

Surgeon / Inventor, CCM Hockey and Industrie Orkan Collaborate to Design and Produce Game-Changing Full Head Protective Hood for Healthcare Workers

Rapid innovation and teamwork: CCM Hockey re-engineers its NHL Pro Custom Equipment production facility and Industrie Orkan contributes its air treatment system expertise to support the new protective device

Montreal, Quebec, April 13, 2020 – A joint task force combining the innovative capabilities of surgeon Dr. René Caissie of the *Hôpital du Sacré-Cœur de Montréal*, Dorma Labs and DentalCorp; CCM Hockey, a leading designer, manufacturer and marketer of hockey equipment; and Industrie Orkan, a Canadian leader in high-efficiency particulate air (HEPA) handling systems, has worked hand-in-hand to meet the urgent personal protective equipment (PPE) needs of Quebec healthcare workers fighting the COVID-19 virus by designing and producing a Full Head Protective Hood in record time.

Powered air-purifying units

The advantage of the full-head protective hood is that it completely encloses the user's head and is powered by an air-purifying respirator (PAPR). This device will provide an integrated defence against multiple hazards by combining respiratory, head, eye and face protection, guarding against aerosolized and airborne particulates. It can be worn for multiple hours at a time and reduces inter-patient treatment protection changeover lapses. The protective hood was tested at the *Institut de Recherche en Santé et Sécurité du Travail* (IRSST), attaining an Assigned Protective Factor (APF) of 100—10 times the APF needed to qualify an N95 mask.

Deploying innovation and engineering capabilities where they're needed

As the pandemic began to progress, Dr. Caissie witnessed first-hand the urgent need for highly protective devices and wanted to do something to protect his fellow medical professionals on the front lines of this battle.

"With the rapidly declining quantity of personal protective equipment available in my work environment, as did most of my colleagues, I began to look for solutions," said Dr. Caissie, Oral and Maxillofacial Surgeon at the *Hôpital du Sacré-Cœur de Montréal*. "I decided to participate in an effort to build our own equipment using materials that are readily available here in Montreal, so that this could move quickly and without having to depend on external factors more than absolutely necessary."

After working tirelessly in his garage to design a working prototype, Dr. Caissie reached out to CCM to see if the company could produce the device at scale. At the same time, CCM was seeking to leverage the innovation mindset that is rooted in its DNA, along with its industry-leading engineering capabilities, to assist in the fight against COVID-19, building upon its recent donation of 500,000 surgical masks. CCM's engineering and design teams transformed available supplies and quickly developed manufactured prototypes.

"We are deploying our culture of innovation and craft, which normally protects the world's best hockey players doing battle on the ice, for a new purpose: Protecting our healthcare workers on the front lines of the most important battle of our time," said Rick Blackshaw, CEO of CCM Hockey.

“Our team of skilled craftspeople and grinders has managed to temporarily transform our NHL Pro Custom Equipment facility into a medical equipment installation, engineering a completely new production line, deploying safety measures, and training employees,” added Mr. Blackshaw. “Meeting the logistical challenges of implementing such a change is daunting, but to do so in the face of personal stress, imposed personal isolation and extreme time constraints shows what a committed and resourceful team we have.”

In parallel, Industrie Orkan offered its expertise and experience in design, 3D simulation and manufacturing to develop a complete positive pressure fresh air supply system for the protective hood within 48 hours. Significantly, all components of this air treatment system are made in Quebec and are readily available.

“We were contacted by Dr. Caissie just a few days ago and were thrilled by the positive pressure hood project. Our entire team took up the challenge, motivated by the idea of protecting physicians on the front lines,” said Simon Labrecque, Vice-President of Industrie Orkan. “We are proud to be able to deploy this innovative solution in hospitals throughout Quebec,” added Mr. Labrecque.

Once duly approved by Health authorities, CCM Hockey will produce up to 150 units per day for as long as supply and market conditions allow.

Teamwork is vital: Open source sharing of the design for the common good

Manufacturing blueprints—designs, materials specs and assembly instructions—are to be shared on an open source basis as soon as possible at www.ccmhockey.com so as to permit any manufacturer capable of increasing our collective production capacity to join this race against the clock to protect our health professionals and save our communities.

“The tremendous response time and manufacturing turnaround at CCM and Orkan is a true testimony to the power of collaboration in the face of a common threat,” observed Dr. Caissie. “The needs are so great that we are asking everyone out there to chip-in in any way they can. At this point, a robust supply chain is vital to producing as many devices as possible and distributing them without delay.”

About Dr. René Caissie

Dr Caissie is a specialist in Oral and Maxillofacial Surgery. He is the chief medical officer at Dorma Labs and a partner at DentalCorp. He is an active member and surgeon at the *Hôpital du Sacré-Cœur de Montréal*. Dr René Caissie is a fellow of the Royal College in his specialty. He is a clinical lecturer at the *Université de Montréal's* Department of Surgery and is often invited to lecture at Oral and Maxillofacial Surgery conferences around the world. Dr. He has published multiple peer-reviewed articles in the field of nerve regeneration and is now an examiner at the Royal College in his specialty.

About CCM Hockey

CCM Hockey is a leading designer, manufacturer and marketer of hockey equipment and related apparel. With its headquarters located in Montreal, the company has operations in Canada, the United States and Europe. CCM Hockey equips more professional hockey players than any other company, including superstars like Connor McDavid, Alex Ovechkin, Sidney Crosby, Carey Price and John Tavares. CCM Hockey is also the official outfitter of the American Hockey League, the Canadian Hockey League, and several NCAA and National teams. For more info, visit: www.ccmhockey.com.

About Orkan

Founded in 1999, Industrie Orkan is a Canadian leader in air filtration and purification using its TRUE HEPA technology. Its products are entirely manufactured at its Saint-Hubert plant, in Quebec. Industrie Orkan has sales outlets in Shanghai, Beijing, Seoul, Bangkok and Lyon.

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