

# APAC Fortes

-By Zoe Chuang



# Hermetic Seal (Optical Components)

- All components used in offshore wind turbines are constantly facing the challenge of very high humidity.
- Long-term exposure in high humidity can cause various electrical problems, leakage across pins, damage to the silicon chip or circuit board, light scattering across a photonic component due to water droplets at the fiber-to-chip interface, corrosion, and other issues. Exposure to such stressors may
  - damage or shorten the component's life
  - impede performance and reliability
  - corrode the transceiver
  - or in worst case scenarios, cause the optical component to completely fail.

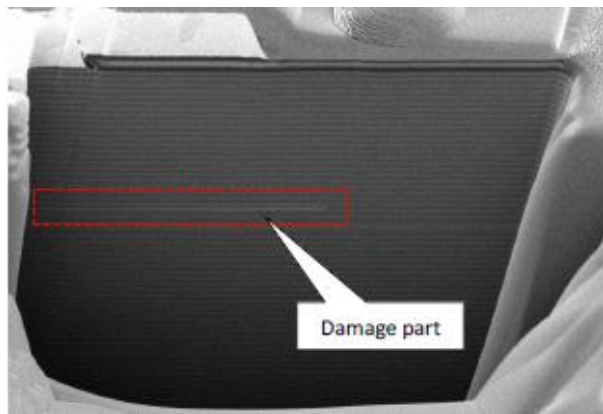


Figure 1: VCSEL Dark Line Defects

(One of the potential damages)

# Hermetic Seal (Optical Components)

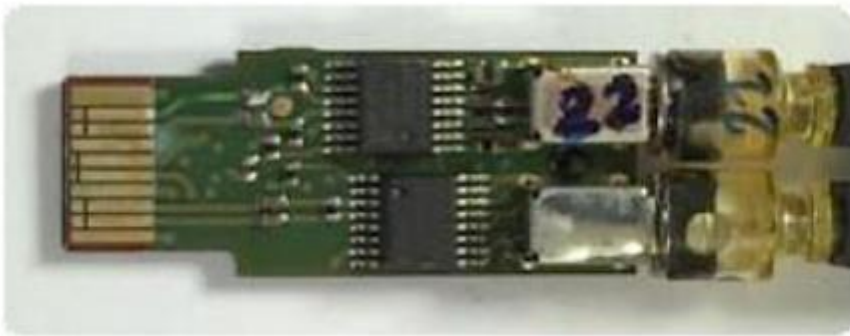
- APAC's optical components are all hermetically sealed to keep moisture and air contamination out.
- Components are placed inside a chamber filled with helium and a 5kg high pressure is applied. The component is then tested with a helium leak detector to see if there's any He inside the component.



Figure 2: Helium Leak Detector at APAC

# Conformal Coating <sup>\*Optional</sup> (Electrical Components)

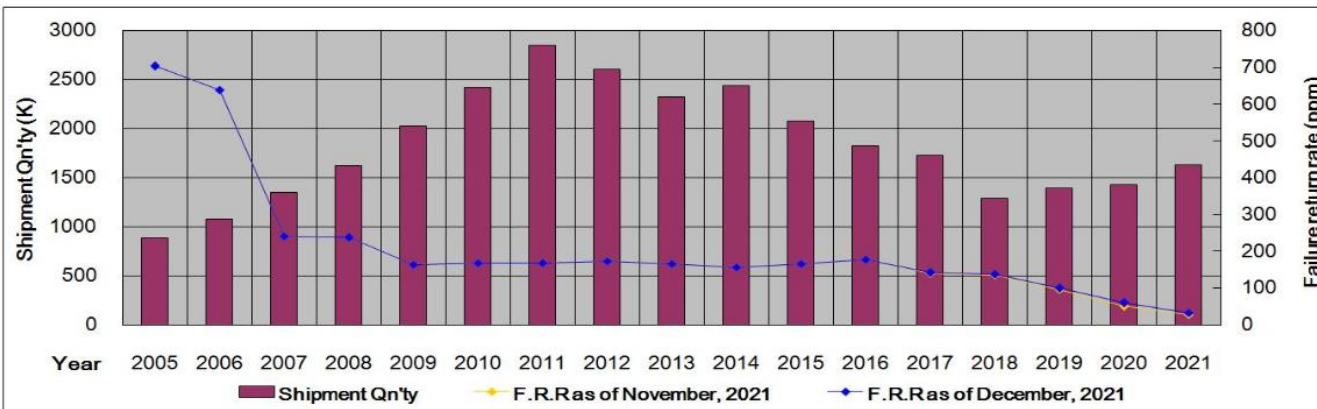
- As offshore wind farm is expected to operate in a highly corrosive environment, it has become a challenge for fiber-optic and electronic components to survive in such an environment.
- Customer can choose to apply conformal coating on the PCB to protect electronic circuits from air-borne contaminants in the operating environment, thereby preventing corrosion as well as protecting the PCB against humidity and chemical attack.





# Field Return Rate

- As offshore wind farm is expected to operate for many years, wind turbine manufacturers should choose highly reliable partners to insure smooth operation and post-sales service.
- APAC has been a key manufacturer in the industry for over 24 years. Our field return rate is lower than 169 ppm in the past 11 years. We continue to track the field return rate annually.



Year	Return Qn'ty (piece)	Shipment Qn'ty (piece)	Field Return Rate(ppm)
2011	483	2,856,331	169
2012	449	2,606,314	172
2013	377	2,329,961	162
2014	383	2,442,249	157
2015	348	2,081,838	167
2016	327	1,823,720	179
2017	246	1,733,086	142
2018	179	1,288,474	139
2019	139	1,392,047	100
2020	86	1,431,708	60
2021	54	1,635,795	33

# Flexible Design

- APAC's expertise's lie in transceiver designs and manufacturing. We can assist the customer to improve the design and manufacturing of the following fronts:
  - SMT PCBA
  - TO-can package
  - Optical Sub-module (TOSA/ROSA) design and manufacturing
  - COB package
  - Transceiver design and manufacturing
  - Custom transceiver specs
  - Custom EEPROM/label design





# Reliable Supply

- Situated in Taiwan, APAC is fully supported by Taiwan's flexible regulations and high technologies.
- APAC's transceivers are insured with 5 million Euro policy.
- Sustainable supply and long life time/longevity is expected of us.



100% Taiwan Manufactured