



SYKLOTRON
senteret

PET/CT scans outside main hospitals using drones

June 2018

About us

- Norsk medisinsk syklotronsenter AS (NMS)
- Head office at Montebello, Oslo, Norway
- 29 employees
- Public company
- Commercial – but profits are reinvested in R&D
- Cyclotron and GMP manufacturing facility at OUS (Gaustad)
- Producing radiopharmaceuticals for 8000 PET/CT scans/year
- Supplying PET radiopharmaceuticals to 11 locations all over Norway
- Our products typically have a half life of 109 minutes
- Each product vial is shipped in a transport container containing a 14 kg wolfram pot for shielding



Key activities

- Cyclotron production of isotopes:
 ^{18}F , ^{11}C , ^{15}O , ^{68}Ga

- Running a Norwegian mobile-PET service in co-operation with Alliance Medical



- In house production:
 - NaF (^{18}F)
- Contract manufacturing:
 - SteriPET[®] (FDG)
 - Flutemetamol (^{18}F)
 - Axumin (^{18}F)



Mobile PET/CT

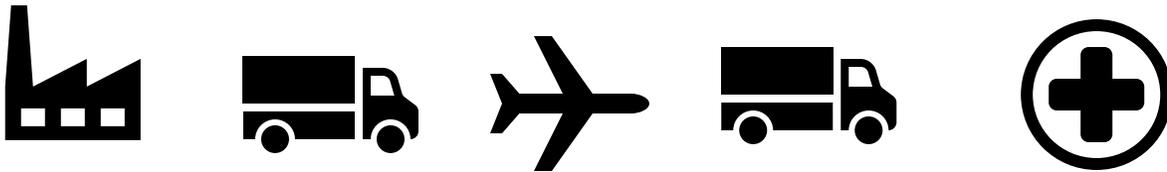
- Curently operating at 3 sites in the South East of Norway: Tønsberg, Lillehammer and Elverum
- More Customers expected to come on line in 2018/2019
- Typical transport times:

Location	Typical transportation times (by car)
Tønsberg	60 min
Elverum	120 min
Lillehammer	160 min



Why drones?

- Customers located > 250 km from Oslo – transport by air
- Expensive and time consuming:



- All customers are looking for product at the same time – limited parallel production capacity on the cyclotron
- If transport times can be shortened -> improve on cyclotron capacity
- **Each half life counts**

Challenges

- Radioactive products – public opinion
- Regulatory: GDP (Good distribution practice), radio protection and ADR
- Weight limitations: (One single shipment >20kg)
- Weather conditions
- Shipment during hours of darkness