Certified Decentralized Wastewater Treatment Technologies: Norms and Their Implications

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Agenda

- What is a Norm and Why are Norms necessary?
- Certification Process of Onsite Wastewater Treatment Systems – A 7 Step Program
- Other Aspects Related to the Certification Program
- Certified Technologies
- Q&A

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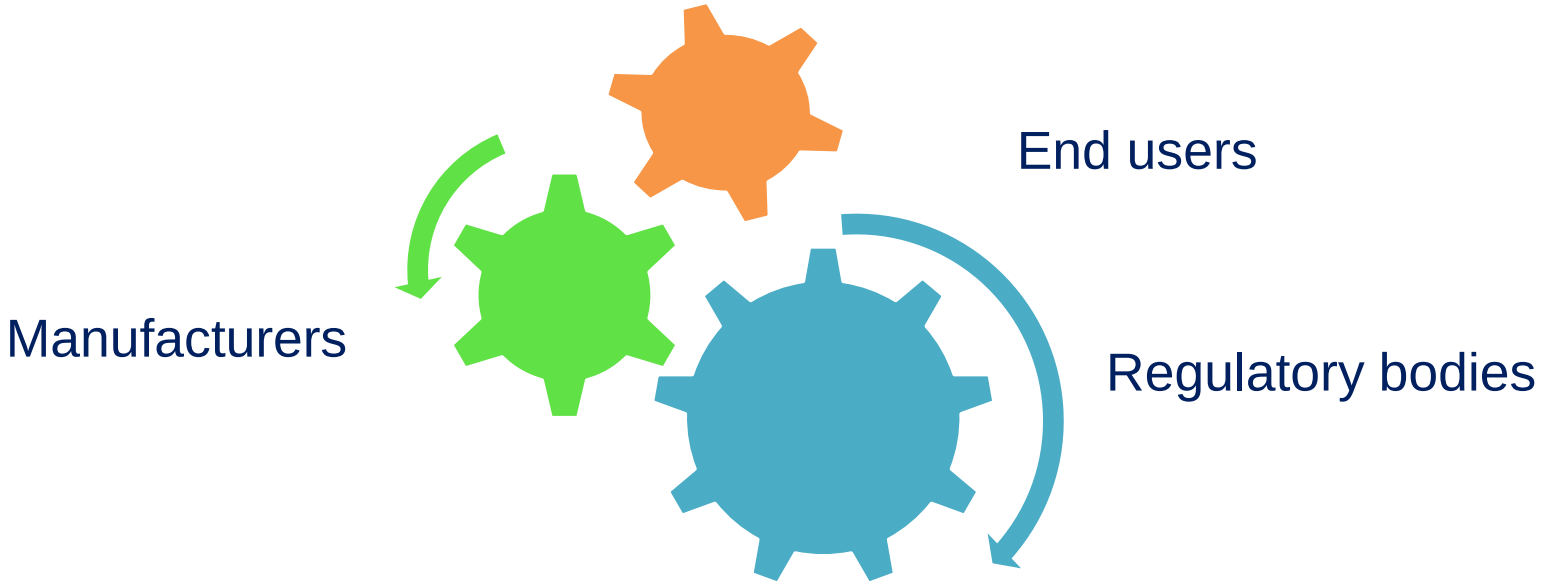
What is a Norm?

- Set of mandatory technical prescriptions established to ensure the proper functioning and safety of a product or process.
- Consensus between a group of representatives, the industry, academia and the public.
- Keys to success:



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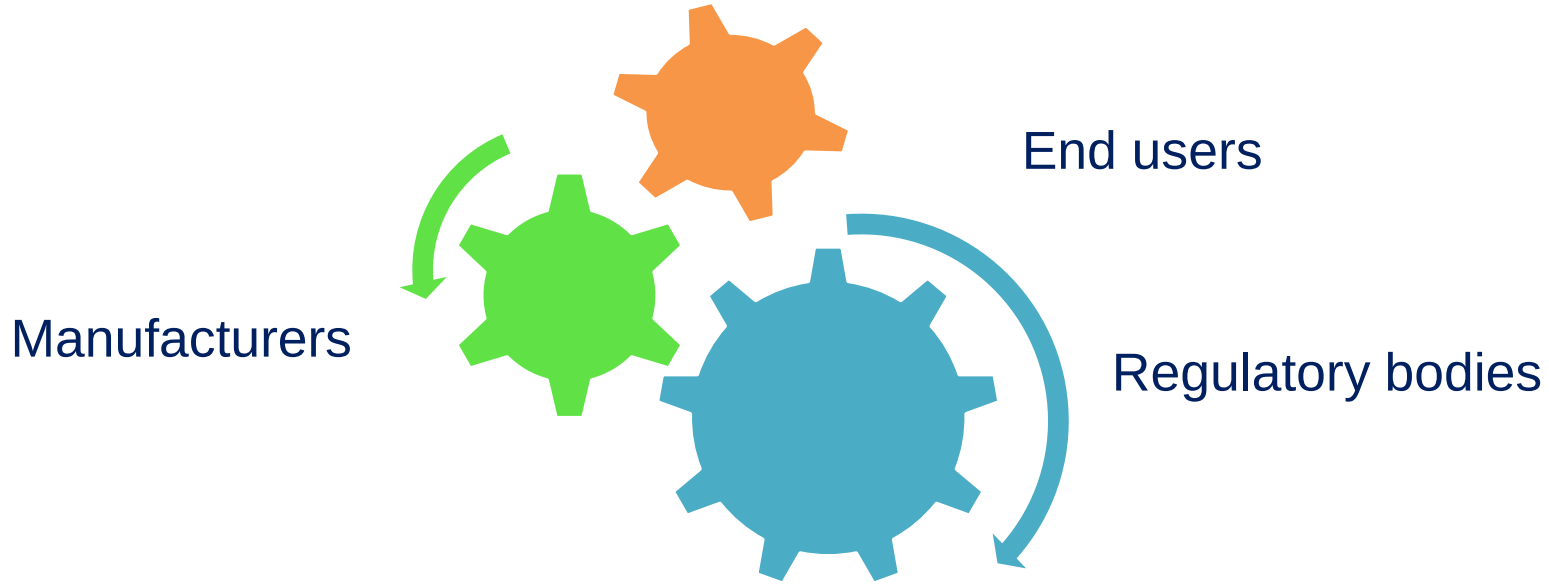
Why Are Norms Necessary?

- Ensure the quality and reliability of a product for end users.
- Specify a common approach for manufacturers.
- Set minimal expected requirements from regulatory bodies.



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Canadian Norms

NSF/ANSI 40
Residential Wastewater Treatment Systems

NQ 3680-910
Wastewater Treatment
Onsite Septic Systems for Isolated Dwellings

CAN/BNQ 3680-600
Wastewater Treatment
Residential Onsite Septic Systems

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Facts About the NSF-40 Norm

- Any residential wastewater treatment system with a capacity of 400 to 1,500 gal./d (1,500 to 5,700 l/d)
- $CBOD_5$ and TSS reduction – one single treatment class
- 26-week long trials
- No criteria regarding the temperature of the influent
- Dosing pattern: 35% in the morning, 25% at noon and 40% in the evening
- 4 special weeks – stress tests
  - Laundry day: 3 days of laundry over 5 days
  - Parents at work: 40% in the morning and 60% in the evening
  - Power outage: 48-hour stoppage
  - Holiday: No water supply for 1 week

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Criteria Considered for the NSF-40 Certification

- Noise level: 60 dB to 6 m
- Mechanical components and required maintenance
- Electrical conformity with norms in effect
- Access port for maintenance and samplings
- Detection and signalization of errors: visual and audible alarm
- Labelling and traceability
- Warranty
- Documentation
  - Owner’s Manual
  - Design and Installation Guide
  - Operation and Maintenance Guide
  - Troubleshooting and Repair Guide

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Facts About the 3680-910 Norm (Quebec)

- Refers to the NSF-40 norm (Annex A)
- Additional 26 weeks of trials
  - Annex A: Performance trial (equivalent to NSF-40)
  - Annex B: Reliability trial
- Trial cover Quebec's 4 seasons
- Plant hardiness zone
- Possibility of controlling the temperature of the influent
- 5 performances classes
  - $CBOD_5$, TSS, fecal coliforms and phosphorus reduction
- Public certification process (NQ 3680-915)
- Annual field audit process

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Facts About the CAN/BNQ 3680-600 Norm
Canada (except Quebec)

- Refers to the NSF-40 norm (Annex A)
- Expanded version of the Quebec norm (3680-910)
- Annex B: More demanding reliability test
  - More analyses
  - Feeding pattern « Parents at work » on weekdays (40% to 60%)
- 3 temperature options for the influent
  - No control
  - < or = 11 ± 1 C
  - < or = 16 ± 1 C
- Additional performance classes
  - $CBOD_5$, TSS, fecal coliforms, phosphorus and nitrogen reduction
- Public certification process (CAN/NQ 3680-900)
- Annual field audit process

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Impact of a Norm

- Trials – $120,000 to $175,000
  - Depending on the number of performance classes
  - Based on the length of time required
  - Does not include costs incurred by the manufacturer for:
    - R&D
    - Installation work
    - Preparation of the documentation
- Annual costs to maintain the certification
  - Annual management costs to maintain the certification: $1,965
  - Costs of the plant’s Quality Program verification: $4,550
- Systems field audits costs
  - Approximately $1,200 per visit per site
  - Therefore, for one performance class = minimum of $6,000 to $12,000 per year

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Certification Process of Onsite Wastewater Treatment Systems

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7-Step Process

1. Filing of the application by the manufacturer
2. Validation of the project by the BNQ
3. Annex A trials
4. Annex B trials
5. Issuance of the certificate
6. Bi-annual plant’s verifications
7. Annual validation of field performances

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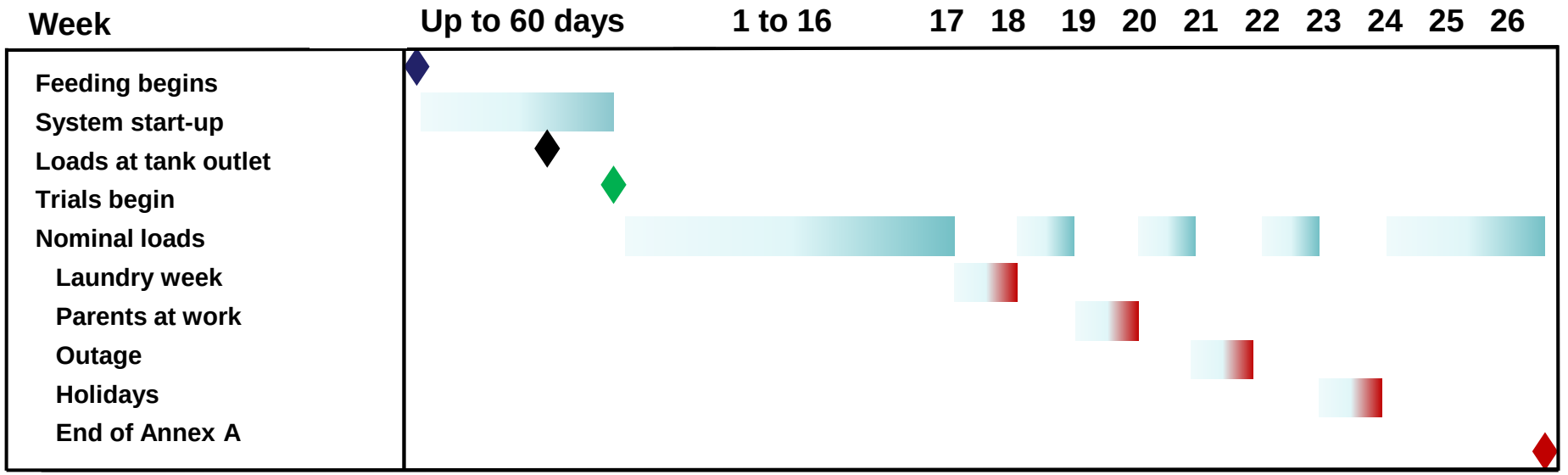
Annex A Trial (more)

- System start-up and acclimatization period
- 26 weeks of trials



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Annex A Trials (more)

- Respect of the weekly and monthly requirements
- Respect of a minimal quality of influent concentrations

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Annex B Trials

- Choice to pump-out or not the septic tank
- Official start of the Annex B trials
- Weekly sampling campaign
- Respect of the requirements
  - 80% of good results
  - Maintain of the minimal concentrations of the influent

- Trials end after 26 weeks and the system is no longer supplied with water
- Tested system is removed and its structural integrity is verified

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Issuance of the Certificate

- Preparation of the official reports for Annex A and Annex B
- Site visit to the production plant where the system is manufactured
  - The plant’s Quality Program is verified
- Validation of the respect of all requirements
- **Decision of the BNQ**
- Issuance of the certificate and publication on the BNQ website

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Example of a Conformity Certificate from the BNQ

BNQ
Bureau de normalisation du Québec

Le BNQ est membre du Système national de normes (SNN).

CERTIFICAT DE CONFORMITÉ

N° du certificat : **890** — **Certificate number**
N° de la norme : **NQ 3680-910/2000-06-16 M1 (2004-09-10)**
N° du protocole de certification : **NQ 3680-915/2000-06-16**

Date d'expiration : **2017-01-31**

Le Bureau de normalisation du Québec, ayant reconnu la conformité de systèmes d'épuration autonomes pour les résidences isolées :

Techno

- **ESP-TS pour un traitement secondaire (classe II);**
- **ESP-TSA pour un traitement secondaire avancé (classe III).**

(voir annexe au certificat)

ainsi que l'aptitude du détenteur à fabriquer ces produits conformément aux exigences de la norme et du protocole de certification, délivre le présent certificat à :

Name of manufacturer

Le présent certificat est délivré selon les règles précisées dans le document BNQ 9902-001. En foi de quoi, ont signé à Québec, le 23 janvier 2015.

Kim Cantin, directrice des opérations
Bureau de normalisation du Québec

Responsable de programme
Certification

Le présent certificat demeure la propriété du BNQ et doit lui être retourné s'il le demande.
La validité du présent certificat de conformité est vérifiable à l'adresse www.bnq.qc.ca/fr/clients-certifies.html.

FT-CP-00_Certificat_FR v4

Bi-Annual Plant Verification

- Quality Program
  - Verification of the Quality Program
  - Verification of the production
  - Structural integrity test
  - Verification of customer files
- Labelling
  - Traceability
  - Trademark use
- Management of non-conformities

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Annual Validation of Field Performances

- Annual issuance by the manufacturer of a list of all systems installed by performance class
- Selection of the number of systems:
  - 1% of the number of systems sold in the last 5 years
  - Minimum 5, maximum 10 per year
  - Spread out on the territory
- Manufacturer is notified of the sites chosen and sampling dates

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Annual Validation of Field Performances (more)

- Site visits and sampling campaigns
  - Validation of system's usage and maintenance with the homeowner
  - Composite samples
- Respect of the requirements (80%)
- Decision to maintain the certification

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Certified Technologies

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List if Certified Companies – NQ 3680-910 Norm

Certified businesses

Number of certificates:3

Bas-Saint-Laurent	PREMIER TECH TECHNOLOGIES LIMITÉE (PREMIER TECH AQUA)
Ontario	WATERLOO BIOFILTER SYSTEMS INC.
USA	NORWECO, INC.

Source:

http://www.bnq.qc.ca/en/standardization/environment/onsite-residential-wastewater-treatment-technologies.html

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Questions?

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