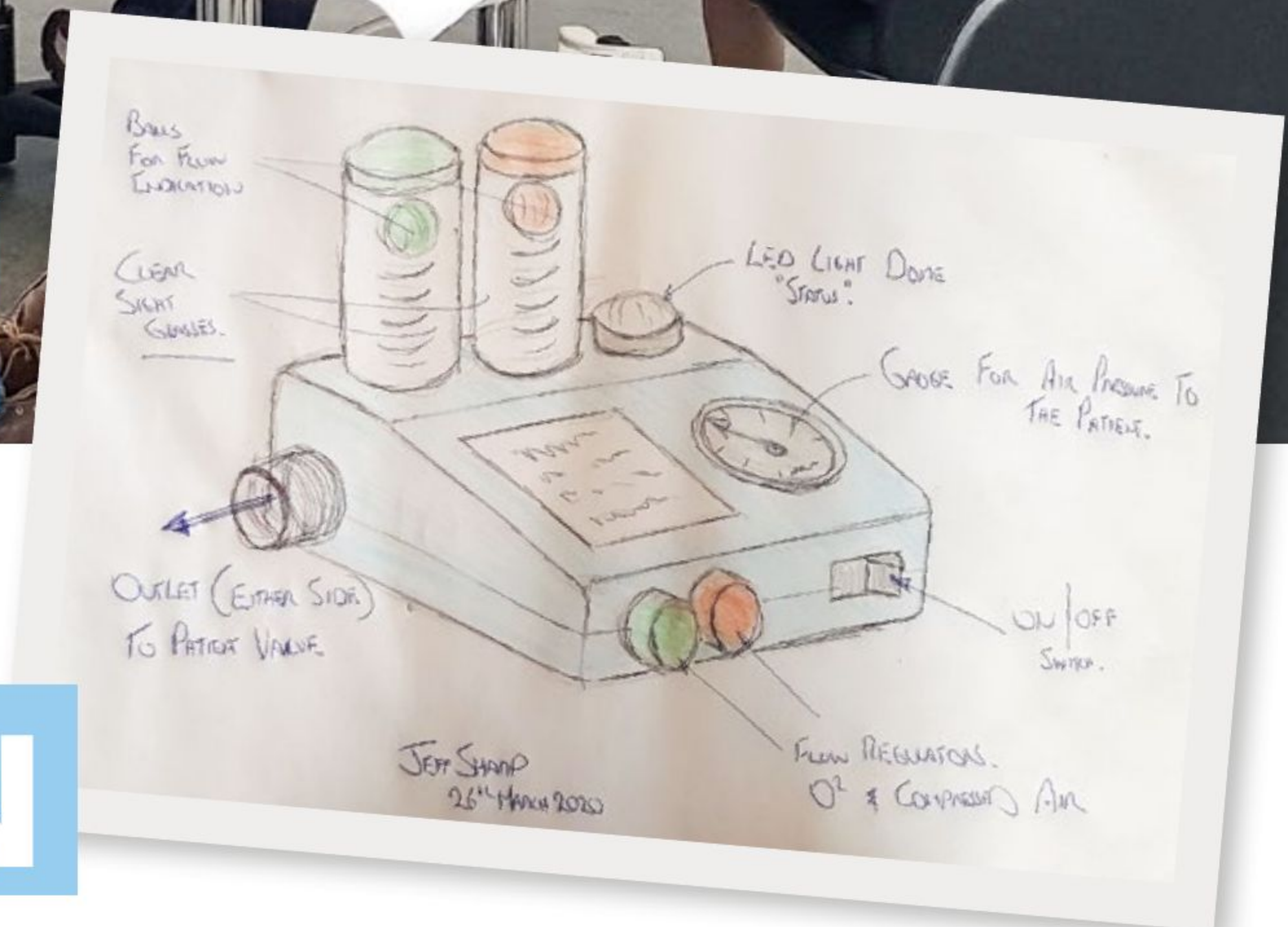


PICTURED: The first ventilator design meeting, with social distancing, at ES Plastics NZ warehouse, during level 4 lockdown.

INSET: Jeff Sharp's original design sketch.



INGENUITY BORN OUT OF LOCKDOWN



By Kylie Hatfield

At the height of COVID-19 lockdown measures in New Zealand, necessity and ingenuity bred a solution to a crucial health challenge many countries were experiencing. A low-cost pandemic ventilator was developed by three neighbours – an engineer and two doctors – and is now in demand to help ease the burden of the pandemic on other countries.

As the domestic and international effects of COVID-19 became increasingly catastrophic, Managing Director of ES Plastics Jeff Sharp reached out to his two neighbours, Dr Martyn Harvey and Dr Giles Chanwai

from Hamilton, New Zealand. The three neighbours discussed ES Plastics' capabilities and what they could do to assist in an effective national response to COVID-19.

Dr Harvey is directing the Waikato Hospital response to COVID-19 and Dr Chanwai is an emergency response specialist; both were working on the front line at the time. The two doctors were well-aware of the impending stress COVID-19 would place on the public health services. The biggest concern was the limited availability of ventilator units, which were mainly staffed ventilator beds, with only 153 in public hospitals New Zealand wide.

On the eve of the country's lockdown, Jeff's neighbours provided him with a 'PENLON Nuffield Series 200 Ventilator', a durable yet straightforward ventilator used over many decades, before being replaced by more advanced technology.

Using this piece of historical innovation, Jeff began designing what would eventually become RespiratorNZ, an emergency response ventilator system made and manufactured in Hamilton.

The ES Plastics team developed the prototype in just seven days in March and is currently scaling up production rates to 100 units per day.

With the risk of COVID-19 now considered very low in New Zealand,



PICTURED: Dr Giles Chanwai, left, Dr Martyn Harvey and Jeff Sharp at ES Plastics NZ, in-vitro testing the VC Pandemic Ventilator.

attention has turned to ensuring other countries have access to the VC Pandemic Ventilator.

“Global demand for ventilators was at an all-time high, with many countries scrambling to produce and manufacture as many ventilators as possible to deal with the influx of patients requiring

them,” said ES Plastics Director Heather Allen, also a member of the Rotary Club of Rototuna. “There is interest within Rotary in sending our product to India, Bangladesh and Pakistan.”

The Rotary Club of Rototuna has supported the project and assisted several local campaigns and initiatives

related to combating COVID-19.

Club President Tony Richardson said what the ES Plastics’ team has achieved is remarkable.

“Standard ventilators cost \$100,000 and require highly trained operators, a hospital environment and a global supply chain for parts. The VC Pandemic Ventilator costs a tenth of that, can be run off a power drill battery and can be deployed in third-world countries without mains power and with rapidly trained operatives,” Tony said.

“The project was developed from scratch in a few weeks and has attracted global interest. All because two doctors and an engineer live next door to each other and because lockdown meant resources were available to work on new ideas.”