# Web-based application for KBE solution

***For assignment 3, we were challenged to create a web-based KBE system. This included a web browser as user interface, knowledge base with relevant information and coordination with NX for 3D modeling.***

## Check if pump exists:

```
def pump_exists(target_vpm):
    sparql_query = f"""
    PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
    PREFIX A3: <http://www.kbe.com/pump.owl#>
    ASK {{
        ?pump a A3:Pump ;
              A3:targetVPM "{target_vpm}"^^xsd:decimal.
    }}
    """
    url = "http://localhost:3030/A3/query"
    PARAMS = {"query": sparql_query}
    response = requests.get(url, PARAMS)
    if response.status_code == 200:
        data = response.json()
        return data["boolean"]
```

## Insert order to KB:

```
def insert_order_data(pump_name, order_quantity,
                      customer_username):
    count = get_order_count()
    order_number = f"order_{count}"
    sparql_query = f"""
    PREFIX A3: <http://www.kbe.com/pump.owl#>
    INSERT {{
        A3:{order_number} a A3:Order;
            A3:hasProduct A3:{pump_name};
            A3:hasCustomer A3:{customer_username};
            A3:orderQuantity {order_quantity}
    }}
    WHERE {{
    }}
    """
    insert_sparql_data(sparql_query)
    return order_number
```

### Create a Pump

Enter Volume Per Minute (VPM) in cubic meters:

7

Create Pump

Hide Pumps

### Available Pumps

| Pump Name | Target VPM | Gear Radius | Teeth Diameter | Gear Depth | Case Thickness | Angle Speed | Number of Teeth |
|---|---|---|---|---|---|---|---|
| pump_1 | 12.0 | 320.05 | 32.01 | 640.1 | 10.0 | 8.96 | 32 |

VPM

genetic algorithm

### Pump Details for pump_2

| Parameter | Value |
|---|---|
| Target VPM | 7.0 |
| Gear Radius | 293.45 |
| Teeth Diameter | 48.65 |
| Gear Depth | 586.89 |
| Case Thickness | 10.0 |
| Angle Speed | 3.61 |
| Number of Teeth | 19.0 |
| Calculated VPM | 7.0001 |

View Image | Order

Pump data

Fuseki KB

Pump name

Customer/Order data

### Order confirmed with order number: order_2

Homepage

### Your Orders Martin

| Order Number | Pump Number | Quantity |
|---|---|---|
| order_2 | pump_2 | 4 |

Customer data

### Order The Pump

Enter username:

Martin

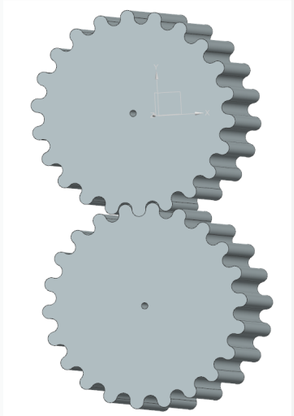
Enter email:

MartinIs@Coolboy.com

Enter amount of pumps:

4

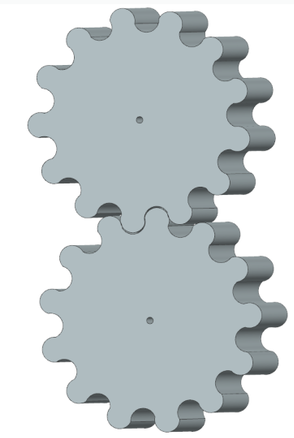
Submit Order



### Pump Details for pump_5

| Parameter | Value |
|---|---|
| Target VPM (m³) | 14.0 |
| Gear Radius (mm) | 334.82 |
| Teeth Diameter (mm) | 47.82 |
| Gear Depth (mm) | 669.64 |
| Case Thickness (mm) | 16.74 |
| Angle Speed (rad/s) | 6.57 |
| Number of Teeth | 22.0 |
| Calculated VPM (m³) | 14.0006 |

View Image | Order



### Pump Details for pump_6

| Parameter | Value |
|---|---|
| Target VPM (m³) | 50.0 |
| Gear Radius (mm) | 385.36 |
| Teeth Diameter (mm) | 96.34 |
| Gear Depth (mm) | 770.72 |
| Case Thickness (mm) | 19.27 |
| Angle Speed (rad/s) | 9.13 |
| Number of Teeth | 13.0 |
| Calculated VPM (m³) | 49.9992 |

View Image | Order