

FIEM INDUSTRIES LIMITED



LIGHT UP THE WORLD

Accelerating **Innovation**



ANNUAL
REPORT
2021-22

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Accelerating Innovation



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WHAT'S IN THIS REPORT...

01 to 36	Corporate Overview
37 to 37	General Information
38 to 60	Directors' Report with Annexures
61 to 66	Management Discussion & Analysis
67 to 84	Corporate Governance Report & Certificates
85 to 91	Business Responsibility Report
92 to 148	Standalone Financial Statements
149 to 203	Consolidated Financial Statements
204 to 204	Form AOC-1

Disclaimer:

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At FIEM, we are Accelerating Innovation to deliver highest quality products for our valued OEMs in shortest possible time.

We are augmenting our in-house R&D capabilities with world-class designing, development & testing facilities to evolve an ecosystem - which fosters product innovation and best-in-class Automotive Lighting products for our customers.

RONIN

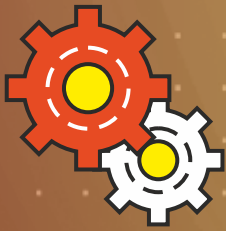


TVS RONIN



HEAD LAMP WITH INNOVATIVE FEATURES

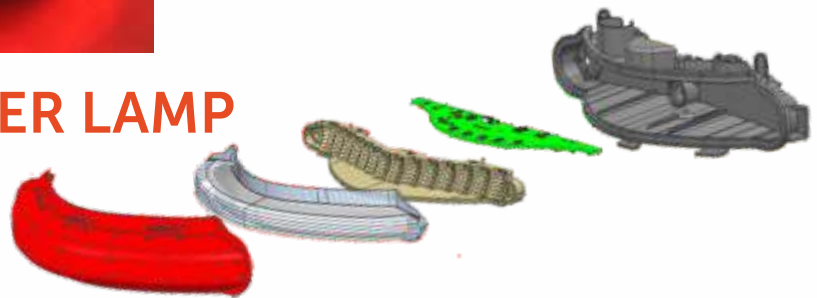
- LED headlamp with innovative features and design with congruent signature of position lamp function.
- Partially concealed reflector design under black bezel bring forth the miniature window design with better illumination on road.
- Opel high transmittance inner lens with direct LED concept gives a homogeneous light with bold curvature lines.
- High efficient thermal concepts derived distinctly to cope with High power LED's which gives a uniform light output.



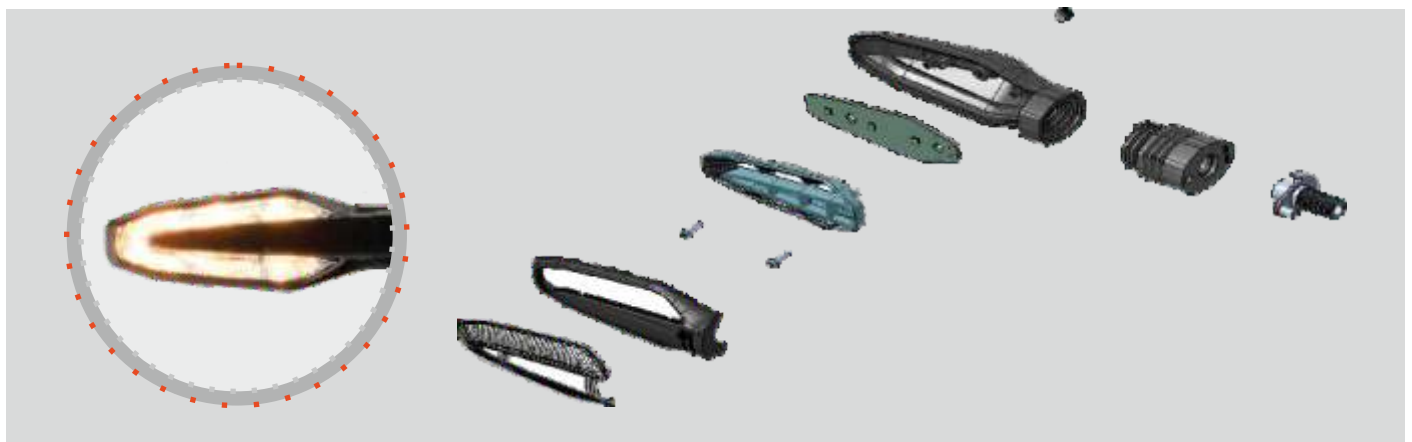
TECH INNOVATION



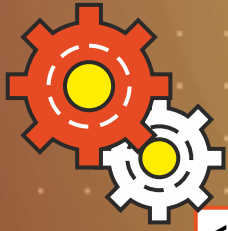
TAIL LAMP & WINKER LAMP WITH INNOVATIVE FEATURES



- Sleek looking Semi –bar shape design which camouflages with frame and surrounding parts, adds aggressiveness to the retro design motorcycles.
- Light bar with lateral running seamless extruded optics provide unique design appeal to deliver 180 degree light which improves the safety.
- Multiple concepts are homogenized to put forward a hybrid lighting experience with striking lit up for tail and stop function.



- Unique feature aligning the motorcycle styling concept with the flexible stay integrated with housing to give unique style and homogenous lighting.



TECH INNOVATION

<< CLASS B >>

MT-15



FZ-X



CONVENTIONAL LED HEAD LAMP TO WORLD'S SMALLEST **Bi-FUNCTIONAL LED PROJECTOR HEAD LAMP**

Starting 2018, till date we have already launched 7 models using the World's smallest Bi-functional LED Head light module (patented).

We have further enhanced position / DRL function by using the Bi-functional module to give unique styling feature in the motorcycle.



<< CLASS C >>

TRACER-700



<< CLASS D >>

MT-25

MT-09

MT-03

FZ-S

CROSSER-XTZ



<< INDIRECT EXPORT BUSINESS >>



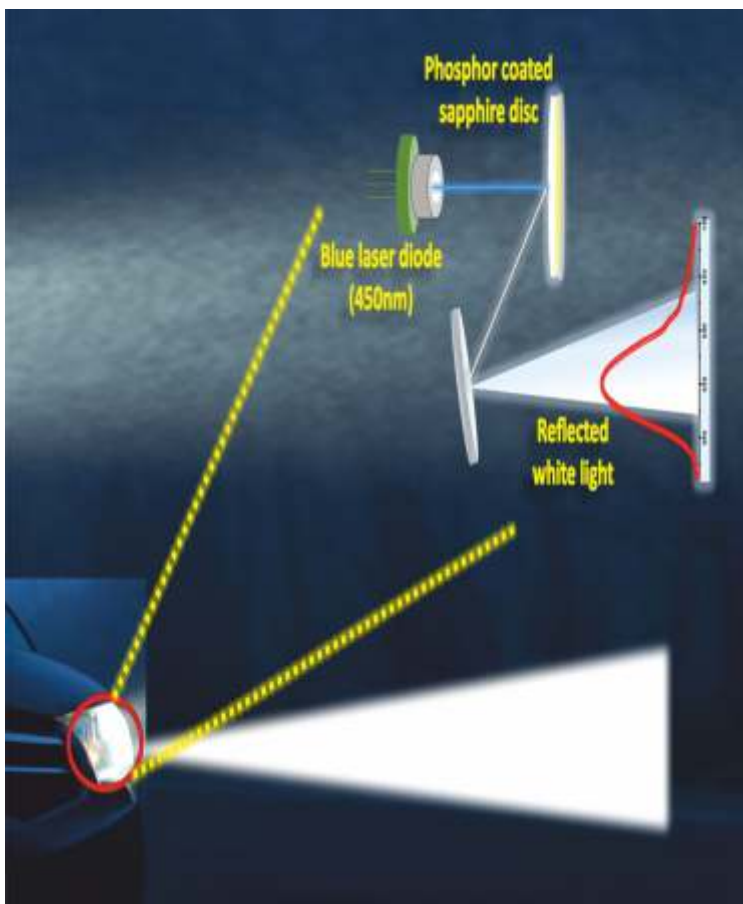
In our quest to remain self-dependent for next generation lighting technologies, our In-house R&D is relentlessly working on futuristic technologies like white light generation using LASER, which are yet to be adopted in 2W Lighting...

NEXT GENERATION LIGHTING: LASER TECHNOLOGY

Abstract

A facile synthesis method for the development of $Y_{3-x}Al_5O_{12}: Ce_x^{3+}$, $x=0.03-0.24$ yellow phosphor via an auto-combustion method and fabrication of phosphor-incorporated sapphire disc (PISD) of various dimensions is reported. The photoluminescence (PL) intensity for the optimized concentration of Ce^{3+} -doped yttrium aluminum garnet (YAG) phosphor is

recorded at 550 nm wavelength under the excitation wavelength of 445 nm from a high power blue laser diode. The developed PISD exhibits high stability and luminescence. The blue laser diode is a promising candidate to revolutionize the luminous intensity of the white light by several orders of magnitude as compared with the existing blue light-emitting diodes. This emerging technology has an extremely bright future with endless uses of tunable power of the laser that controls the intensity of the emitted white light. Hence, this new approach provides a paradigm shift to produce highly efficient white light based on PISD integrated with blue laser diode as compared with the conventional technology. Moreover, such configurations allow more styling and packaging flexibility that reduces the overall size of the fabricated unit and makes it favorable for various lighting applications.



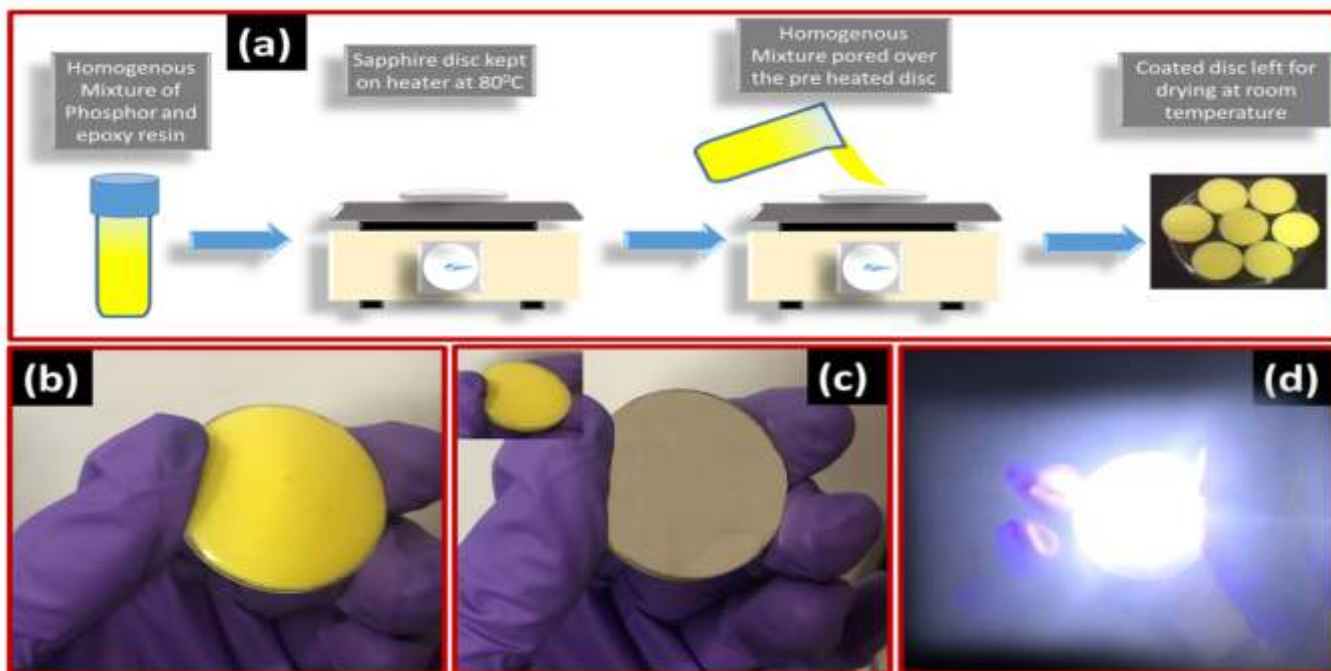
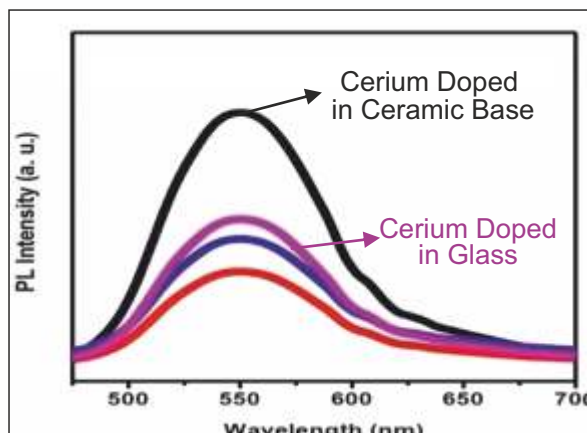


Figure : a) Schematic diagram of disc fabrication, b) Fabricated disc for transmission mode, c) Fabricated disc for reflection mode, d) Laser-induced white light for consistency check.

Recent Development

Based on the experience of the first prototype of PISD, recently we have designed glass and ceramic based phosphor which have higher efficiency to convert blue laser light to white light. This new approach provides a paradigm shift to produce highly-efficient white light based on PISD integrated with a blue laser diode as compared with the conventional technology. The blue laser induced white light is a promising candidate to revolutionize the luminous intensity of the white light by several orders of magnitude as compared with the existing blue light - emitting diodes based white light. This emerging technology has an extremely bright future with endless uses of tunable power of the laser that controls the intensity of the emitted white light for several applications such as head lights in automobile industries and many more.



WORLD CLASS TESTING FACILITIES

We believe, our multi location testing facilities will immensely benefit to all our OEM customers. This will prove an important strength of our Company to garner new business from the OEMs.

NABL Accredited Photometric Testing Laboratory



**NABL Accredited Photometric Laboratory
in R&D Centre at Rai, Haryana
R&D Centre Recognised by DSIR,
Ministry of Science and Technology**