metres of multilayer conduit, 2 flexible conduit brackets, including a velcro strap for fastening, and a cable strain relief.

workable solution. Intensive exchange of ideas led the ABB PMA team producing a prototype which was sent to Denmark for testing. A test environment was set up at Bagger-Nielsen so that the new dresspack solution could be tested on a real cobot. Bagger-Nielsen also provided the PMA team with feedback which was continuously used to improve the prototypes; the end result was a cobot kit which met the stringent requirements for wear resistance and frequently repeated movements.

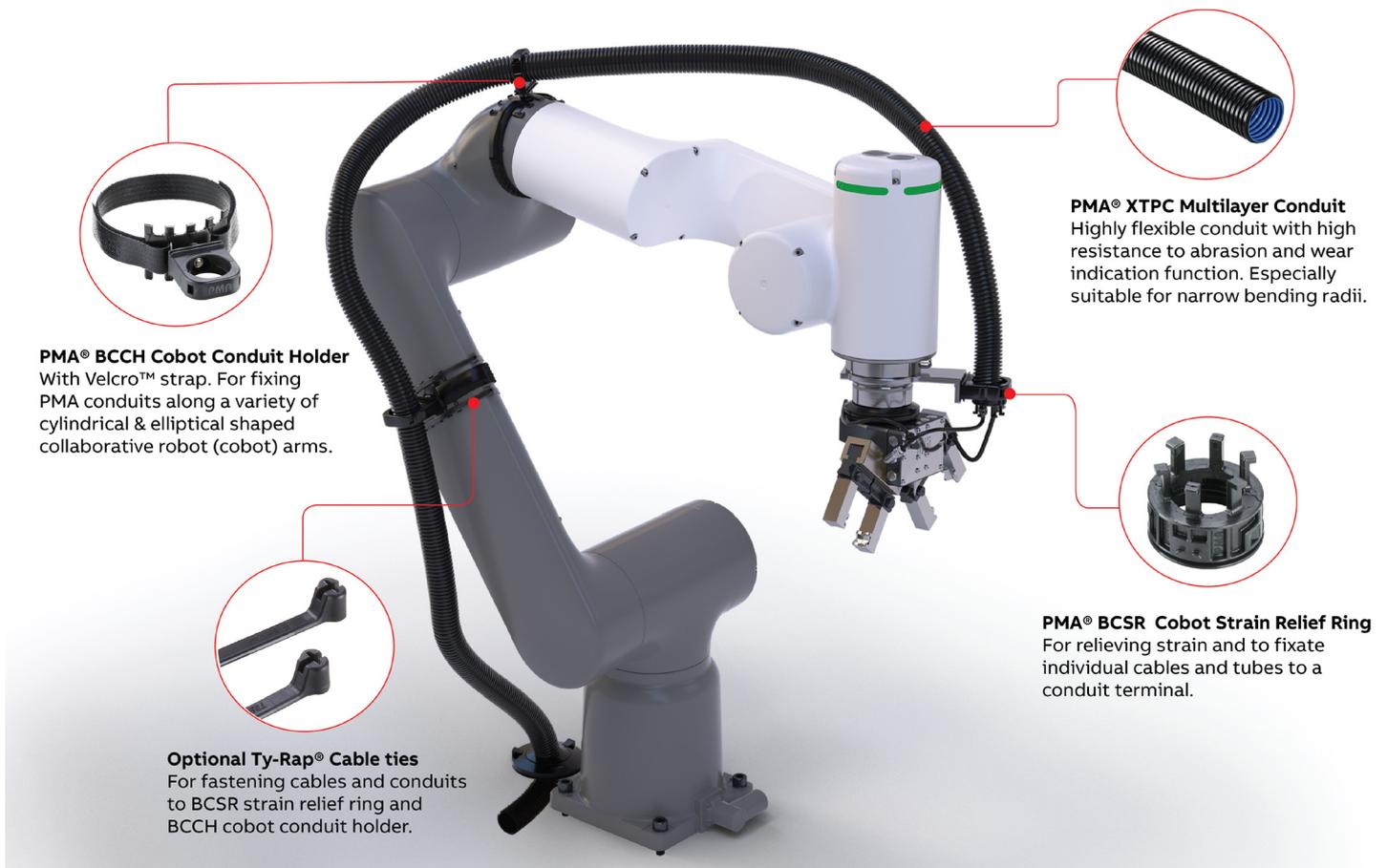
“We enjoyed an excellent working relationship with PMA and a clear exchange of views during the entire process”, said Ole Bendix, Bagger-Nielsen’s product expert. “We received a great deal of useful feedback from PMA’s experts; working together, we produced a good solution which we were able to present to our customers.”

The ABB PMA team also valued the close cooperation between the two: “The process was extremely fast-moving; we developed over 20 prototype variants which were then tested under real world conditions. Our close working relationship with Bagger-Nielsen made it possible to develop a product which precisely meets customer

requirements and the needs of the market,” added Slavko Markovic, PMA’s Application Engineer. This collaboration with the PMA team was the key to the introduction of new products and to our ability to compete. “We clearly feel that there is an increased demand in the robotics sector and our most important task is to ensure that this intelligence is fed back to the PMA team so that we can remain at the forefront of the market”, said Rikke Bagger-Nielsen, the company’s managing director.

### A product which meets customer requirements precisely

The teams worked together to rationalize the process and shorten the time to production. “The decisive factor for us is that we now have products which are competitive, in the market. “Consequently,” says Rikke Bagger-Nielsen, “we feel obliged to share with the PMA team our knowledge of the local market, so as to ensure that all information is available in one place and that products are adapted to meet changing conditions”.



**PMA® BCCH Cobot Conduit Holder**  
With Velcro™ strap. For fixing PMA conduits along a variety of cylindrical & elliptical shaped collaborative robot (cobot) arms.

**PMA® XTPC Multilayer Conduit**  
Highly flexible conduit with high resistance to abrasion and wear indication function. Especially suitable for narrow bending radii.

**PMA® BCSR Cobot Strain Relief Ring**  
For relieving strain and to fixate individual cables and tubes to a conduit terminal.

**Optional Ty-Rap® Cable ties**  
For fastening cables and conduits to BCSR strain relief ring and BCCH cobot conduit holder.

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ABB's cobot kit provides a comprehensive cable protection solution which is suited to a wide possible range of cobots. PMA's cable protection range offers a comprehensive portfolio of conduits, screwed connections and accessories.

### ABB PMA and Bagger-Nielsen

A long-standing and successful partnership in the field of cable protection solutions forms the link between ABB PMA Cable Protection and Bagger-Nielsen in Denmark. Bagger-Nielsen is a modern, innovative company which imports and sells a hand-picked selection of high-quality products from a range of manufacturers. With its PMA® cable protection range, ABB provides a comprehensive portfolio of conduits, screw connections and accessories for varied markets and applications. ABB is a leading supplier of industrial robots and robot software and also of application equipment and complete manufacturing solutions.

PMA CobotProtect™ website:



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