

Projet

Technique

DEPRAZ Jimmy

DUFFÉ Maxime

DUSCHENE Pierre

JULIEN Louis

SAUZON Théo



Propul~Surf



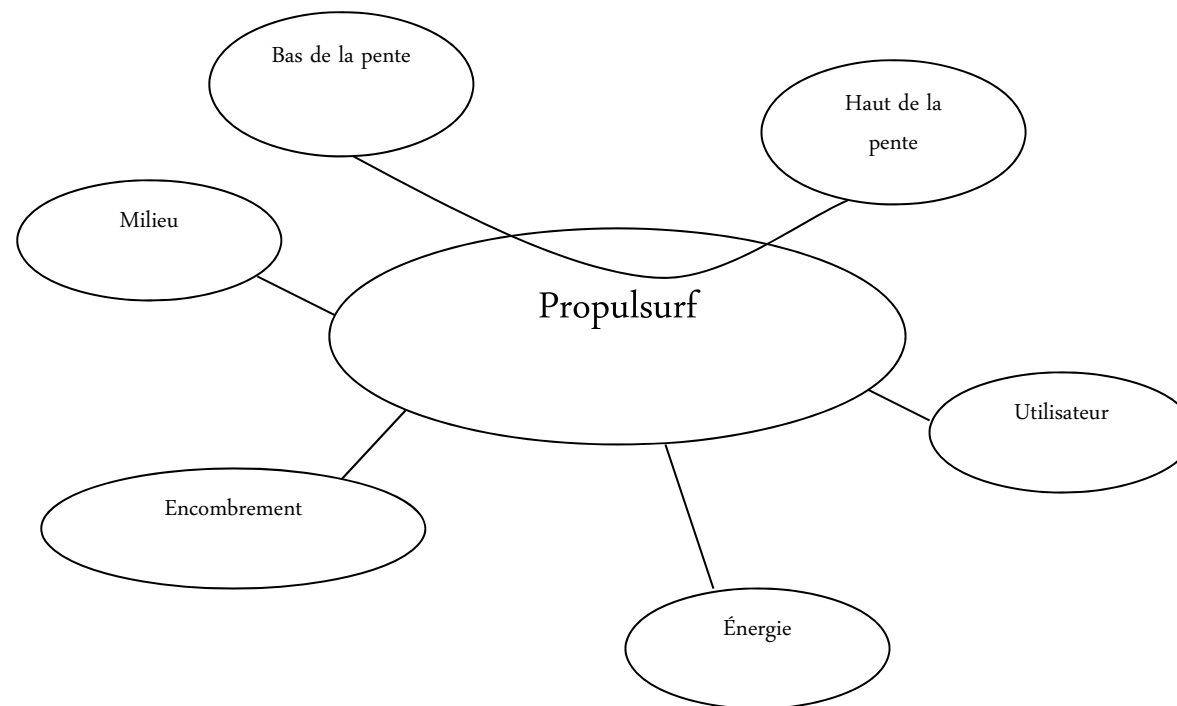
Une nouvelle solution

- ③ Remontées mécaniques dégradant le paysage
- ③ Ecologique et économique
- ③ Portatif

coûteuses et

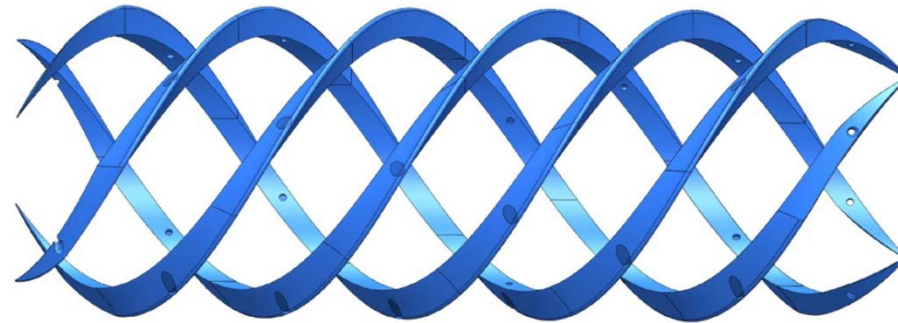


Fonctions



Innovant

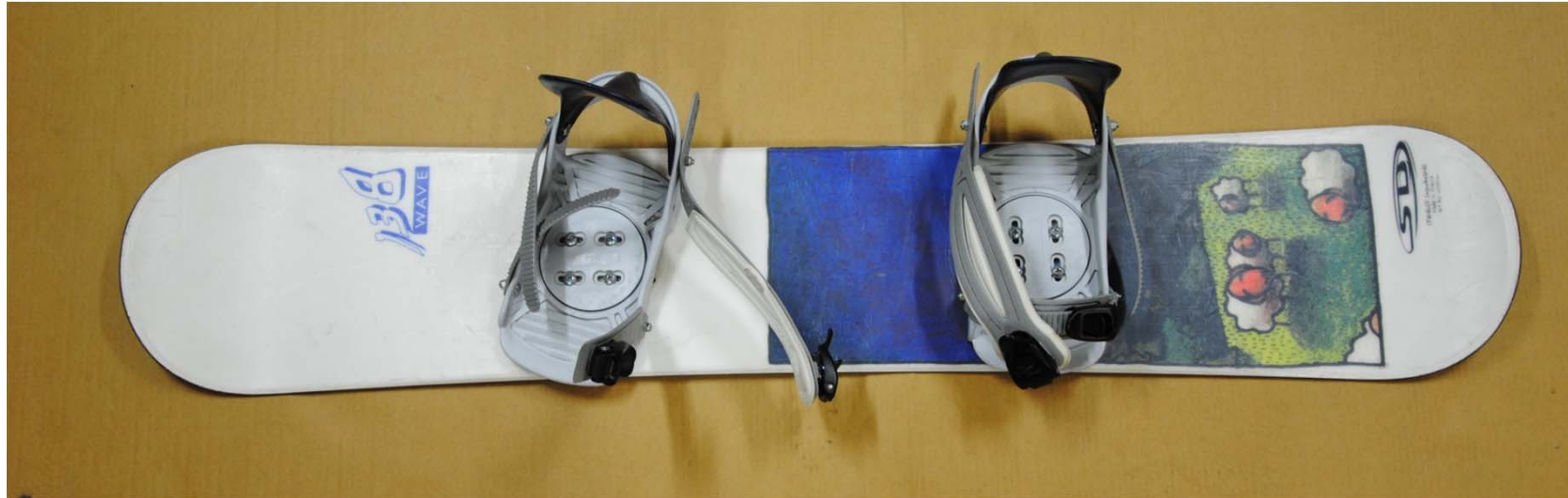
Atouts



- ① Original
- ① Efficace énergétiquement
- ① Respectueux du manteau neigeux
- ① Portatif

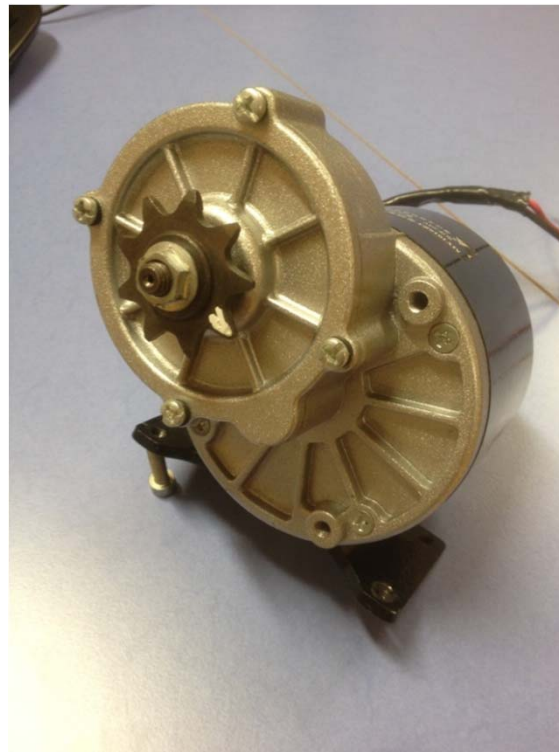
Conception

Snowboard



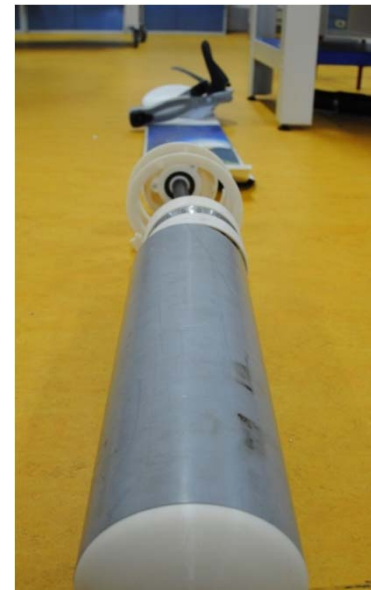
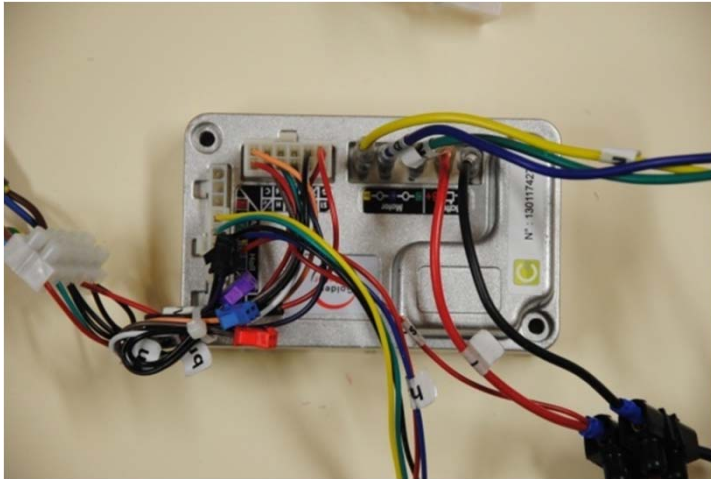
Conception

Motorisation



Conception

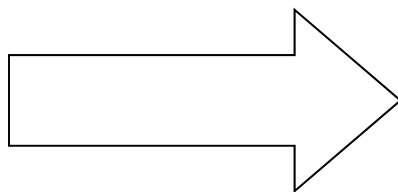
Composants



Modélisation

Conception

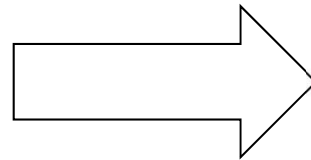
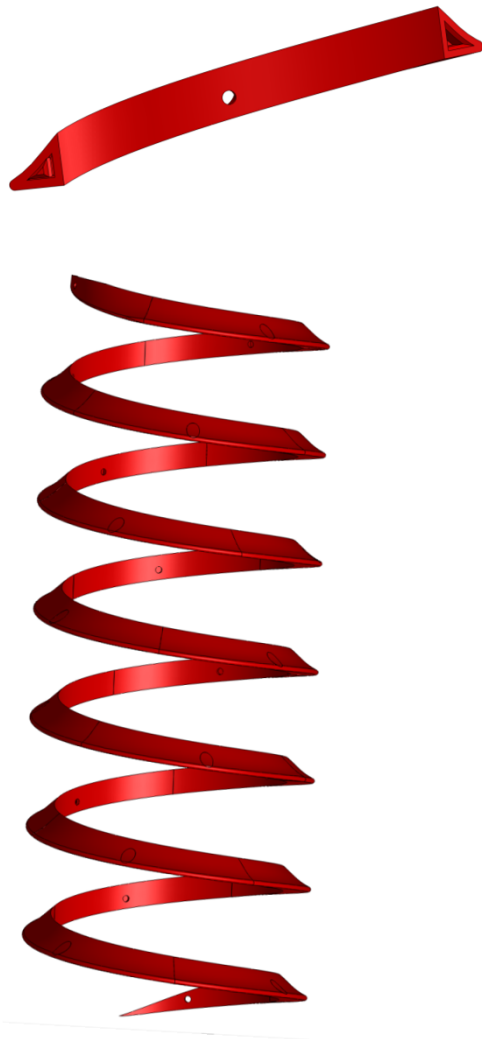
Prototypage



Modélisation

Conception

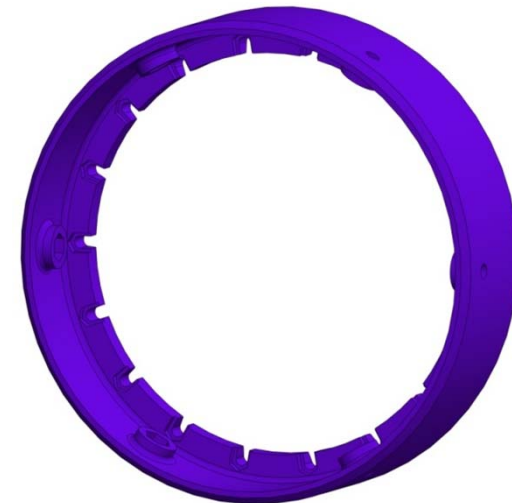
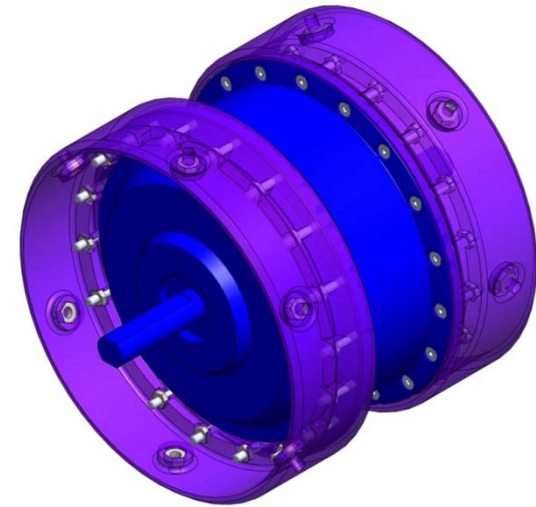
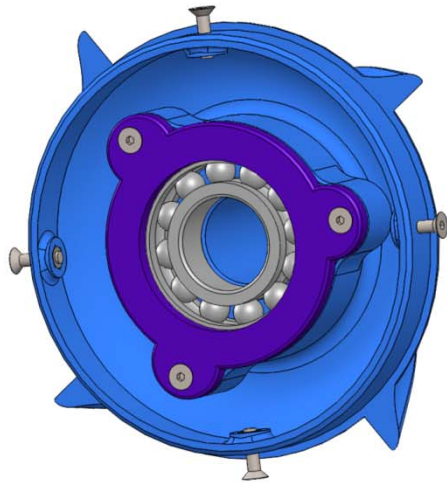
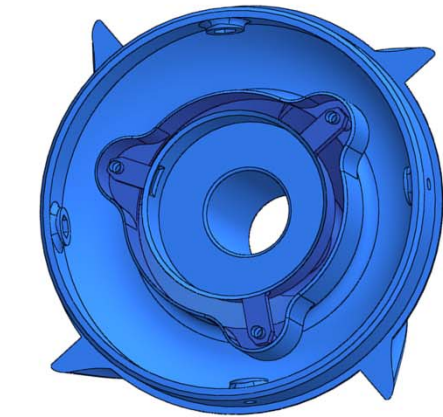
Hélices



Modélisation

Conception

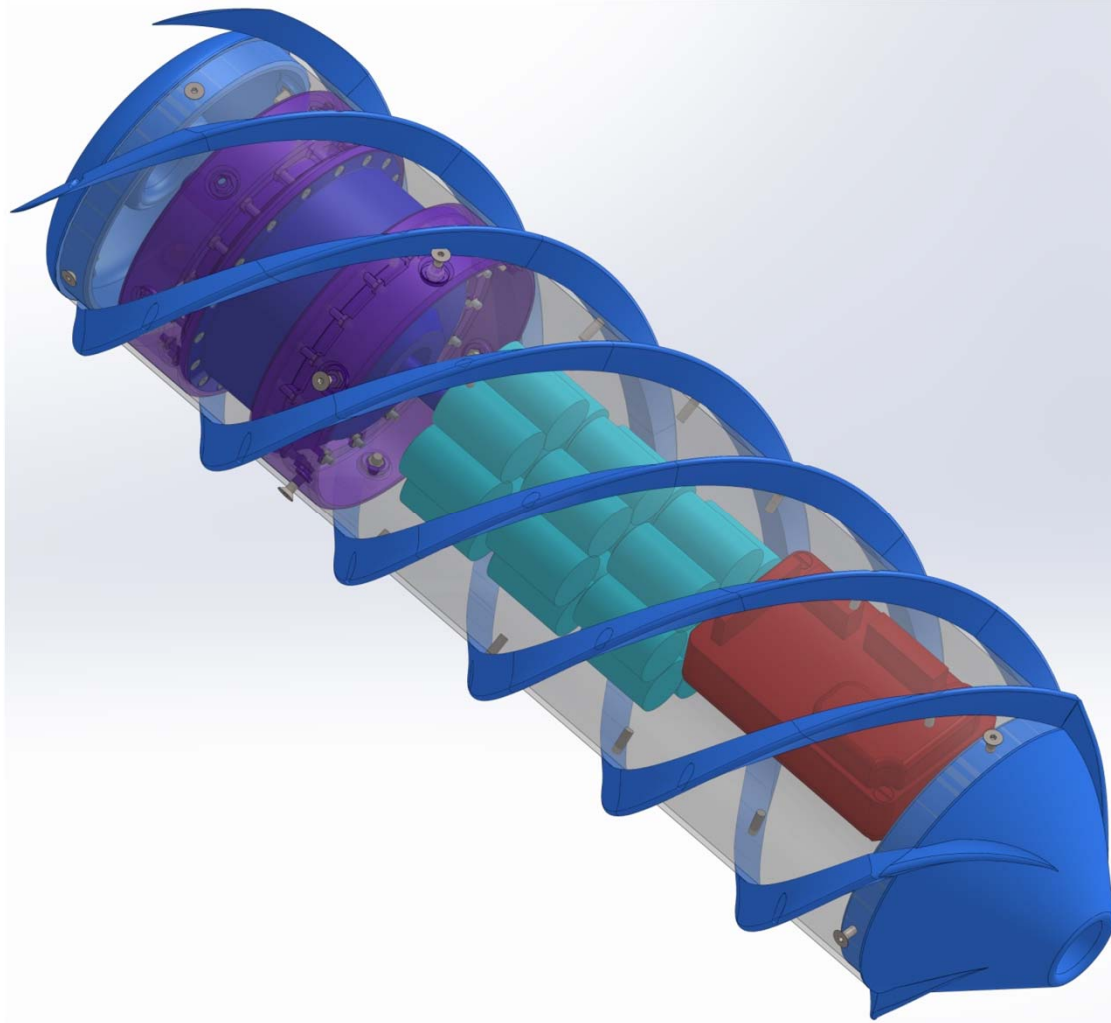
Caches



Modélisation

Conception

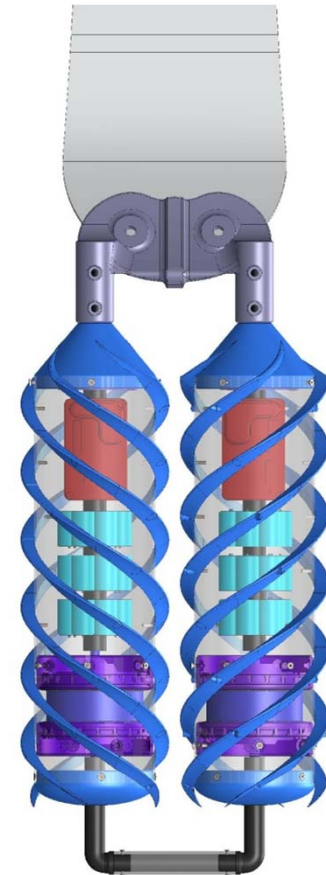
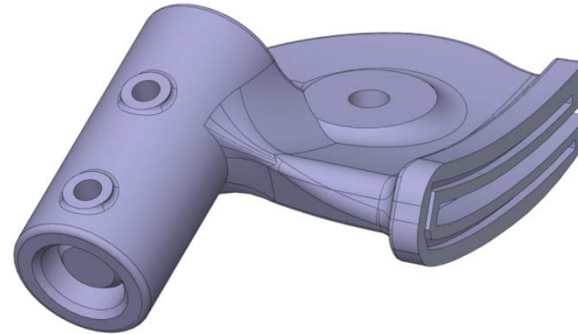
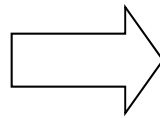
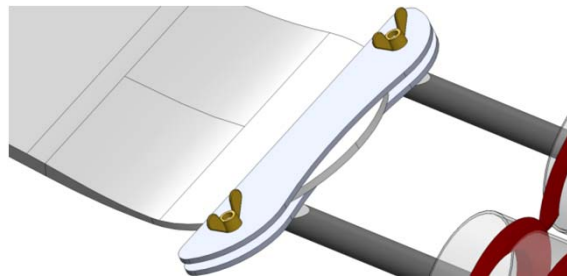
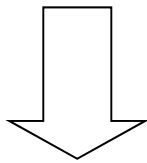
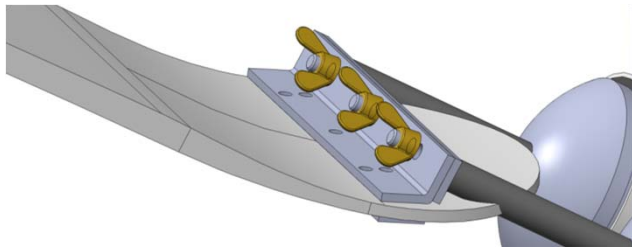
Assemblage



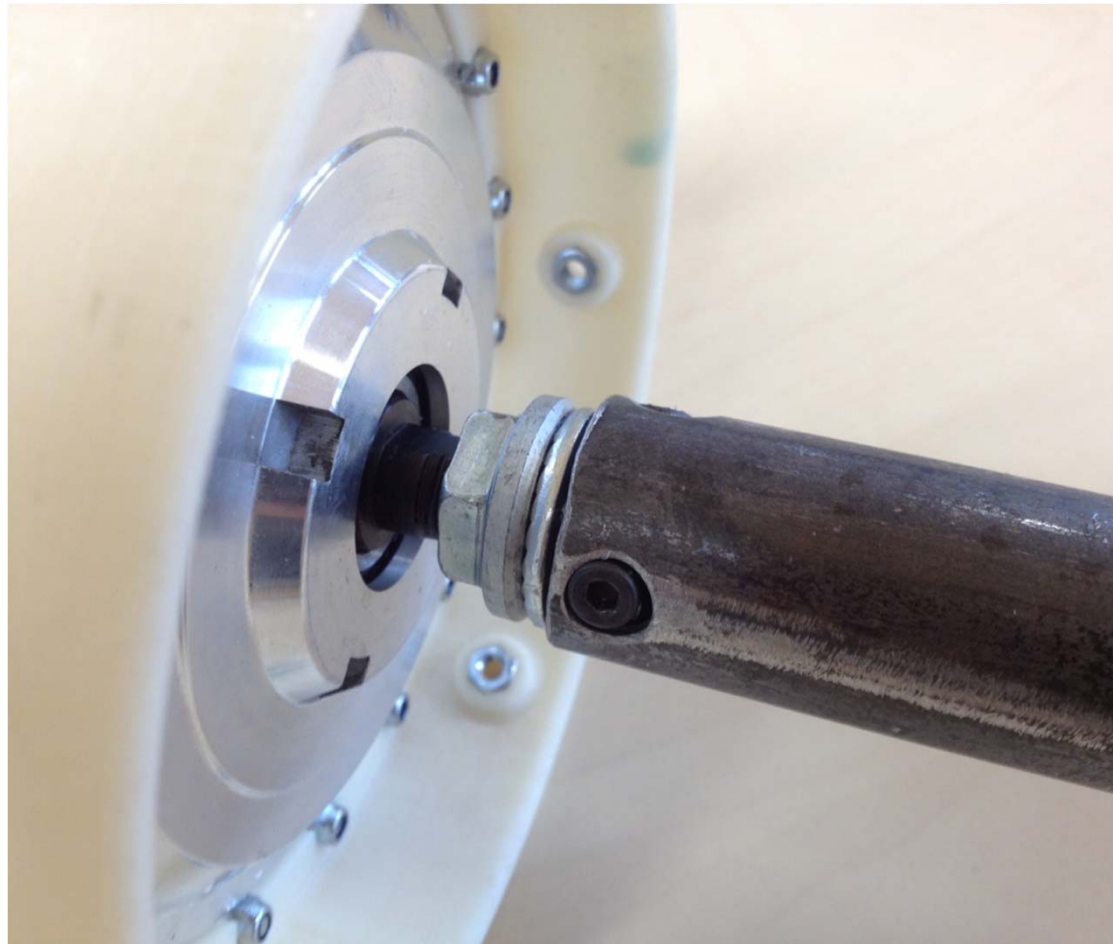
Modélisation

Conception

Fixation avant



Hyperstaticité



Mesures

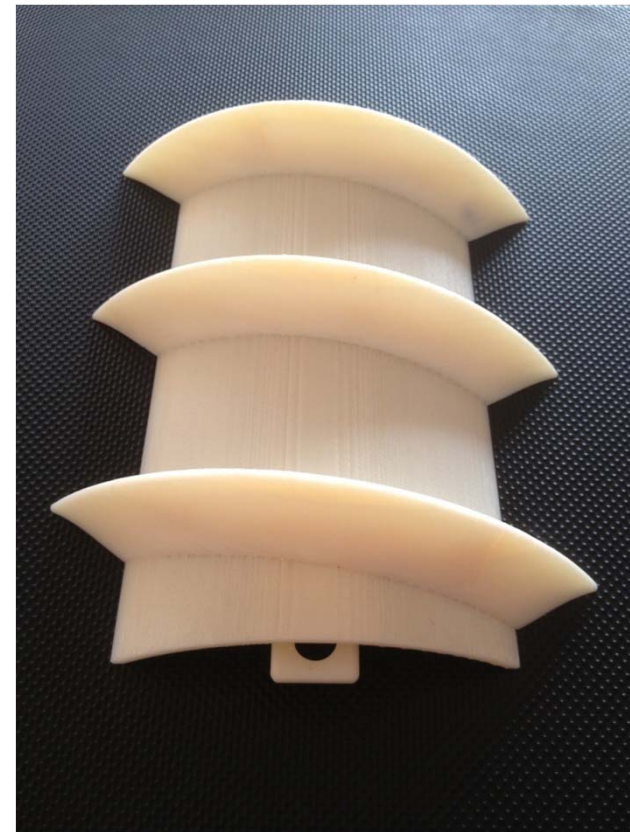
Neige :

Effort de frottements en glissement : 25 N pour le surf (sans hélice)
avec un poids total de 400 N

Hélices :

Avec 3 hélices, avant que la neige ne casse, on transmet 80 N.
Avec toutes les hélices, avant que la neige ne casse, on transmet 400 N

NB : ces résultats ont été obtenus suite à des tests sur une neige fraîche et poudreuse de 3 jours



Energie

Résolution des inconnues

$$\text{CoeffFrottements} = \arctan(25/400) = \arctan(0.062) = 0.062$$

$$\sin(\alpha) = 250/500 \Leftrightarrow \alpha = \arcsin(0.5) = 30^\circ$$

Travaux résistants

$$W(\overrightarrow{\text{Poids}}) = \overrightarrow{\text{Poids}} * \text{hauteur}$$

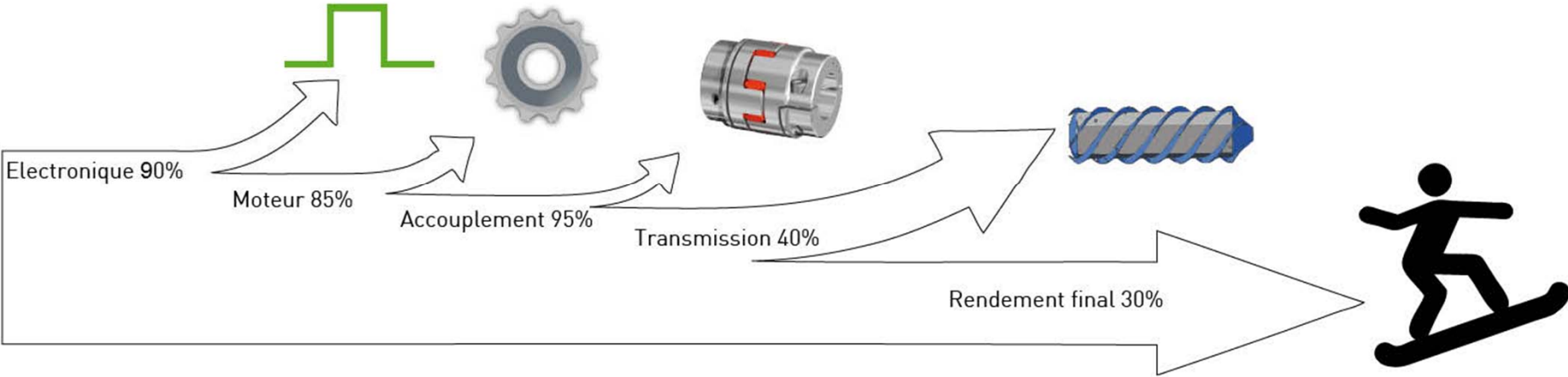
$$W(\overrightarrow{\text{Poids}}) = 800 * 250 = 200\,000 \text{ J}$$

$$W(\overrightarrow{\text{Frottements}}) = \overrightarrow{\text{CoeffFrottement}} * \text{Poids} * \cos(30) * \text{distance}$$

$$W(\overrightarrow{\text{Frottements}}) = 0.062 * 800 * \cos(30) * 500 = 12\,400 \text{ J}$$

$$\sum(W_{\text{résistants}}) = 212 \text{ kJ}$$

Rendements



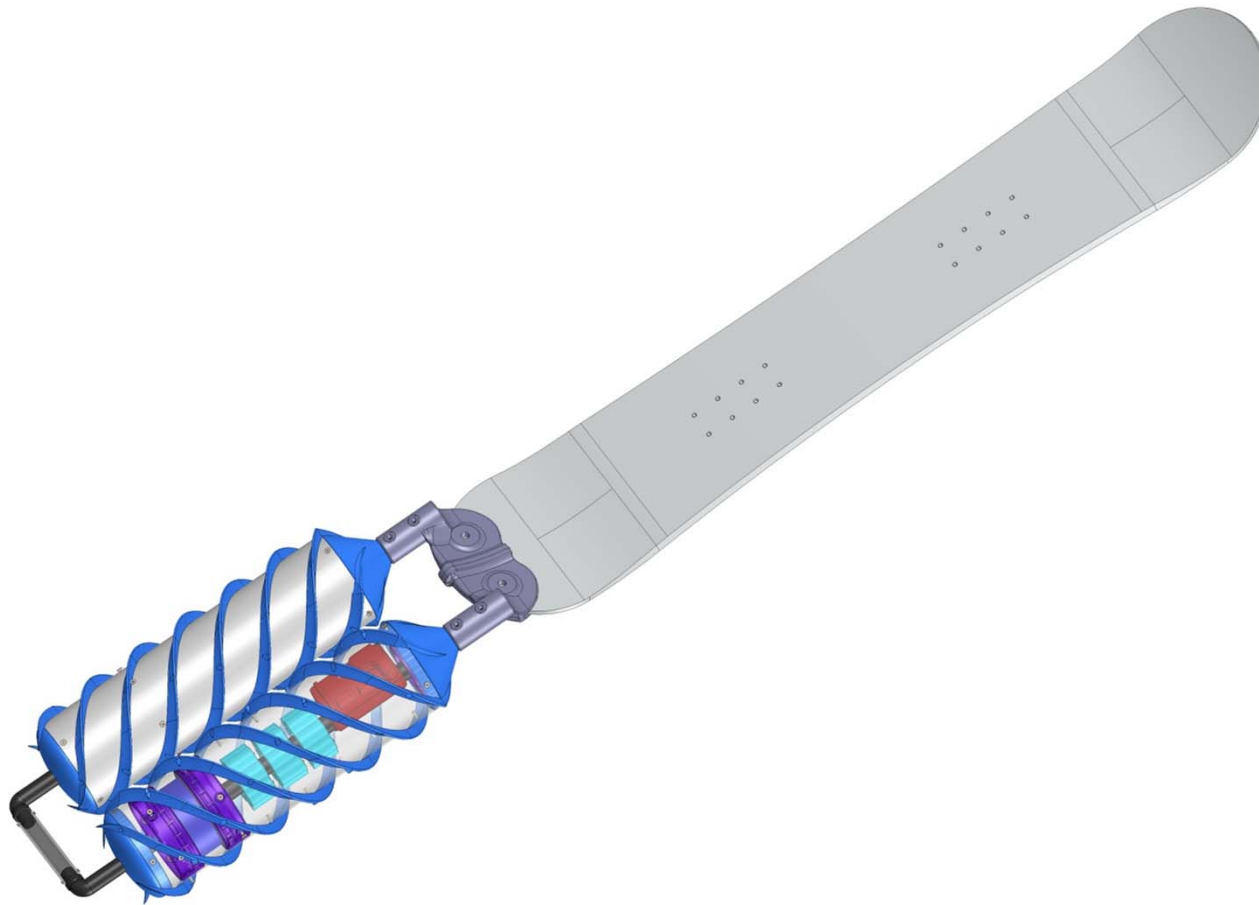
Pertinence

Validation du concept



Pertinence

Prototype final



Conclusion

- ④ Concept validé
- ④ Dernier prototype en impression
- ④ Création d'un carter de protection
- ④ Réduire le poids

