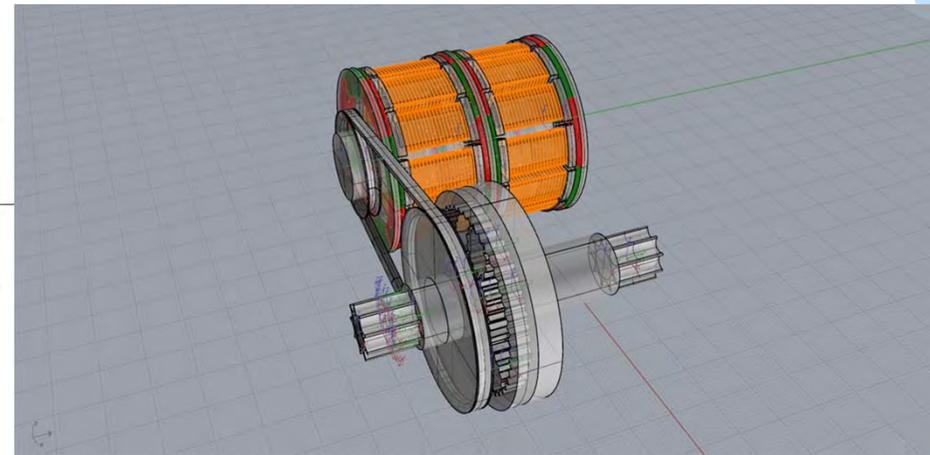
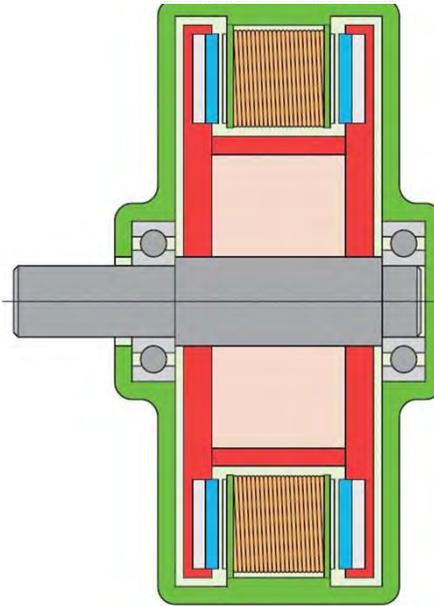
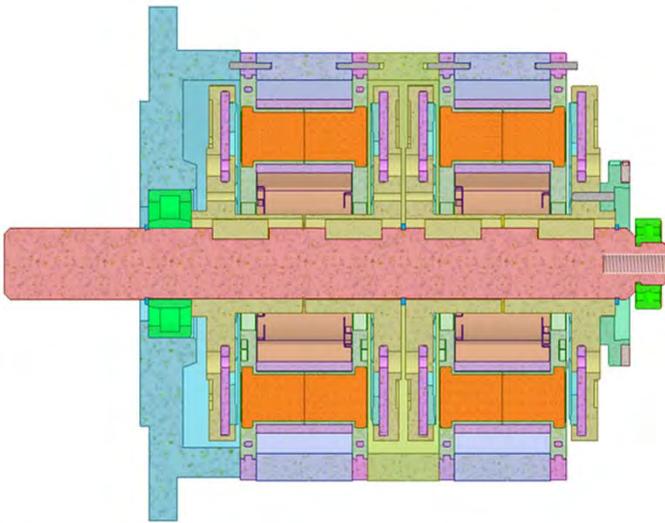


eflow

Since 2017.01.26



Keep confidential !!!

Company Profile

Name	eFlow Co., Ltd. Since Dec.27, 2015. www.eFlow.kr
CEO	Charlie Suhan Youn (尹秀漢) +8210 93042077, eFlowcharlie@gmail.com
Business	PAM (Permanent Axial Flux Magnet) Motor/Controller and application development e-bike drive module / Industrial Motor /Energy-System Generator
Address	#202, 10, Bulmosan-Ro 10-Gil, Changwon-si, Korea, 51543
R&D	#201, 10, Bulmosan-Ro 10-Gil, Changwon-si, Korea, 51542
Employee	5 people

History

- 2017 01.26 Open Company in Gyungnam CCEI
– Develop. Of Envir. Friendly and High efficiency Motor Tech. Application.
The list company of K-Global 300
- 2018 01 HQ office and R&D office in KERI (Korea Electro technology Research Institute)
- 2018 09 Families Company of KERI
- 2019 09 Partnership with Pragma Industries (France)
- 2019 11 Partnership with PA Elektronik (Germany)
- 2019 11 Venture Business Certification (Korea)

- 2017 – Present Development project
 - 40 KW PAM Motor in Hydraulic module Application
 - 400 W Auto cooling fan module
 - 15 kW Wind power Generator
 - 4 kW Small Vehicle Drive Motor
 - 750 W Tooling Machine Hydraulic Drive motor
 - 250/350W High efficiency e-bike drive module (SE-Drive)

- Patent : 3 Patent registration in Korea (*PAM Motor e-bike drive module)
- 2 Patent Application (Progress of Registration) in Korea
- 2 PCT Patent application

Vision

Energy Saving

Environ,
Friendly

Permanent

Globalization

High Efficiency PAM (Permanent Axial Flux Magnet) Motor/Controller development

Smart Mobility Drive Module (e-bike, small e-vehicle)

Renewable energy Application (Windy, Wave power)

High efficiency Industrial Drive Motor Module

Gift to the Green Earth to the next generation, permanently !!

eflow major business and target market

Main Technology	Target Market
Permanent Axial Flux Magnet Motor (PAM)	<ol style="list-style-type: none">1. e-Vehicle (E-bike, Smart mobility)2. Renewable Energy (Windy, Wave (generator)3. Industrial App. (Hydraulic Ind. Motor, e-tool machine etc.)4. Electronic Ind. (Home electronic, Robot, Factory automation etc.)

Main BIZ and Background (PAM motor)

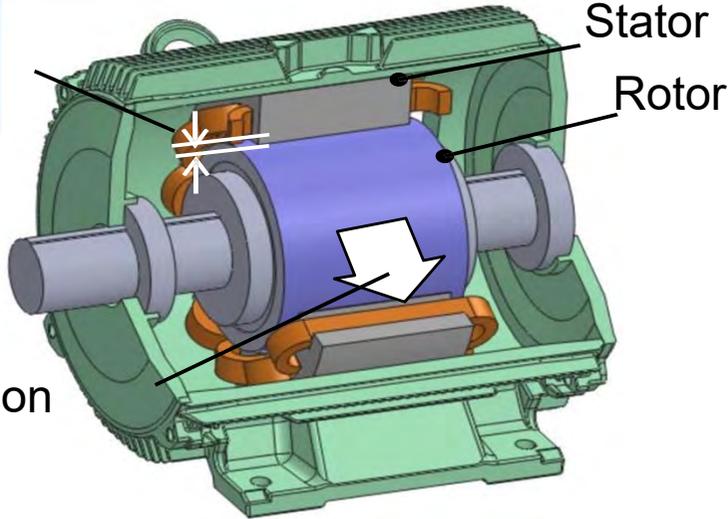
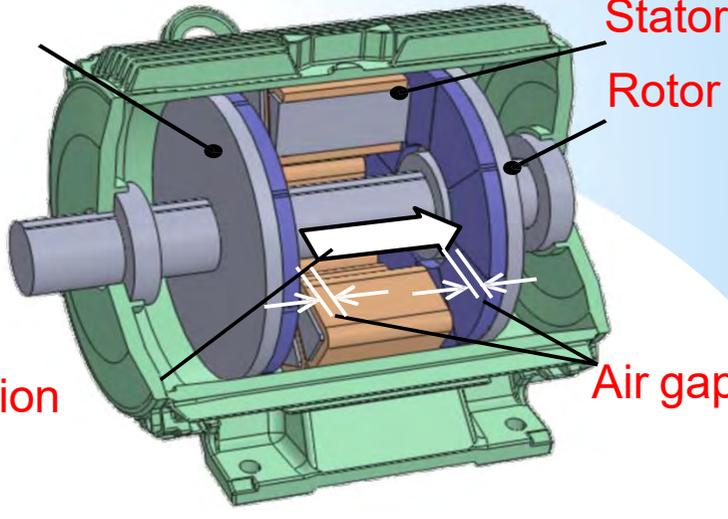
1. Development Background of PAM (Permanent Axial Flux Magnet Motor)

- Request of High energy efficiency motor : Approach to the material and configuration develop.
- Development of Material : Price increase of raw material
 - ex) Rare earth magnetic material
- Development of Configuration : High efficiency and low material consumption
 - ex) Radial type to Axial type
- PAM Motor : High efficiency & Power, Economical Product and Small size, low noise,

2. Advantage of PAM Motor : High efficiency & Power, Economical Product and Small size, low noise,

High Efficiency	(> 90%)
Increase the Torque	(over 25% from current motor)
Compact size and lower weight	(more than 30% reduction)
Noise	(more than 30% Noise reduction)

* Advantages of PAM Motor Structure

	Conventional (Radial-flux motor)	Developed (Axial-flux motor) PAM
Structure	 <p>Air gap</p> <p>Stator</p> <p>Rotor</p> <p>Flux direction</p>	 <p>Rotor</p> <p>Stator</p> <p>Rotor</p> <p>Flux direction</p> <p>Air gap</p>
	<p>High Efficiency</p> <p>Increase the Torque</p> <p>Compact size and lower weight</p> <p>Noise</p>	<p>(> 90%)</p> <p>(over 25% from current motor)</p> <p>(more than 30% reduction)</p> <p>(more than 30% Noise reduction)</p>

The Status of e-flow e-bike project (SE-Drive)

- Development Status

Concept Design → 2D Drawing Design → 3D Drawing Design → 3D Simulation

Prototype PAM Motor production → Prototype SE-Drive Production → Mass Production

- Customer market request :

High efficiency, High Torque, No Cogging, Lower Noise, Constant Speed, e-bike mid-drive

- Contract Customer

LOI Contract with eflow SE-Drive : Pragma Industries (France), PA Electronik (Germany)

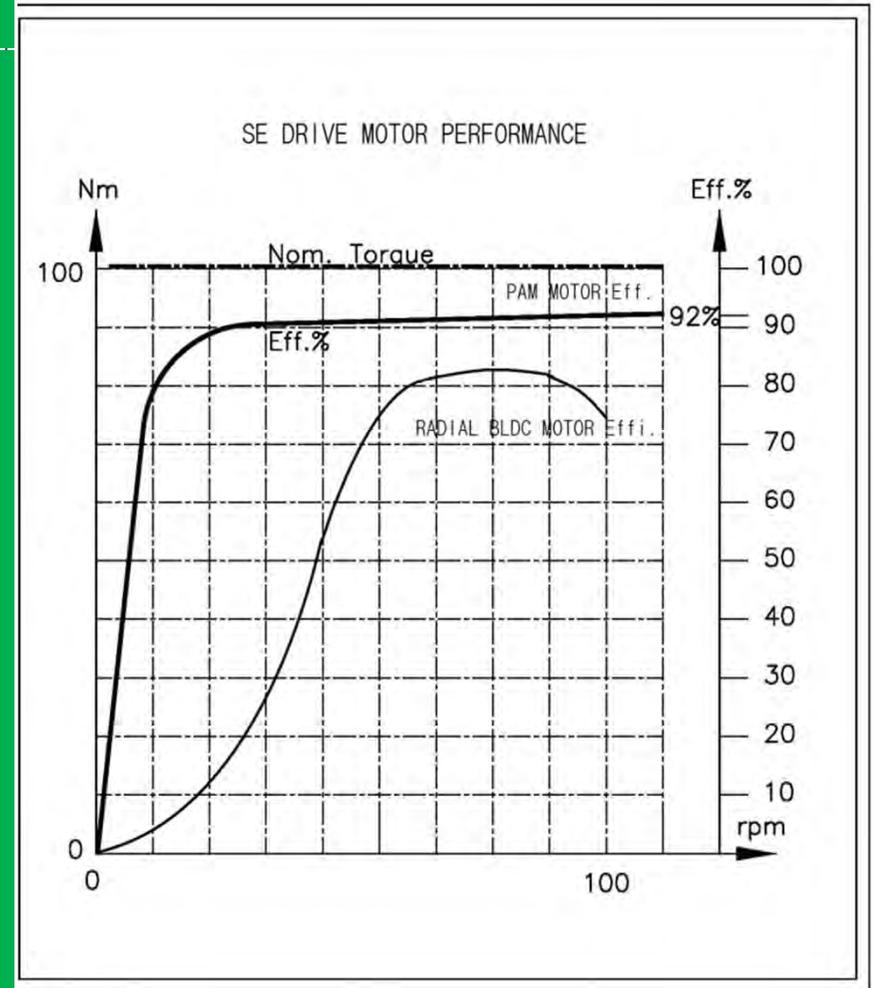
- Target Customer

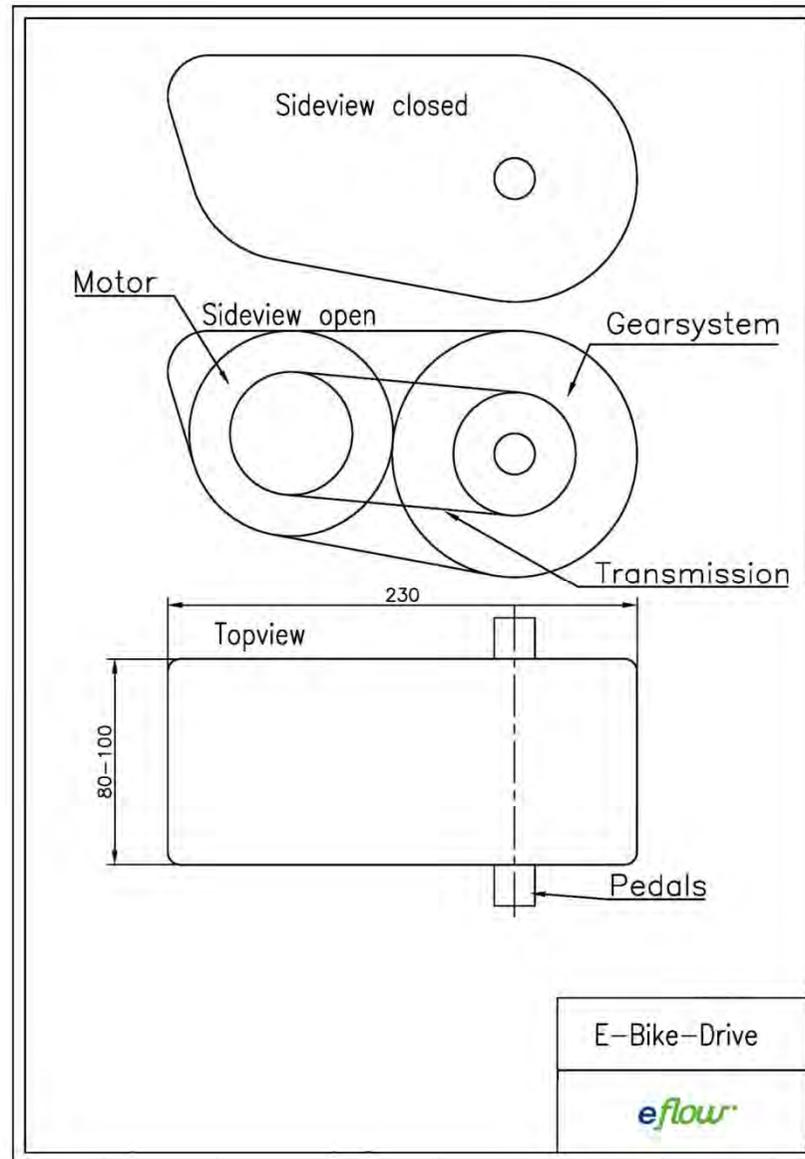
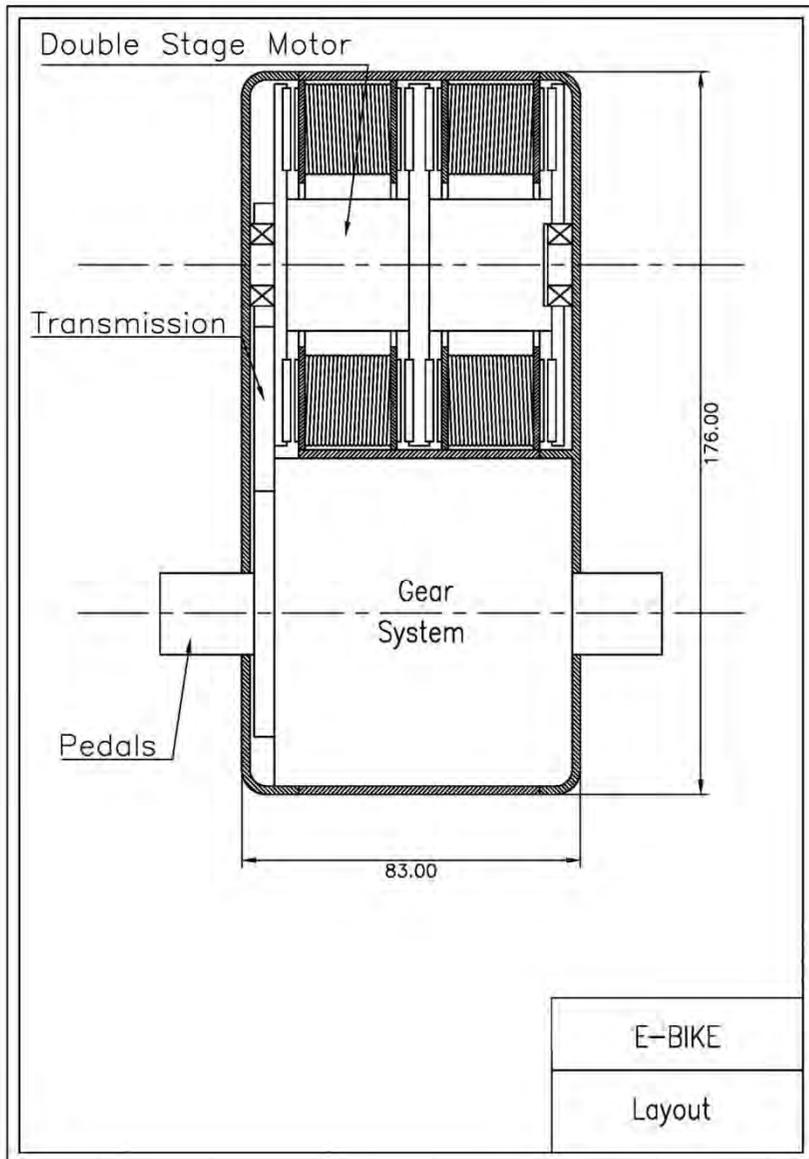
EU main e-bike supply company : Derby-Kalkhoff, Focus, Raleigh, Univega and Rixe. Flyer, Vanmoof

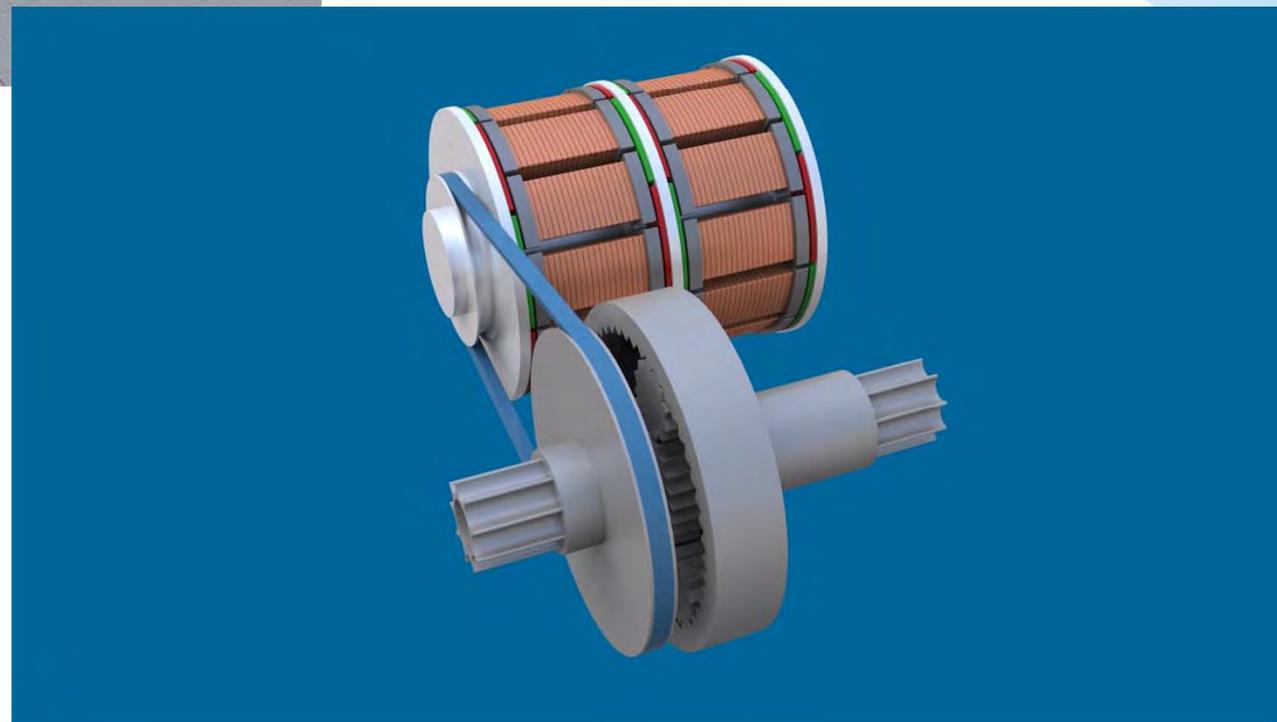
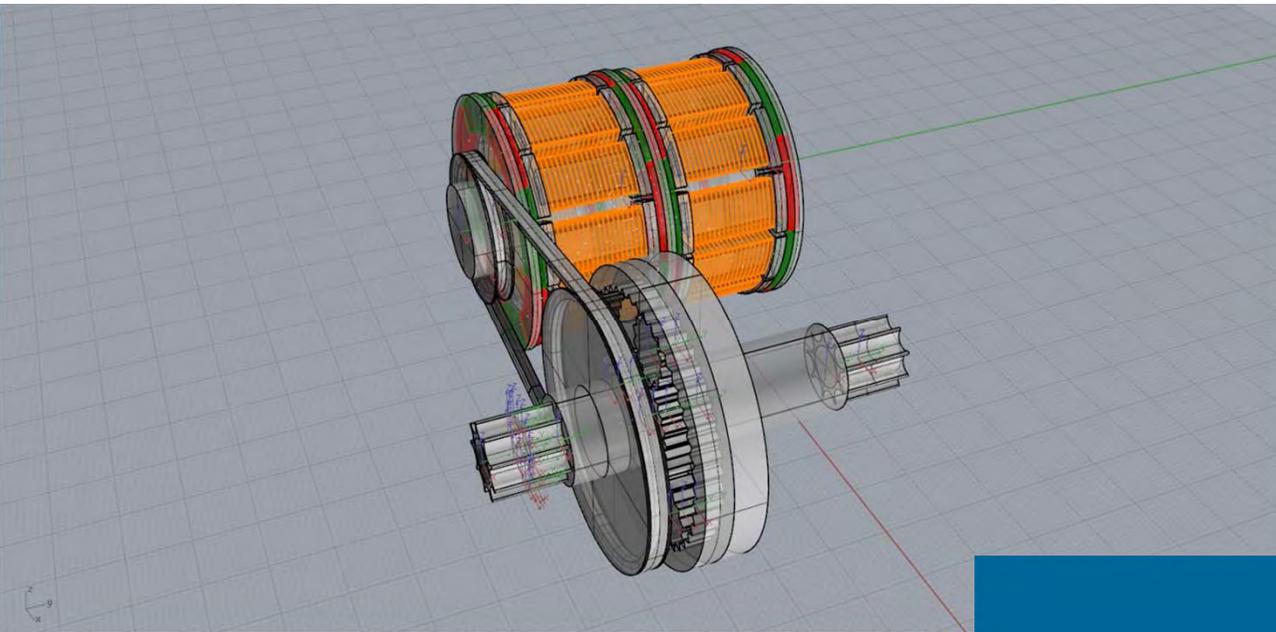
Local e-bike assembling company

* e-flow SE-Drive Specification

	36v (250w) Current	36v 250w (eflow PAM SE-Drive)
RATED VOLTAGE (V)	36	36(48)
RATED CURRENT (A)	6.5	7-8
MAX. INPUT CURRENT(W)	350(250)	500
PEAK POWER(W)	500	1000
RATED RATION SPEED(RPM)	80	100
MAX. OUTPUT POWER(W)	350(250)	250 - 800
Normal/MAX. OUTPUT TORQUE(Nm)	50/75	75/100
SPEED RATIO	The design value	The design value
MAX. RUNNING SPEED (Km/h)	25(35)	25
P.A.S. (PEDELEC)	30% - 300%	30% - 300%
WEIGHT (kg)	3.8	2.5
IP-STANDARD	60	65 (WP)
NOISE (dB)	<65	<45

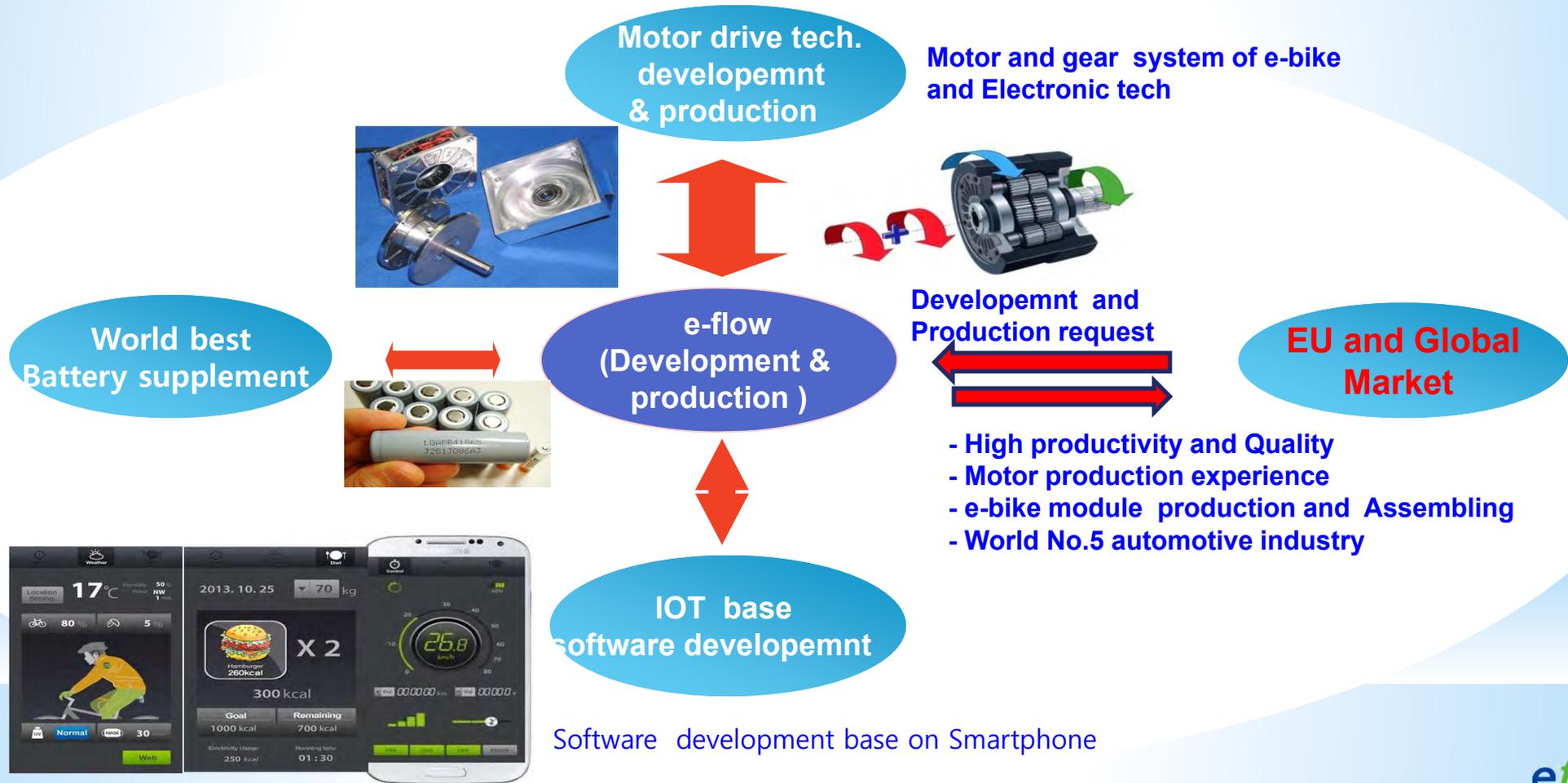




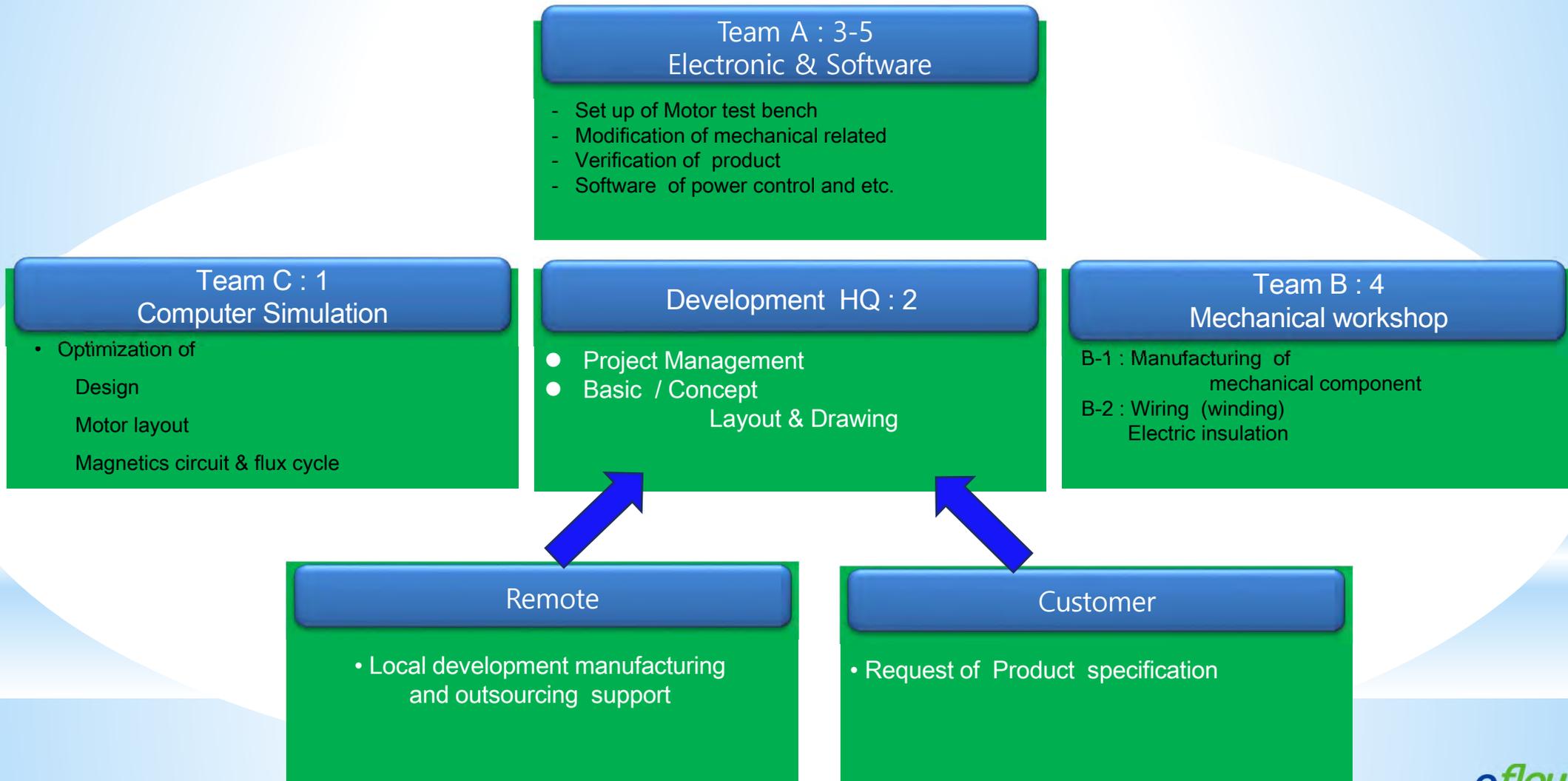


e-bike SE-Drive <Why in Korea ?>

manufacturing tech. background of all components are best in the world



Motor Development Group



Thanks !!!! .
Keep Contact

With Us ! Get A Better Solution !!